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G U N N E X L I M I T E D

REPORT ON EXPLORATION

of

ESQUIMALT & NANAIMO RAILWAY CO LAND GRANT

PERIOD: January 1, 1965 - December 31, 1965.

PROPERTY FILE

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ILLUSTRATIONS

Diamond Drill Logs: - Skarn Claims:

Hole #3.....	in pocket
Hole #4.....	in pocket
Hole #5.....	in pocket
Hole #6.....	in pocket

Plans and Sections:

Area Surrendered	1" = 4 miles
Area Explored Geologically	1" = 4 miles
Area Explored Geochemically and by Prospecting	1" = 4 miles
General Geology (five sheets)	1" = 1/2 mile
General Geochemistry (five sheets)	1" = 1/2 mile
 Skarn Claims	
- Geology	1" = 100'
- Geochemistry (THM and Ni)	1" = 100'
- Section D.D.H. #3,4 and 5	1" = 50'
- Section D.D.H. #6	1" = 50'
 Fourth Nanaimo Lake Area	
- Geochemistry - north extension	1" = 200'
- Electromagnetic survey - north extension	1" = 200'

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ILLUSTRATIONS CONT'D.

Plans and Sections:

NWB and ER Showing

- Geochemistry 1" = 200'

Horne Lake - Alberni Area

- Geology 1" = ¼ mile

Mary Claims

- Location Map 1" = ¼ mile
- Geology and Topography, sheet #35 1" = 100'
- Outcrop Map, sheet #35 1" = 100'
- Geological Cross-Sections 1" = 100'
- Magnetic Survey, sheets #15,25,26,34,35 1" = 100'
- Self Potential Survey, sheet #35 1" = 100'
- Geochemistry (THM), sheets #25,26 1" = 100'
- Geochemistry (Cu), sheet #35 1" = 100'
- Assay Plan, sheets #35E, 35W 1" = 50'
- Assay Plan, sheet #35 1" = 100'

Airborne Magnetic Anomalies

- #6 - Geochemistry and Magnetism 1" = 200'
- #9 - Geochemistry and Magnetism 1" = 200'
- #16 - Geochemistry and Magnetism 1" = 200'
- #17 - Geochemistry and Magnetism 1" = 200'
- #18 - Geochemistry and Magnetism 1" = 200'
- #19 - Geochemistry and Magnetism 1" = 200'
- #35 - Geochemistry and Magnetism 1" = 200'
- #37 - Geochemistry and Magnetism 1" = 200'
- #42 - Geochemistry and Magnetism 1" = 200'
- #43 - Geochemistry and Magnetism 1" = 200'
- #44 - Geochemistry and Magnetism 1" = 200'
- #45 - Geochemistry and Magnetism 1" = 200'
- #46 - Geochemistry and Magnetism 1" = 200'
- #47 - Geochemistry and Magnetism 1" = 200'
- #48 - Geochemistry and Magnetism 1" = 200'

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ILLUSTRATIONS CONT'D.

Plans and Sections:

Airborne Magnetic Anomalies Cont'd:

#49 - Geochemistry and Magnetism	1" = 200'
#54 - Geochemistry and Magnetism	1" = 200'
#55 - Geochemistry and Magnetism	1" = 200'
#56 - Geochemistry and Magnetism	1" = 200'

REPORT ON EXPLORATION OF
ESQUIMALT AND NANAIMO RAILWAY COMPANY LAND GRANT

Period: January 1, 1965 - December 31, 1965.

SUMMARY

Gunnex Limited continued throughout 1965 to explore certain areas of the E & N Land Grant on Vancouver Island as outlined in Mineral Agreement No. 6 with Canadian Pacific Oil and Gas Limited. The regional exploration by prospecting and by geological and geochemical techniques was not completed in 1965, as had been expected, but only a small area remained to be explored. Detailed investigations of several small local areas was completed and will continue on others in 1966. The Skarn zone, which had been extensively explored, was eliminated because it lacked potential. The Douglas showing (Mary Claims) on Mount Spencer was examined in detail and has indications of being an important occurrence of copper. Its exploration will continue in 1966. Many of the airborne magnetic anomalies were investigated by ground methods and none are believed important. Approximately one-half of the Gunnex permit area was surrendered to C.P.O.G. at the end of 1965.

A total of \$98,248.45 was spent during the year.

INTRODUCTION

The Report on Exploration for the year ending December 31, 1964, outlined in considerable detail the background information such as regional geology, topography, access, exploration procedures, geochemical techniques, and descriptions of individual mineral occurrences. These items will not be repeated in this report; the report will be, essentially, a report of progress and will merely record the year's activities and describe new information gained in the year.

An average of twelve men, including one engineer and one geologist, was employed in exploration work for much of the year. The abnormally heavy falls of snow which had forced a halt to all work late

in the preceeding year, prevented the exploration work from becoming fully active until early in May. Work on Mount Spencer could not begin until mid-July. All activities terminated at the end of November. Prior to May, a small crew gathered geochemical samples in snow-free areas, and made detailed surveys of magnetic anomalies. Diamond drilling at the Skarn claims resumed in March and was completed in April.

Contrary to expectations, the reconniassance exploration work was not completed, due to the difficulty in retaining workmen together with the large amount of work done on Mount Spencer where half the crew was employed for much of the season. Only a small portion of the total area remains to be explored and this should be completed early in the coming season. The areas explored and remaining to be explored are outlined on an attached sketch.

The regional geological mapping, also, was not completed. A greater area remains to be mapped than to be explored but no difficulties are anticipated in completing the mapping in 1966. An attached sketch shows the areas mapped and remaining to be mapped.

At the end of 1965 Gunnex Limited surrendered to C.P.O.G., as per Article 20 of Mineral Agreement No. 6, approximately one half of the original lands covered by the agreement. The western portion was retained for further exploration. At the same time, a small parcel of land on Mount Buttle, which Gunnex had obtained by an amendment to the original agreement, was also surrendered. The total area of the original two blocks amounted to about 545,000 acres of which Gunnex retains about 240,000 acres. An attached sketch map shows the areas surrendered and retained.

GENERAL GEOLOGY

No significant changes in the geology were discovered. The limestone, which outcrops near the summit of Mount Spencer and which was formerly considered as possibly being Triassic in age, was determined to be Triassic. This decision was based on its general appearance and

on the stratigraphy. A fossil found in the limestone, when identified, should confirm the age.

The presence of Triassic limestone on Mount Spencer is the first known occurrence of this important rock unit within the Gunnex permit area. Most ore deposits on Vancouver Island and on the Queen Charlotte Islands are related to this limestone and occur in the volcanics immediately beneath it. The Douglas copper occurrence on Mount Spencer occupies this position and, for this reason alone, is significant.

GEOCHEMISTRY

In September a change in laboratories doing geochemical determinations was made from the Mogensen Laboratory to Technical Service Laboratories in Toronto whose analyses differed from those of Mogensen but seemed more reliable. Thus a third laboratory has been involved in geochemical analyses and three differing sets of results have been received. The analyses of each laboratory is indicated on the geochemical maps by different symbols. Because of the varying results, it is difficult to compare one area with another; but each of the three types of analyses indicates the most important item - anomalous conditions.

The Gunnex and Mogensen laboratories analysed by hot acid extractions and colourimetric comparisons; Gunnex reported both total heavy metal and copper but Mogensen reported only Total heavy metal. Technical Service Laboratories use hot acid extraction and atomic absorption determinations and report the copper content in excess of a predetermined background value - 80 parts per million. As a precaution the samples are checked in batches of ten for both copper and zinc.

Routine sampling by the prospectors disclosed no new anomalous areas although a few individual samples contained higher than normal values. No significance was attached to them. Most of the soil samples collected on Mount Spencer were anomalous, as would be expected, and soil sampling was temporarily discontinued. Later it was noticed that the soil

samples did indicate trends and the sampling was resumed whenever men were available to gather them.

A large and strong geochemical anomaly occurring in the headwaters of China Creek was sampled in more detail but its source was not determined. Further investigations will be made in 1966.

SKARN CLAIMS

The Skarn zone south of Labour Day Lake was eliminated. Good mineralization was found but not in sufficient quantities to be classed as ore. A lens of sulphides containing copper was found but was not explored in detail because it was obvious from the geology that it could not contain more than a few tens of thousands of tons. A capable mining contractor, Cameron McMynn Ltd., studied the available information and decided that it could not be profitably mined on a lease or royalty basis. No more work is planned.

Diamond drilling, which had been halted late in the previous year by deep snow, was resumed in March and was terminated in April. Drill hole No. 3 was completed and holes No. 4, 5 and 6 were drilled. Only hole No. 3 intersected ore-grade material; holes No. 4 and 5 drilled beneath it failed to cut ore. This, and the surface geology, demonstrate that the sulphide lens occurs as a pipe-like mass in chert contained within a local small embayment in the underlying diorite and consequently can not be considered important. The sixth and final hole was drilled to check an area where widespread, but low-grade copper mineralization had been found on surface. No mineralization was found in the drill hole.

Drill hole No. 3, in addition to the ore-grade material intersected near surface, cut a second skarn zone at depth and was continued until the deep skarn zone had been completely penetrated. Several mineralized sections were found in the deep zone and an attempt was made to again penetrate it with drill hole No. 4 but bad ground conditions forced the abandonment of the hole before the zone was reached. No further attempts were made to reach it.

A total of 3,562 feet of "A" core drilling was completed on the Skarn claims of which 1,734 feet was drilled in 1965.

Logs and cross-sections for holes No. 3,4,5 and 6 are attached as well as a revised geological plan showing the locations of all holes.

Several of the soil samples previously reported for copper and/or total heavy metals were tested for nickel. A revised geochemical plan showing the nickel values is attached.

Eleven of the Skarn claims (Skarn 6 to 15 inclusive) were permitted to lapse. The original four claims (Skarn 1 to 4) remain in good standing until September 24, 1971. Much of the work done on the Skarn claims was not applied as assessment work. It was decided that the cost of recording the work was not warranted.

MOUNT SPENCER (MARY CLAIMS)

The Douglas showing on Mount Spencer, 16 miles south south-east of Port Alberni, has developed into a promising occurrence of copper. Widespread low-grade copper mineralization has been found over a large area. Better grade material has been found but its continuity and extent have not yet been established. Trenches have been excavated wherever possible and there remains little more that can be done on surface. An induced polarization survey and diamond drilling are planned for 1966.

Mineralization on Mount Spencer was first noticed late in 1964 as wide-spread occurrences of rust but its significance was not then realized.

It was not until mid-July that sufficient snow had melted to permit resumption of work. A camp was established at an elevation of 4,175 feet on the saddle between the two summits of Mount Spencer. Logging roads are located in the valley bottoms not far distant, but the precipitous nature of Mount Spencer required that the camp be serviced by helicopter.

Small pits were blasted into several of the rusty zones and specks of sulphides were observed. Deeper excavations into fresher rock disclosed that the host rocks, volcanics, are highly fractured and that the fractures are mineralized with pyrite, pyrrhotite and a little chalcopyrite and bornite. A few specks of molybdenite were observed but this mineral does not seem to be a normal component of the mineralization. Later, nearly massive sulphides were found in several local areas.

The decomposition of the abundant pyrite, aided by the extensive fracturing in the volcanics and possibly by the chemically active overlying limestone, has resulted in the highly fractured volcanics being oxidized and leached to depths much greater than is normal in a recently glaciated terrain. Consequently, it was necessary to dig at least two feet and sometimes as much as four feet before a true sample could be obtained. One trench was excavated to a depth of eight feet and the values continued to improve to the bottom.

Several wide rusty mineralized zones were located within a width of 1,200 feet and were traced for a length of 2,500 feet. Both extensions are open; the western end was traced no farther than a steep hillside due to difficult access, and the eastern end was lost in an area of heavy overburden. Other rusty areas have been noted to the north and may indicate similar parallel mineralized zones. They occur in a rugged terrain and have not yet been investigated.

The area explored in 1965 was soil sampled and tested by magnetic, electromagnetic and by self potential surveys. None of these techniques demonstrated sharp anomalies but they did show weak and vaguely anomalous situations which parallel the known mineralization. The electromagnetic survey experienced various difficulties and no reliable results were obtained. No electromagnetic information is presented but the various geophysical and geochemical plans are attached.

A geological study showed that the mineralization surrounds, and is probably related to, feldspar porphyry dykes which have intruded

(and fractured ?) the Triassic volcanics. A fairly thick and relatively flat-lying bed of the "Sutton" (Triassic) limestone caps the volcanics. The limestone has an east-west trend and dips gently to moderately southward. The underlying volcanics are thought to have similar attitudes. The feldspar porphyry dykes have east-west strikes and are thought to be vertical or to dip steeply southward. The vertical extent of the mineralization is not known but since it appears to be related to the vertical dykes it should have considerable vertical continuity. It is most unlikely that the mineralization is related to the present surface. A geological plan is attached.

Five distinct zones of mineralization have been found. Steep hill sides, or talus, or thick overburden have variously prevented a systematic plan of exploration. Consequently, pits and trenches were excavated and sampled only where possible and all such locations have been exhausted. Assay plans are attached.

The most southerly, or No. 1, zone measures 400 feet by 800 feet and has an indicated arithmetic average grade of 0.41% copper.

The No. 2 zone occurs 300 feet north of the No. 1 zone and has been traced for 2300 feet. It has an average width of about 100 feet. Insufficient sampling has been done to estimate the grade, but frequent good grade samples indicate that its copper content is probably better than that of the No. 1 zone.

The No. 3 zone is about 400 feet north of the No. 2 zone and averages about 100 feet in width. It has been traced for a length of 1200 feet. Very few samples have been taken and little is known about its grade.

The No. 4 zone occurs about 100 feet north of No. 3. Little is known about it.

The No. 3A zone occurs 800 feet east of the No. 3 zone and may be an extension of it. An area measuring 100 feet by 400 feet has

been located and samples containing as much as 11.00% copper have been taken from it. An arithmetic average of the 18 samples taken in the No. 3A zone yielded 3.21% copper.

Other rusty zones on the north summit of Mount Spencer have been observed from a distance, but have not yet been examined. They may indicate copper mineralization.

Assessment work in the amount of 16 years was recorded for each of the original eight Mary claims and they will remain in good standing until November 5, 1981. The claim group was enlarged in October to 66 claims by staking 58 new claims named Mary 9 to 66 inclusive. The claim block is now six claims wide and eleven claims long and covers an area of about four square miles. It extends from Museum Creek on the west to Rift Creek on the east. A location map is attached.

FOURTH NANAIMO LAKE AREA

Vertical coil electromagnetic equipment was used to run several lines in the skarn area south of Fourth Nanaimo Lake. Several weak conductors were indicated but nothing conclusive was demonstrated. No further work is planned. The electromagnetic profiles are plotted on an appended plan.

ALLIES MOLYBDENUM PROPERTY - MOUNT BUTTLE

No work was done on Mount Buttle during 1965. Since the preliminary examinations made in 1964 were not encouraging, the area was surrendered to C.P.O.G. at the end of 1965.

AIRBORNE MAGNETIC ANOMALIES

Nineteen magnetic anomalies indicated by the airborne survey completed by Hunting Survey Corp. Ltd. in 1962 were located on the ground. They were detailed with a Sharpe MF-1 fluxgate magnetometer and were soil sampled. None were considered important. The results of each investigation are plotted on appended plans.

FUTURE PROGRAM

No change in procedures nor working methods is planned. It is expected that exploration work can be resumed in April, that the regional exploration and mapping will soon be completed, and that detailed examinations of all known mineralized zones and of all magnetic anomalies will have been completed by the end of 1966.

It is planned to have an induced polarization survey made early in the season on the mineralized zone on Mount Spencer and to construct a road to the showings as soon as snow conditions permit. Diamond drilling will be done during the summer. Detailed prospecting of the rusty zones will continue and the lower contact of the Triassic limestone will be traced and thoroughly investigated.

EXPENDITURE

Gunnex Limited was required to spend in 1965, the second agreement year, an amount not less than 20¢ per acre or \$109,000. The actual expenditure was only \$98,248.45 but the difference was more than offset by the credit remaining from the first agreement year. An itemized list of expenditures from January 1, 1965 to December 31, 1965 follows:

Salaries and wages.....	\$ 46,579.91
Transportation.....	15,960.94
Supplies and Equipment.....	7,499.02
Supplies - food.....	6,502.98
Diamond drilling (Skarn claims).....	11,762.38
Assaying, including soil sample analyses....	4,433.65
Government Fees.....	1,054.00
Workmen's Compensation Assessment.....	1,355.39
Unemployment Insurance - Employer's share...	307.84
Telephone and Telegrams.....	545.79
Stationery, printing and postage.....	906.86
Rents and Insurance.....	1,339.69
	<hr/>
TOTAL.....	\$ 98,248.45

Statement of total expenditures and of credits to December 31, 1965 follows: (see page 10).

G U N N E X _ _ L I M I T E D

C.P.O.G. EXPENDITURES TO DATE

DECEMBER 31, 1965.

<u>AGREEMENT YEAR</u>	<u>CALENDAR YEAR</u>	<u>EXPENDITURE REQUIRED</u>	<u>ACTUAL EXPENDITURES</u>			<u>CUMULATIVE CREDIT</u>	
			<u>C.P.O.G.-GENERAL</u>	<u>SKARN CLAIMS</u>	<u>MARY CLAIMS</u>		<u>TOTAL</u>
1st	1963	\$50,000	\$39,726.51			\$39,726.51	\$39,726.51
	1964		82,568.87	\$10,605.60		93,174.47	82,900.98

2nd	1965	109,000	55,090.82	13,342.98	\$29,814.65	98,248.45	72,149.43

3 rd	1966	96,000					

NOTES:

Required expenditure 1st agreement year= \$50,000
 Required expenditure 2nd agreement year = 545,000 acres @ 20¢ = 109,000
 Required expenditure 3rd agreement year = 240,000 acres @ 40¢ = 96,000

Cumulative credit for 1965 of \$72,149.43 reduces the actual requirement expenditures in 1966 to \$23,850.57.

WFDix:cs:s



 Kenneth C. Rose, P.Eng.
 Manager - Western Division

KCR:s
 cc: CPOG, WFDix, TFSchorn, File.

February, 1966.