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REPORT

on

GIANT METALLICS MINES LTD. (N.P.L.)

ADAMS PLATEAU
BRITISH COLUMBIA

May 15th, 1973
Vancouver 5, B.C.

W. G. Hainsworth, P. Eng.

TABLE OF CONTENTS

| | Page No. |
|--------------------------------------|----------|
| Summary & Conclusion | 1 |
| Introduction | 2 |
| Recommendations | 3 |
| Location and Accessibility | 4 |
| Property | 4- 5 |
| Topography | 6 |
| History | 6 |
| Geology | 6 |
| Ore Occurrences | 7-8-9 |
| Smelter Shipments | 10 |
| Mill Tests | 11 |
| Work Program Completed | 11 |
| Geochemical | 12 |
| Geophysical | 13 |
| Diamond Drilling | 14-15 |
| References | 16 |

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SUMMARY & CONCLUSIONS

The lead-zinc-silver ores of the Adams Plateau were discovered in the early 1920's. Granby optioned the Lucky Coon property in 1929 and did trenching and drilling before allowing the option to drop that same year. There was no further activity on the Plateau until 1949 when Consolidated Mining & Smelting optioned the Mosquito King showings. Their activity attracted Westville Mines and Pioneer Mines into the same area. C. M. & S. drilling was inconclusive thus forcing them to drop the option. Shuswap Mines followed them onto the property but did very little work. At the same time a Spokane group picked up the Lucky Coon option and shipped some ore.

In 1953 Trans Mountain Mines completed an option on the EX showing of the Bishchoff brothers. They mined and drilled the showing but dropped the option shortly thereafter.

In 1955 Plateau Minerals was formed to take over the EX and Mosquito King showings. They carried on with surface operations. In 1965 Giant Metallics Mines Ltd. was formed and took over the EX and Mosquito King holdings from Plateau Minerals. They enjoyed a vigorous two summers (1966 and 1967) before lapsing into a quiet exploration procedure. In 1969 Giant Metallics added the Lucky Coon ground to their holdings.

Since 1929, the ground presently held by Giant Metallics has seen sporadic attempts to outline large ore tonnages. No company has spent any length of time trying to decipher the geology. They have all approached it with a prospecting plus a drilling campaign style. When the drill results flagged the companies started to look elsewhere.

The mineral outlined to date has adopted an elusive structure. On the Lucky Coon, the three vein systems are still there. The Granby drilling was poorly done and remains inconclusive. No attempt has been made to expand the tonnage or grade of any of these veins since the Granby operation. The veins are strong, consistent and apparently, of moderately good grade. Some shipping of these ores has been done with good results.

The EX showing has seen a fair amount of mining. Despite the fact that the open pit has had a fair amount of ore shipped from it, the possibilities of enlarging the pit tonnage exists. A thirty-one hole drilling program in the vicinity of the pit by Trans Mountain in 1953 did intersect ore values and is reported to have outlined 10,000 tons. A Giant Metallic hole (6-66) in 1966 cut 32½ feet of ore. The lack of mineralization in the two holes of the following year should not be discouraging.

The Mosquito King area has the most showings scattered over a wide area. Drilling by Cominco leave the impression of short lens-like structures. It is quite possible that these structures could adopt a good geometric design that would be amenable to mining. There has not been enough drilling to prove or disprove this possibility. The grade where intersected near the surface is of a strong tenor.

The possibilities exist that sufficient tonnages can be lined up on any or all of the three mineralized areas to justify a mill of from 50 to 100 tons per day. In this opinion the writer is backed up by several other mining authorities.

The Granby engineer of the 1928 operation, J. H. Hall, states in his conclusion on the Lucky Coon program - "It is felt that in view of the tendency of the ore to pinch out both along the strike and the dip, that the property holds little promise for large scale operations. It is, however, deserving of further development with a view to small scale work." No programs have been instituted on the Lucky Coon since 1928 with this in mind.

In 1954 after examining the EX showing and looking over the drill results, J. B. Colson, Geologist for the Sunshine Mining Company completed his report with the following quotation: "This property could very adequately be explored by closer trenching and a well-planned diamond drilling program. At present face-value, this area shows great promise and is tremendously interesting economically. I am convinced that this property will be proved to contain large deposits of good grade ore." Since his writing, there have only been three drill holes put in, in the vicinity of the showing.

It is this writer's conclusion that this property has not been thoroughly explored and, notwithstanding some disappointing results during 1966-67, further exploratory work is certainly warranted. My conclusion is based primarily on the number of mineral showings throughout the claims which suggest the area has been the site of very extensive mineralizing activity. Furthermore, future work should be directed towards a broader understanding of the geology, extension by drilling of ore in already known showings, and possibly the useage of electrical means to reveal the presence of unknown surface showings.

The possibility of outlining sufficient ore on any or all three of the main showings is highly possible. Initially the Lucky Coon provides the greatest possibility of producing ore material for a mill. Following it, the EX showing could contribute a limited tonnage. The Mosquito King would require intensive drilling to line up ore tonnages.

INTRODUCTION:

At the request of Giant Metallics Mines Ltd. (N.P.L.), the writer has made an evaluation assessment of the potentials of the mining properties of the company, located on Adams Plateau in the Kamloops Mining Division of B.C. The object of this report was to gather data respecting the economic possibilities of the property and to recommend an exploration program for the coming 1973 season.

The writer has been on the property many times in the past six months. The first time was in November 1972 prior to the change in management. During April of 1973, the new management group instituted an exploratory drill program of short duration on the Mosquito King showing. This was more to obtain some idea of geology than to outline ore. The writer was in charge of this program and visited the property many times.

W. H. B.
13

A great deal of technical literature and data has been made available to the writer by the company. This report is based on close research of all this data pertaining to post operation. In lieu of not having seen the property free of snow, the writer has borrowed freely from geological descriptions of the property by past writers.

RECOMMENDATIONS:

The writer recommends that the company proceed with a specific staged exploration program during 1973 which program would be directed along the lines discussed under conclusions.

Specific Recommendations would be : Diamond Drilling.

EX Showing: Close spaced (40') vertical holes to prove up the Trans Mountain figures. The holes need not be deep. Recommended drill footage is 5000 feet.

MOSQUITO KING: Close spaced (40'0) vertical holes to prove up a continuity and grade of mineralization. These holes also need not be deep. Recommended drill footage is 4000 feet.

LUCKY COON: Two tier drilling to prove tonnage and grade in the three veins to a depth of 300 feet. A minimum tonnage target should be 50,000 tons of economic grade. Recommended drill footage is 8000 feet.

Geological Mapping: A closely detailed geological survey of the showings and the property in general. Combined with this mapping would be a thorough sampling program of all mineralized exposures.

Geophysical: If the old grid lines of 1966-67 are still in evidence it is recommended that a horizontal loop E.M. survey be carried out. It is recognized that with the large amounts of conductive sulphides contained within the property that many anomalies would be representative of the non-economic conductive sulphide minerals. However, it is also recognized that the survey is a fast and major procedure in which to locate hidden conductive sulphides.

The above recommendations should be carried out in a staged programme. The staging of each programme would be tied to a particular portion of the property. In order of priority, the writer recommends that the EX showing be given first consideration; followed by the Mosquito King and lastly by the Lucky Coon.

EX Showing

1. Detailed mapping
2. EM survey
3. Diamond drilling - BQ drilling if warranted.

MOSQUITO KING Showing

1. Detailed mapping
2. EM survey
3. Diamond drilling - BQ drilling if warranted.

LUCKY COON Showing

1. Detailed mapping.
2. EM survey
3. Diamond Drilling - BQ drilling if warranted.

It is the writer's opinion that this programme is fully justifiable but it should be understood that this programme constitutes only the initial phase of an evaluation programme aimed at gaining a more complete knowledge of the ore potentials of the property. If Diamond Drilling is undertaken then a tonnage figure will be built up for the property. If drilling results are encouraging this phase should be immediately followed by an underground operation directed at the actual physical exposure of ore material below the surface. This latter programme would also result in making ore available for metallurgical bench tests or larger scale research. It would also help substantiate the drilling grades.

LOCATION and ACCESSIBILITY:

The property is located in south central British Columbia, 60 miles north-east of Kamloops, B.C. From the Canadian Pacific Railway siding at Squilax on Highway 401, it is 22 miles by good secondary road to the claims.

The area has been active in logging in recent years and many secondary roads have been constructed by logging companies through the Plateau.

The co-ordinates of the claims is longitude $119^{\circ} 30'$ west and latitude $51^{\circ} 10'$ north. It is located in the Kamloops Mining Division.

PROPERTY

The Giant Metallics claim group consists of 112 claims in two groupings. The Lucky Coon holdings, consisting of 8 crown granted claims, lies as a single unit two and a half miles to the west of the larger EX-Mosquito King group.

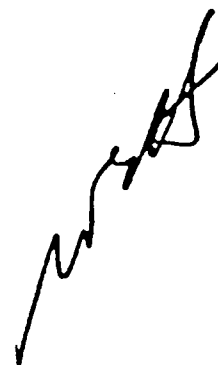
The claims are located in the Kamloops Mining Division, British Columbia.

| <u>CLAIM #</u> | <u>RECORD #</u> | <u>EXPIRY DATE</u> |
|----------------|-----------------|--------------------|
| Spar | 43916 | July 8, 1973 |
| R | 55202 | April 22, 1974 |
| R #1 | 55203 | April 22, 1974 |
| R #2 - 5 | 57694-97 | June 30, 1974 |
| R #6 & 7 | 57698 & 99 | June 30, 1973. |
| R #8 - 11 | 57700 - 03 | June 30, 1974. |
| D | 55204 | April 22, 1974 |
| B #1 - 3 | 55205 - 07 | April 22, 1974 |

| <u>CLAIM #</u> | <u>RECORD #</u> | <u>EXPIRY DATE</u> |
|----------------|-----------------|--------------------|
| EX | 10261 | Sept. 15, 1973 |
| EX #1 | 10262 | Sept. 4, 1973 |
| EX #2 Fr | 12577 | Sept. 3, 1974 |
| Pat #1 & 2 | 12575 & 76 | Sept. 3, 1973 |
| Pat # 5 & 6 | 13733 & 34 | June 2, 1973 |
| Pat #8 & 9 | 13862 & 63 | Aug. 2, 1973 |
| Pat #10 & 11 | 13884 & 85 | Aug. 11, 1973 |
| E #4 | 37829 | Aug. 11, 1973 |
| E #5 Fr | 38132 | Aug. 28, 1973 |
| D #1 & 2 | 37831 & 32 | Aug. 11, 1973 |
| D #3 & 4 | 37836 & 37 | Aug. 11, 1973 |
| D #5 - 7 | 37833 - 35 | Aug. 11, 1973 |
| W Fr | 59411 | Aug. 8, 1973 |
| A Fr | 59409 | Aug. 8, 1973 |
| D Fr | 59410 | Aug. 8, 1973 |
| Pat Fr | 60277 | Sept. 7, 1973 |
| Pat 1 & 2 Fr | 60278 & 79 | Sept. 7, 1973 |
| Zarf #1 - 6 | 64895 - 900 | July 11, 1973 |

The eight crown grants consist of:

| | |
|--------------|-------|
| Elsie | L5227 |
| Billy | L5228 |
| White Swan | L5229 |
| Golden Eagle | L5230 |
| Lucky Coon | L5231 |
| Last Chance | L5232 |
| Elk #5 | L5438 |
| Elk #8 | L5439 |



TOPOGRAPHY:

The Adams Plateau appears to be a partially dissected remnant of an uplifted peneplain. The comparatively flat surface of the plateau is 5200 to 5600 feet above sea level. In the area of the claims it is almost completely covered by balsam and spruce. There are numerous willow swamps.

Overburden is not unusually deep, but it is extensive and presents an obstacle to prospecting and mapping.

Gold and Scotch Creeks and their many small tributaries flow southerly in sharp narrow valleys into Adams Lake and Shuswap Lake.

HISTORY:

Sulphide-bearing minerals in the Adams Lake area appeared to have been known to trappers in the early part of the 1910's. The Bischoff brothers opened up numerous showings during this period. In 1928 they staked the present known Mosquito King and EX showings. Further to the west, 2 prospectors from Chase, T. Callahan and H. McGillivray, prospected and staked what is now called the Lucky Coon group. This latter staking was optioned by Granby in 1928. After a six month period the option was allowed to elapse and the property lay dormant until 1950. During this quiet period for the Lucky Coon, exploration work was going on at the Mosquito King and EX properties. A Vancouver entrepreneur, I.W.C. Soloway, sponsored several seasons work on the claims. He was followed in 1949 by the optioning of the Mosquito King showings to C. M. & S. They released their option the following year. A Spokane group, following the activity, acquired the Lucky Coon in 1950 and conducted limited surface work before dropping the property. The same year Shuswap Mines acquired the 75 claims of the Mosquito King and by staking added another 57 claims. ~~Trans-Mountain Mines~~ acquired the EX group also in 1950. Over the following 3 years Trans-Mountain shipped raw ore to the Kenville Mill at Nelson. Sporadic activity was carried on from 1953 through 1955 when Plateau Minerals was organized under C. Riley to acquire large blocks of ground in the EX and Mosquito King area. During this period NIB Yellowknife Mines obtained an option to carry out some magnetometer work on ground south of the Mosquito King. They followed this up by drilling 14 holes before dropping the option. Over the next ten years work was usually of a prospecting nature, with discovery followed by trenching. Interest in the Plateau has fallen off substantially. In 1965 the present company, Giant Metallics, acquired the EX and Mosquito King claims. That same year International Copper Corp. optioned the Lucky Coon but relinquished their option the following summer. Eventually Giant Metallics added the Lucky Coon to their group. In February 1973, control of Giant Metallics passed to the present group.

GEOLOGY:

The general geology of the area consists of interbedded sedimentary and volcanic formations, highly metamorphic, belonging to the Suswap Complex.

In the Lucky Coon area, or the western portion of the property, vein occurrences lie within impure shale beds which have been highly altered. Associated with these shales are heavily metamorphosed chloritic rocks, conforming to the bedding of the sedimentaries. The strata is striking N 40° - 55° E and dipping from 20° - 35° to the north-west. Lying to the south-east near Nikwikaia Lakes is a large area of quartzite.

Dykes, striking northeast, have been exposed throughout the property. These dykes, vertical in altitude, are of a fine-grained composition and black in colour.

The EX and Mosquito King showings lie in formations at stratigraphically a lower horizon than the Lucky Coon. Here the principal rock types in evidence are dark grey and brown phyllite, sericitic schist and greenstone schist, quartzite and limy phyllite. These bedded metamorphic rocks strike north-east and dip 10° to 35° to the northwest.

Cutting the above formations are many small dykes of fine-grained diorite and occasional larger bodies of granite porphyry.

ORE OCCURRENCES:

Within the Giant Metallics claim group there are two different mineralization occurrences. At the west end of the group - in the Lucky Coon section - the structures are mineralized shear zones. In contrast, the EX and Mosquito King show selective replacement zones.

In the Lucky Coon section, sulphide minerals include arsenopyrite, pyrite, sphalerite, galena, argentite and tetrahedrite - quite a different assemblage from that on the east side of the plateau. The ore is described as occurring in a silicified shear zone approximately parallel to the bedding in limy argillites. Within a relatively narrow width, intermittent sulphide mineralization is exposed from the Bill (Lot # 5228) through to the Last Chance (Lot #5232), a distance better than a mile and a half. The sulphides are fine grained and banded and usually very heavy across narrow widths, commonly several six inches to two foot bands being separated by altered wall rock one to four feet thick. The sulphide bands lie parallel to the attitude and foliation, this being northeasterly with dips of 20° to 40° northwest. In places the closely spaced sulphide zones appear to be in achelon over narrow widths, and here and there similar parallel veins appear to be 300 to 400 feet off strike.

The Granby work in 1928 outlined two lengthy structures and two short occurrences. The sampling on the 2000' long North Vein averaged:

| <u># of Samples</u> | <u>Width</u> | <u>Ag</u> | <u>Au</u> | <u>Pb</u> | <u>Zn</u> |
|---------------------|--------------|-----------|-----------|-----------|-----------|
| 12 | 14.6" | 7.93oz | 0.03oz | 7.5% | 4.3% |

Eight diamond drill holes were put down under this structure by Granby. Unfortunately not all assay results are available. Of the six holes stating core recovered, the recovery rate was 29%. The reliability of the assay results must be taken with some deep reservations.

The # 3 hole ran:

| <u>Width</u> | <u>Ag</u> | <u>Au</u> | <u>Pb</u> | <u>Zn</u> |
|--------------|-----------|-----------|-----------|-----------|
| 6" | 0.24oz | Tr | Nil | 2.5% |

Recovery in this hole was 13%.

The #5 hole, located 450' further to the southwest, intersected the vein formation for the following:

| <u>Width</u> | <u>Ag</u> | <u>Au</u> | <u>Pb</u> | <u>Zn</u> |
|--------------|-----------|-----------|-----------|-----------|
| 14" | 24.62oz | 0.05oz | Tr | 15.5% |

Recovery in this hole was 14%.

The Billy Vein, located on strike with the North Vein, some 2500' to the southwest is somewhat offset to the northwest. Granby samples of the various trenches ran:

| <u># of Samples</u> | <u>Width</u> | <u>Ag</u> | <u>Au</u> | <u>Pb</u> | <u>Zn</u> |
|---------------------|--------------|-----------|-----------|-----------|-----------|
| 13 | 24.3" | 1.49oz | 0.018oz | 0.3% | 2.9% |

Only one drill hole (#9) was put under this structure. Assays are not available but the drill log states 22" of ore was cut over a nine foot core length. Core recovery in this hole was 58%.

The two short occurrences were single assays with apparently no lengthy extension of the vein being located. However, a short 37' adit was driven by Granby into one of the occurrences - the Elsie vein. A sample taken by the company at the face assayed:

| <u>Width</u> | <u>Ag</u> | <u>Au</u> | <u>Pb</u> | <u>Zn</u> |
|--------------|-----------|-----------|-----------|-----------|
| 16" | 12.44oz | 0.025oz | Tr | 11.4% |

Allen sampled this same adit in 1966 with the result:

| <u>Width</u> | <u>Ag</u> | <u>Au</u> | <u>Pb</u> | <u>Zn</u> |
|--------------|-----------|-------------|-----------|-----------|
| not given | 15.0oz | not assayed | 22.0% | 10.0% |

With close checks in zinc and silver it is surprising that there should be such a large discrepancy in the lead content.

Later exploration work has extended the North Vein northerly into the Lucky Coon claim. Here according to Allen three veins of heavy sulphides are exposed continuously over a length of 400 feet. These bands have widths up to 4 feet, and are separated by one to five feet of barren country rock. Allen cut seven samples across these showings and arithmetically averaged them out as:

| <u># of Samples</u> | <u>Ag</u> | <u>Au</u> | <u>Pb</u> | <u>Zn</u> |
|---------------------|-----------|-----------|-----------|-----------|
| 7 | 10.76oz | 0.07oz | 11.26% | 6.07% |

McIntyre's description of the mineralized deposits on the EX and Mosquito place the occurrences within the limy beds of the phyllite assemblage. In his opinion the occurrences of the silver-lead-zinc ore, seem to be controlled by and concentrated along folds or crumpled zones. At the EX showing good grade ore occurs in three thin, closely spaced limy beds along a small, broken monoclinial fold of the enclosing sericitic sequence. At the Mosquito King the mineralization occurs along thin, selective beds whose gentle dips show no folding or crumpling. Intrusive structures are in evidence at certain Mosquito King showings, but their relationship particularly with reference to ore control are presently unknown.

The mineralization on the Mosquito King occurs for 3000 feet along the strike of the beds. More recent exploration has opened up parallel situations. The replaced beds are the major control, but it is by no means uniformly or even continuously mineralized. C. M. & S. engineers believed that control of the patchy mineralization was caused by joints and small faults of a north-striking set. The dominating sulphides are pyrrhotite, pyrite, galena, sphalerite

In 1949, C. M. & S. put twenty drill holes down in the immediate vicinity of the trenches with the objective of tracing the mineralized structures down their dip. The writer has access to eleven drill assay sections. These sections pertain to the trenches marked, at that time, "O", "P" and "Y". The holes have definitely picked up the structures at depth but the grade of mineralization has fallen off quite markedly. Ore material was shipped from this general area in 1972 to the Kenville Mill at Nelson.

In 1967, the Giant Metallics undertook a drill program throughout their large holdings. They drilled eleven holes of AX size for a total of 3001.6 feet. Three of the holes were in the vicinity of the C. M. & S. holes mentioned in the proceeding paragraph. One hole was in a granitic dyke for its full distance. The other two successfully followed a mineralized bed down the dip for some seventy odd feet. They proved the mineralization to be weakening at depth both in grade and width.

It is rather difficult to relate the C. M. & S. drilling to the Giant Metallics drilling because of uncertainty in drill locations. It should also be pointed out that Giant Metallics used a small sized bit - "A" - and it was not of the wire-line type. The C. M. & S. drilling was prior to the introduction of wireline. There remains a possibility that some mineralization was lost in drilling. A factor that this drilling did produce was the absence of any closely spaced mineralized sections. None of the drill holes showed more than the one ore vein. No assay plans of the Mosquito King trench sampling are available, if indeed, any were made.

The EX showing is of a different structural geometry from the Mosquito King. The mineralization is still a replacement process of select phyllite beds but there are superimposed mineralized horizons. The bedding varies from slightly east of north to just north of east with dips occurring from 10° through to 100°

to the northwest.

A large open cut had been made in the vicinity of the showing and has exposed three superimposed anticlinal mineralized zones. The open cut has partially exposed the crest of the upper zone. Drilling has outlined a central zone ten feet lower and a third conformable lower zone at a further twenty foot depth. These beds are stated by Allen to have mineralized lengths exceeding 200 feet.

* In 1953 Trans Mountain Mines who had the property under option laid out a closely spaced drill program in the vicinity of the open cut. The intention was to outline tonnage and grade in the open cut area. Thirty-one drill holes totally some 2500 feet were completed. Diamond drilling proved the three superimposed monoclinol type ore zones, averaging ten feet thick at their crests and gradually thinning in both directions. The ore shoots appear to plunge about 20° to the south west. A ten thousand ton drill estimate has been advanced for this mineralization.

In 1954, J. B. Colson of Sunshine Mining Company visited the EX open cut, and took four samples from the large trench. They assayed:

| <u>Width</u> | <u>Ag</u> | <u>Au</u> | <u>Pb</u> | <u>Zn</u> |
|--------------|-----------|-----------|-----------|-----------|
| 2.5' | 3.0oz | .002oz | 5.0% | 4.6% |
| 5.6' | 1.7oz | .005oz | 2.1% | 9.3% |
| 5.4' | 2.3oz | .005oz | 3.0% | 8.3% |
| 7.0' | 0.6oz | .005oz | 0.6% | 6.0% |

The mineralization in the EX deposit is composed chiefly of galena, sphalerite, lesser pyrite, pyrrhotite and magnetite and a little chalcopryite.

Several other areas of interest have been brought to light by the Giant Metallics programs of 1966-67. One of these is a large pyrrhotite-pyrite zone three miles to the south of the Mosquito King showings. Chalcopryite is associated with the iron sulphides. Here larger scale dozer stripping has been followed by sampling. In all, 9 large areas have been tested with 134 samples. The arithmetical average is 0.09% copper with the highest assay running 0.44% but the average sample being in the 0.07% to 0.10% area. One hole in the '67 campaign was put under this area and intersected isolated areas of low grade copper.

A quarter mile west of the pyrrhotite area is another large stripped area referred to as the magnitite zone. Eighteen samples resulted in a slightly higher copper grade - 0.21% - than the pyrrhotite zone. The two-hole section drilling here revealed a 45° dipping zone about 90' in thickness and grading 0.13% copper.

SMELTER SHIPMENTS:

Shipments have been made from the EX and the Lucky Coon showings.

The EX raw ore was shipped to the Trail Smelter and resulted in:

| DATE | WEIGHT | GOLD | SILVER | LEAD | ZINC | IRON | SILICA |
|-------------|--|-------|--------|------|------|------|--------|
| Sept. 15/52 | Truck load | 0.015 | 25.8 | 40.2 | 9.4 | 16.2 | 6.10 |
| Sept. 17/52 | Truck load | 0.017 | 27.0 | 43.0 | 10.1 | 15.6 | 6.21 |
| Oct. 10/52 | 45.59 tons | 0.005 | 16.6 | 33.6 | 8.5 | 17.4 | 9.6 |
| Oct. 3/53 | Carload of Pb concentrate from Kenville Mill. | 0.08 | 42.6 | 64.4 | 6.0 | 7.4 | 1.00 |

Mill Tests

In 1953, 97.6 tons of ore from the EX 1 showing were milled at the Kenville Base Metal Concentrator near Nelson, B.C. Head assays of the feed ran 0.01 oz Au and 20.19 oz Ag per ton, 30.13% Pb and 10.04% Zn. From this was produced a 45.8 ton lead concentrate assaying 0.24 oz Au and 42.16 oz Ag per ton, 61.40% Pb and 6.55% Zn. Recovery was 98.7%.

A zinc concentrate weighing 13.75 tons assayed 0.68 oz Au and 5.16 oz Ag per ton, 6.78% Pb and 41.40% Zn. Recovery was 89.1%. Silver recovery was stated to be 100%. Concentration ratio is 1.5 : 1.

In 1972, 228.4 tons of ore from the Lucky Coon showings were put through the Kam Kotia Mill near Denver, B.C. The shipped ore assayed 26.34 oz Ag/ton, 18.12% Pb and 6.33% Zn. A lead concentrate, 63.96 tons, assayed 84.29 oz Ag/t, 58.20% Pb and 8.34% Zn. Recovery was 91.9%. The Zinc concentrate, 14.80 tons, assayed 12.30 oz Ag/t, 5.18% Pb and 48.31% Zn. Zinc recovery was 86.3% and silver recovery 92.7%.

In September 1971, a bench flotation test was run by Britton Laboratories of Vancouver. Equal weights of samples from the Lucky Coon and the Mosquito King were selected. The calculated assay of the composite head sample was 0.033 oz Au and 10.34 oz Ag per ton, 11.03% Pb and 5.88% zinc. The bulk lead-zinc concentrate produced from the above assayed 0.053 oz Au and 36.7 oz Ag per ton, 37.5% Pb and 18.6% zinc. Recoveries were 82.5% for the Pb, 89.7% for the zinc.

During late 1972 samples from the property were forwarded to the Mines Branch of the Dept. of Energy, Mines and Resources in Ottawa where flotation tests were carried out. At the present time correspondence is incomplete with Ottawa.

WORK PROGRAMS COMPLETED

A chronological order of optionees of the various showings and the work programs is herewith listed:

1928 - Lucky Coon - Granby option - 9 diamond drill holes totalling 694 feet, 3420 feet of trenching and 52 feet drifting. Relinquished option in November 1928.

- 1949 Mosquito King - C. M. & S. option - put in 22 trenches and 20 diamond drill holes totalling 2861.5'. Relinquished option in late 1949
- EX - Westville Mines - Trenching and prospecting. Relinquished option same year.
- 1950 Lucky Coon - Spokane Group - did some surface work and shipped several carloads of ore from Elsie.
- Mosquito King - Shuswap Mines - did surface work and additional staking.
- 1953 EX - Trans Mountain Mines - shipped 204 tons of raw ore. Completed about 2500 feet of diamond drilling in 31 closely spaced holes.
- 1955 Mosquito King and EX - Plateau Minerals - confined itself to surface works.
- 1965 Mosquito King and EX - Giant Metallics optioned ground from Plateau and purchased outright in 1969. Carried on extensive surface programs in form of geophysical, geochemical and diamond drilling from 1965 - 1967. Sporadic summer programs from 1967 - 1972.
- 1965 Lucky Coon - International Copper Corp. - did little work. Relinquished option in short time.
- 1969 Lucky Coon - Giant Metallics - claims purchased outright by company. Shipped some ore from here in 1972.

Geochemical Surveys

In 1966 under the direction of A.R. Allen, the first geochemical survey was undertaken on the claim group, which at that time included the EX and Mosquito King. Two base lines were tied to establish survey points. Cross Lines on 300 foot spacings were picketed at 100 foot intervals and were cut on a north-south bearing. Approximately 39.6 miles of crossline were cut.

Allen's soil sampling used the Rubianic and Dithizone methods and were handled directly in the field. The Rubianic tests identified six medium copper anomalies while the Dithizone method resulted in two heavy metals anomalies. On the whole the area within which the anomalous soil situation resulted is relatively flat, and shows little geochemical encouragement. Allen followed up two of the copper anomalies with trenching and uncovered lead-zinc mineralization at both locations.

No anomalous soil situations were developed in the immediate areas of the EX

and Mosquito King showings.

The following year - 1967 - under the direction of MacDonald Consultants Ltd. of Vancouver, another soil sampling program utilizing the same grid system was undertaken.

A total of 2001 soil samples were taken, of which 1140 were sent to Bondar Clegg and Co. of North Vancouver for analyses by the hot aqua regia extraction and atomic absorption method. The samples were assayed for copper, lead and zinc.

The resulting soil maps showed zinc to be very wide spread over the complete grid area. The mobility of the zinc ion is quite high and as most of the showings carry varying amounts of sphalerite the zinc background is what would be expected. The numerous showings contribute to the extensive zinc highs.

The lead soil maps show isolated anomalous situations. Some of the anomalies agreed with the locations of the Mosquito King showings. This survey, unfortunately, did not cover the EX area.

The copper anomalies have been attributed to the pyrite-pyrrhotite deposits because of the association of these minerals. The lack of zinc and lead responses in the vicinity of the copper anomalies confirms this situation.

In general, the soil surveys contribution to the assessment of the property was to substantiate known surface showings.

In 1971, Ducanex ran silt samples for lead, zinc, copper and arsenic over the property as part of a regional program. The resulting plots show moderate strengths of lead, and zinc in the Lucky Coon and the general EX-Mosquito King areas.

Geophysical Surveys

There have been several types of geophysical surveys carried out either over the established grid or across localized targets.

Huntec Ltd. of Toronto in the summer of 1966 ran an Induced Polarization Survey over the complete 40 mile grid system with readings being taken at 200 foot intervals. Fifteen anomalous areas were outlined and considered worthy of further investigation. Subsequent exploration of some of these areas proved the causative bodies to be pyrite-pyrrhotite mineralization. Other anomalies still remain to be checked. It is quite possible that the I.P. method was too selective and outlined areas of fine mineralization of the non-economic variety.

Several Electromagnetic surveys have been run over isolated target areas. In 1969 a Crone J. E. M. survey was run over the Mosquito King claims of Giant Metallics for Dresser Minerals Ltd. The interpretation by A.C.A. Howe International shows no anomalies as being detected. An accompanying S. E. 300 survey using the in-line method indicated two anomalous zones. Unfortunately these surveys can not be tied into any recognizable field markers and therefore are of little value.

In July 1970, an electromagnetic survey over the EC area was carried out by Strato Geological Ltd. using a Sharpe SE-200 unit. The grid covered some 4.3 miles and was closely spaced (100'). The result of the survey was very negative with only a small differential being recorded.

An electromagnetic survey using a Sharpe SE - 600 unit was carried out by E. Asano on the Lucky Coon and EX areas in October 1971. The EX survey showed a conductor which is thought to be the extension of the EX vein system. The Lucky Coon survey was inconclusive due to the type of vein deposits and the nature of the enclosing sedimentary formations.

A Bouguer Gravity survey carried out by M. McCombe of Calgary in 1969 over the main Mosquito King showing shows stronger readings slightly to the north of the showings and to the west in the area referred to as the "Ball Park".

Only one magnetometer survey is known to have been run over the property. This was carried out in 1966 by A.R. Allen. Twenty-seven anomalies were outlined. Some are associated with I.P. anomalies and others with surface showings. The distribution of pyrrhotite and pyrite through the property has a strong bearing on magnetometer results.

Diamond Drilling

The earliest drilling on the property was by Granby in 1929. This drilling can be considered inconclusive due to heavy core losses.

In 1949 Consolidated Mining and Smelting put drill holes alongside many trenches in the Mosquito King ground. Their conclusions from this drill programme was that the vein system was lens-like and of short dimensions.

In 1953 Trans Mountain Mines drilled a series of close spaced holes alongside the EX showings. Their drill program is reported to have outlined 10,000 drill-proven tons. The MacDonald report of 1967 commenting on this program says "the drilling failed to outline any ore of mineable grade and width in addition to what had been mined out of the open cut." However logs and drill sections of the holes do show lead-zinc-silver intersections of moderate widths and modest grades.

In 1966 Giant Metallics drilled six BQ wireline holes totalling 2164 feet. Results of drilling are:

| Hole # | Testing | Width | Au | Ag | Pb | Zn |
|--------|-----------------|-----------------------------------|------|-----|------|------|
| 1-66 | I-P Anomaly C-1 | 8.0 | 0.06 | 1.7 | 1.96 | 5.70 |
| 2-66 | I-P Anomaly C-2 | Nothing of interest | | | | |
| 3-66 | Mag. high | Nothing of interest | | | | |
| 4-66 | I-P Anomaly C | Intersected heavy pyrrhotite zone | | | | |
| 5-66 | I-P Anomaly B | Nothing of interest | | | | |
| 6-66 | EX showing | 32.5 | - | - | 1.9 | 3.2 |

This drill program seemed to be somewhat poorly laid out. The I.P. anomalies were not undercut at their strongest readings. No logs are available from this drilling.

In 1967 the drilling was carried on under MacDonald Consultants management. Eleven holes totalling 3001.6 feet were scattered over the property.

| Hole # | Testing | Width | Pb | Zn |
|--------|------------------|---------------------------------|-------|-------|
| 1-67 | IP Anomaly K(EX) | Nothing of interest | | |
| 2-67 | IP Anomaly K(EX) | Nothing of interest | | |
| 3-67 | IP Anomaly 1-2 | 2.8' | 0.16% | 7.43% |
| 4-67 | IP Anomaly G | Nothing of interest | | |
| 5-67 | Mosquito King | In granite intrusive full depth | | |
| 6-67 | Mosquito King | 2.7' | 4.8% | 0.26% |
| 7-67 | Mosquito King | 7.8' | 1.01% | 1.28% |
| 8-67 | Mosquito King | 5.5' | 0.24% | 1.54% |
| 9-67 | Magnetite Zone | 7.0' of 0.20% Cu | | |
| 10-67 | Pyrrhotite Zone | 57.4' of 0.15% Cu | | |
| 11-67 | Pyrrhotite Zone | 86.1' of 0.11% Cu | | |

No assaying for silver or gold was made in the lead-zinc mineralization. The two holes in the EX showing were only 200' removed from the 6-66 hole in the previous years drilling with rather differing results.

Respectfully submitted



Wm. G. Hainsworth, P. Eng.

Vancouver 5, B.C.
May 15, 1973

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PRODUCT SILVER

PROVINCE OR TERRITORY British Columbia

N.T.S. AREA 82 M/4

REF. AG 2

NAME OF PROPERTY MOSQUITO KING

OBJECT LOCATED - Main showings.

UNCERTAINTY IN METRES 300. Lat. 51°02'50" Long. 119°30'40"

| | | |
|------------------|----------|---------------------|
| Mineral Division | Kamloops | District |
| County | | Township or Parish |
| Lot | | Concession or Range |
| Sec | Tp. | R. |

OWNER OR OPERATOR AND ADDRESS

DESCRIPTION OF DEPOSIT

The area is underlain by a thick assemblage of metamorphic rocks of probable Paleozoic or earlier age. The principal rock types in evidence are dark grey and brown phyllite, sericitic schist and greenstone schist, sericitic quartzite and limy phyllite. For the most part these bedded metamorphic rocks strike northeast and dip 10-40 degrees northwest. The metamorphic rocks are cut by fairly small dykes of fine-grained diorite and in a few places by dyke-like bodies of granite porphyry. The Mosquito King mineralization occurs as a selective replacement of several thin, closely proximate beds, and has been traced for 3,000 feet along strike. The replaced beds are the major control but they are by no means uniformly or even continuously mineralized. The dominating sulphides are pyrrhotite, pyrite, galena, and sphalerite. At the main showing the mineralization varies in thickness from 2 to 10 feet and would average about 5 feet. Drilling indicated the mineralization weakens at depth both in grade and width. In the Ball Park area mineralization was exposed by bull-dozing over an area approximately 500 by 80 feet; an average thickness of 5 feet is assumed.

Associated minerals or products of value - Lead, zinc.

HISTORY OF EXPLORATION AND DEVELOPMENT

The main Mosquito King showings are located at about 5,700 feet elevation on a ridge between Mikwikwaia (Gold) Creek and Kwikoit Creek, on Adams Plateau, some 45 miles northeast of Kamloops. Other showings are located to the west in an area referred to as the "Ball Park".

Showings in this vicinity had been known to the Bischoff Bros. for a number of years prior to their staking of the Mosquito King group of 8 claims in 1928. Sporadic activity to 1931 included further prospecting and open cutting. No further activity was reported and the property was subsequently acquired by I.W. Solloway and Associates of Vancouver. In 1949 they optioned the property to The Consolidated Mining and Smelting Company of Canada Limited. Work by the company included trenching, and 2,861 feet of diamond drilling in 20 holes on Mosquito King Nos. 4 and 5 and Sunset No. 2 claims. The option was given up the following year. Shuswap Mines, Ltd. was incorporated in 1950 by Solloway and Associates to acquire the 75 claim property, however, no further activity was reported.

Niant Metallics Mines Limited in 1965 acquired the Garnet, D, S, and Pat claim groups covering the showings formerly held as the Mosquito King. Subsequent staking expanded the property to about 150 claims. The company also acquired the adjacent EX property (82 M/4, Pb 2). Work during 1966 included geological mapping, magnetometer and induced potential surveys over 40 line-miles, a soil geochemical survey, bulldozer trenching and stripping, and some 3,200 feet of diamond drilling over various areas of the property. Exploration work during 1967 included a geochemical soil survey (2,000 samples), and gravity and electromagnetic surveys over about 39 line-miles. Diamond drilling was done in 3 holes in the vicinity of those drilled by the Consolidated Mining and Smelting Company in 1949. During 1969 electromagnetic surveys were carried out over isolated target areas. In addition, a Bouguer Gravity survey was carried out over the main Mosquito King showings and in the "Ball Park" area to the west. Stripping of overburden was carried out on the Mosquito King showings in 1971.

Indicated reserves were estimated in 1971 as follows:

| | | Ag oz./ton | Pb % | Zn % |
|---------------|-------------|------------|------|------|
| Mosquito King | 21,000 tons | 10 | 15 | 10 |
| Ball Park | 20,000 tons | 10 | 15 | 10 |

D.T.O.
 Mineral Development Sector, Department of Energy, Mines and Resources, Ottawa
 510167 *

Report to Orell Copper Mines Limited
on the
Mosquito King, Bowler Creek and Lichen Properties
by
J. M. Black, P.Eng., Ph.D.

INTRODUCTION

This report is an evaluation of some of the results from early exploration of the Mosquito King and Bowler Creek properties of Orell Copper Mines Limited. It also reports on the nature of the work done in the past year by Craigmont Mines Limited. Results of work done on the Lichen property are discussed briefly.

HISTORY

Mineralization on the Adams plateau has been explored for about fifty years. Showings of pyrite, sphalerite and galena, with silver values, were considered to be veins which happened to generally conform to the bedding.

They were explored by many trenches. In 1949 Cominco optioned the Mosquito King property and completed a program of exploration that included about 880 meters of diamond drilling in twenty holes.

In 1966 and 67, Giant Metallics explored the same property and a nearby one, now referred to as Bowler Creek. On this property the mineralization includes more pyrrhotite, magnetite and chalcopyrite and less sphalerite and galena. This work included trenching, sampling, some geophysics and geochemistry and some diamond drilling. This comprised about eighteen holes in the two seasons, which totalled about 1,500 meters.

From 1967 to 1976, a few more holes were drilled, some of the showings were sampled and a reconnaissance magnetometer survey was run. As a result of an examination in 1973, the writer came to the conclusion that the showings are not veins in the ordinary sense. They are of a type that form as a result of volcanic activity during the accumulation of a sedimentary series. Theories as to this type of occurrence have received general acceptance only in recent years.

The mineral beds are considered to be the same age as the enclosing beds. Pressure subsequently may remobilize the mineralization and force it into fractures or toward areas where pressure is less.

Such beds may continue for great distances and, in fact, here they can be seen to do so. Thickening of the beds can be sought at the crests of secondary folds or any place where it is expected pressure was less than generally prevailed.

GEOLOGY

Most of the area is covered with moderately thick overburden and natural outcrops are few. Some extensive areas have been stripped.

The area is underlain mostly by sedimentary beds. Most of these are argillaceous; some are tuffaceous. They are mostly thin and dark and light beds alternate. Other beds are limy or cherty. Some thicker beds also occur and possibly a few flows. Considerable mica has developed and some beds are schistose.

This sedimentary sequence is cut by numerous dykes. These trend northerly and dip steeply. They are mostly quartz feldspar porphyry or something like that. A few are darker, more like gabbro. The dykes presumably are related to a granitic mass that outcrops northeast of the properties. These dykes are younger than the mineralization and cut across it.

STRUCTURE

The beds generally strike northeastward and dip moderately to gently northwestward. A slight change in attitude occurs near the showings. There the beds strike more nearly easterly than northerly. This change in direction can, in a general way, be correlated with a belt in which the showings occur.

Minor folds and crenulations can be seen in some outcrops. Considerable changes in attitude of bedding can be seen in some drill core. Some of these minor structures may be important in helping to locate where the mineral beds thicken.

MINERALIZATION

The mineralization conforms to the bedding and grades into the beds above it and below it. In a few places it has been described as cutting across the bedding to a limited extent. The mineralization comprises pyrrhotite, pyrite, magnetite, sphalerite, galena and chalcopyrite, in about that order of abundance. Quartz is the gangue mineral.

PREVIOUS WORK

Cominco worked only on the Mosquito King property. Surface sampling had indicated zones 3' to 4' thick with grades approaching 10% combined zinc and lead and with about 2 oz. silver per ton. Exploration was undertaken to look for places where the mineralized zones were thicker.

The first holes were drilled from 300' to 500' from the showings. Some of the mineral beds were intersected at depths of as much as 400'. However, the intersections of mineralization were thinner and lower grade than the surface showings. Later in the program, holes were drilled close to a showing. These holes cored beds of about the same thickness and grade as the surface showing.

It appeared that the grade and thickness were variable. No evidence was found of where a marked thickening could be expected.

In 1966 and 67 Giant Metallics undertook exploration of both the Mosquito King and the nearby Bowler Creek property. Trenching was done and many

zones were sampled. Some soil sampling was done and an I.P. survey was made of the Mosquito King. Showings on both properties were drilled.

The Bowler Creek showings are generally very magnetic because of an appreciable content of magnetite and pyrrhotite. In these showings, sphalerite and galena are less common. Trenching exposed beds ^{with} 0.3% copper across twenty feet and higher values across lesser widths. Intersections of similar grade and thickness were obtained from the drill holes. Samples of this mineralization were not assayed for gold and silver. Subsequent sampling and assaying has shown that some of this mineralization contains significant amounts of gold and silver.

The I.P. survey located numerous anomalies. These do not coincide with any of the mineral showings. These anomalies are considered to be caused by pyrite disseminated in beds other than the ore beds. It is commonly seen in the drill cores.

RECENT WORK

In 1976 Craigmont optioned both the Mosquito King and Bowler Creek properties from Orell. Since that time it has carried out an extensive program on both properties. Their personnel surveyed a grid. Using that as a base, they plotted the roads and the geology. They took soil samples and had them assayed for copper, zinc and lead. They ran E.M. and magnetic surveys. Finally they drilled seven holes on each of the properties - a total of 1,047 meters. Results from all this work have been provided to Orell.

This option has been extended for another year and it is understood that Craigmont is planning a program for the coming season.

The total amount of diamond drilling on the two properties amounts to about 3,500 meters or 11,500'. In addition, a few percussion holes have been drilled and one rotary hole.

GENERAL RESULTS

The work done has demonstrated that several mineral beds occur on each property. On each property the beds are relatively closely spaced. Between the two properties and stratigraphically below the Bowler Creek showings and stratigraphically above the Mosquito King showings, such mineral beds are scarce. It appears that there were two general periods of volcanic activity during which the metals and possibly also sulphur were contributed intermittently to the sea floor. Before and after these main periods of vulcanism there was little volcanic activity to provide metals to form sulphides.

Some of the beds, judging from the alignment of exposures and intersections in a few holes, can be followed for well over 1,000'.

Lengthy sections of known beds and some geochemical and geophysical anomalies have not been explored.

SPECIFIC RESULTS

A hole drilled in the south part of the Bowler Creek property cored, near the surface, a true thickness of 27' that runs about 1% zinc. This bed may be extensive and higher grade sections may be found.

At the eastern end of the main zone on the Mosquito King, surface showings and nearby drill holes demonstrate that a mineral bed continues for about 160'. It is a little over 2' thick and runs about 10% combined zinc and lead and about 2 oz. silver per ton. It extends downward from the outcrop for at least 50'.

At the west end of the same zone, a wider, lower grade section has been traced downward for about 85' from the surface. It maintains about the same grade and thickness.

LICHEN

A geochemical survey of much of the property last season, found some weak anomalies. These may be weak because of a considerable depth of overburden which is too young to have developed a mature profile.

It is recommended that the magnetometer survey, previously recommended, be done in order to determine the location of the contact between the sediments and the volcanics. After this has been found, it is recommended that deep soil samples be taken along its length to try to find geochemical anomalies along it. These would become targets for trenching and/or drilling.

J. M. Black

J. M. Black, P.Eng., Ph.D.
Consulting Geologist
Orell Copper Mines Limited
February 1, 1978

GEOPHYSICAL REPORT
On A
PULSE ELECTROMAGNETOMETER SURVEY
On Behalf Of
CRAIGMONT MINES LTD.

MK Group, Adams Plateau area, Kamloops
Mining Division, B. C..
Lat. 51°01'N Long. 119°30'W N.T.S. 82 M/4

AUTHOR: Glen E. White, P. Eng., Geophysicist
DATE OF WORK: July 14 - August 2, 1978
DATE OF REPORT: August 29, 1978

C O N T E N T S

| | <u>PAGE</u> |
|---------------------------------|--------------|
| Introduction..... | 1 |
| Property..... | 1 |
| Location and Access..... | 1 - 2 |
| General Geology..... | 2 |
| Survey Specifications | |
| (a) Survey Grid..... | 2 - 3 |
| (b) Vecotr EM Survey..... | 3 - 4 |
| Discussion of Results..... | 4 - 6 |
| Conclusion..... | 6 - 7 |
| Recommendation..... | 7 |
| Instrument Specifications..... | 8, 8-i, 8-ii |
| Statement of Qualification..... | 9 |
| Cost Breakdown..... | 10 |

Illustrations

- Plate 1 - Location and Claims Map
- Plate 2 - Loop Location and Conductor Map
- Figures 1 - 30 - Vector Sections
- Figure 31 - Horizontal Loop Profile

INTRODUCTION

This report describes a reconnaissance vector electromagnetometer survey which was conducted over the MK group on the Adams Plateau on behalf of Craigmont Mines Ltd. The survey was conducted by Glen E. White Geophysical Consulting & Services Ltd. with the assistance of two Craigmont personnel, during the period July 14 to August 2, 1978, utilizing a Crone Pulse Electromagnetometer system.

The purpose of the survey was to try and detect a possibly deeply buried flat lying massive sulphide conductor.

PROPERTY

The area of survey is known as the MK group and is illustrated on Plate 1. It consists of mineral claims Fox 1 - 4, MK-4, MK-1, MK-2, A-1, and A-2. Hiltec mineral claim, which is under option to Craigmont, was also covered by the survey.

LOCATION AND ACCESS

The mineral claims are located on the Adams Plateau some 12 miles north of Shuswap Lake, near Scotch Creek which flows southward into Shuswap Lake. Latitude 51°01'N

Longitude 119°30'W, N.T.S. 82 M/4.

Access is by good gravel road for a distance of some 16 miles. This road is the first turnoff heading north after the bridge across the Adams River, traveling eastward along the north side of Shuswap Lake.

GENERAL GEOLOGY

The general rock units in the property area are the Shuswap complex of Archaean Age. The property is underlain by the Eagle Bay formation consisting of chlorite and sericite schist, slate, limestone, quartzite and minor conglomerate. These rocks are metamorphosed and variably silicified and can contain appreciable amounts to 10 - 15% per volume of iron sulphides. Minor graphite is also present. The rocks are dipping flatly some 10° - 20° to the northwest. Minor lenses of lead, zinc and copper mineralization have also been found which has stimulated the various exploration programs.

SURVEY SPECIFICATIONS

Survey Grid

The survey grid is an old one which consists of bulldozed north-south lines which have been remeasured and flagged. Some 25 km of vector electromagnetometer

surveying was conducted from the loop positions shown on Plate 2. Since the survey was of a reconnaissance nature, the traverse lines were spaced some 200 meters apart.

Vector Pulse Electromagnetometer Survey

Vector EM is a deep penetrating electromagnetic survey technique which has evolved from the use of the pulse electromagnetometer system, PEM. The PEM is a transient pulse electromagnetic system which induces eddy currents in a conductive body upon cessation of the primary field. If an eddy current is generated, it decays producing a secondary electromagnetic field. This decaying field is registered by a receiver coil and eight samples of the decaying field are obtained during the current off time.

Vector EM consists of determining the horizontal and vertical components of the secondary electromagnetic field and thus the resultant vector which points to the eddy current position. The primary field is obtained from a small turam type loop of 500 ft./side which is energized with a current of some 22 amps at 24 volts and allows survey coverage of an area of approximately 2500 ft. x 2000 ft. on each side of the loop. The eight channels of secondary field information are

equivalent to a wide spectrum of frequency information from approximately 2 KH_z to 16 H_z. Time synchronization is by radio link.

DISCUSSION OF RESULTS

The positions of the various survey loops A to J are illustrated on Plate 2. These survey loops are referred to on Figures 1 - 30. The numbers which form lines on each graph refer to the channel number. On a vector section, each station will originate a series of numbers according to the response of the overburden - bedrock conductivities. Channel 1 is the highest frequency, approximately 2000 cycles/sec.; each channel number relates to a decreasing frequency. This property showed responses only to Channel 3.

A perusal of the data, Figures 1 - 30, shows on a number of the profiles a dome-like response. This response is a formational response from a flat-lying conductive formation and is caused by secondary eddy currents within the formation giving vector focuses outwards from the loop in a different position for each channel (each frequency) i.e. Figure 9. However, a careful plot of these domes, Plate 2, shows that for each loop they reflect the strike of the lithology.

Loop A; Figure 1, Line 94 / OOE shows a deep

flat formational response at a depth of some 350 m. This is the only line which gave this type of response. Loop B shows dome-like responses on lines 96 / OOE and 10 / OOE, Figures 5 and 6 respectively. Loop C, Figure 7, line 94 / OOE at 106 / OON indicates a possible weak conductor at a depth of some 100 meters. Dome responses are shown on Figures 8 and 9. Loop D, Figure 10, line 104 / OOE, shows a weak deep response at a apparent depth of 400 m. This in itself would not be derogative except that loop E, Figure 13 also gives a Channel 1 focus in the same place. In neither case is there more than a Channel one response. Loop E also shows an interesting shallow response on line 104 / OOE at 99 / 75N at a depth of some 50 m. Loop F, Figure 17, shows a clustering of channel 1 and 2 responses at 108 / OON at a depth of some 150 - 200 m. This line was re-surveyed to check this feature from Loop J. Figure 29 shows a flat bed-like conductor response at a depth of 200 m which correlates with Figure 17. Loop G, Figure 21, line 120 / OOE, gives a possible channel 1 - 2 response at 89 / 50N at a depth of some 200 m. Loops H and I show formational responses. Loop J was positioned to try and confirm the conductive responses from Loop F on line 104 / OON. Lines 100 / 00, 102 / 00, 104 / 00 and 106 / 00 were surveyed from Loop J, Figures 27 - 30 respectively. Figure 27 shows

a sharp change in vector angle at 107 / 00N which may possibly relate to a geological discontinuity of some type. Moreover, the vectors show a definite right-hand electromagnetic field rotation from line 100 / 00 eastward to line 106 / 00E. On Figure 29, the vectors focus straight downward and appear to confirm a flat conductor beneath 108 / 00E at a depth of 200 m. Figure 31 shows a horizontal loop profile with a separation of 50 m along line 104 / 00E. Channels 1 and 2 show negative responses (109 / 50E) indicative of flat surficial conductors such as graphite bearing rock or small lenses of mineralization.

CONCLUSION

During the month of July and early August 1978 a program of reconnaissance vector pulse electromagnetometer surveying was conducted over the MK group, Adams Plateau area, B. C.

The program was designed to try and detect any large massive sulphide conductors at depth or possible down dip extensions of the known mineralization. The vector responses showed large formation dome responses which are caused by flat laying conductive rocks. All the loops showed this effect except loop E which is central to the other loop positions. This would suggest

that there may be a larger volume of less conductive rocks surrounding loop E and that the doming effect which defines a large circular pattern may relate to a particular bedded unit such as a graphite-iron bearing shale or schist.

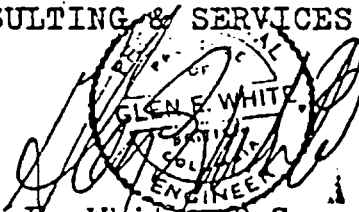
RECOMMENDATIONS

Five possible conductor zones were defined as illustrated on Plate 2. However, they are largely only Channel 1 responses which means they could be poor sulphide conductors and/or good lithologic ones.

Thus, two test diamond drill holes should be undertaken on the two most probable targets as follows:

- #1 - Line 104 / 00E at 99 / 75N drilled vertically to a depth of some 70 meters.
- #2 - Line 104 / 00E at 108 / 00N drilled vertically to a depth of 225 meters.

Respectfully submitted,
GLEN E. WHITE GEOPHYSICAL
CONSULTING & SERVICES LTD.



Glen E. White, B.Sc., P. Eng.
Consulting Geophysicist

ASSESSMENT REPORT

| | |
|------------------|--|
| TYPE: | DIAMOND DRILLING |
| CLAIMS: | A-1, A-2, Fox1-4, MK-1 to MK-4 inc. |
| MININD DIVISION: | KAMLOOPS |
| NTS LOCATION: | 82M/4 E |
| LATITUDE: | 51°03' |
| LONGITUDE: | 119°02' |
| OWNER: | CRAIGMONT MINES LIMITED |
| OPERATOR: | " " " |
| AUTHOR: | N. B. VOLLO, P.ENG. |
| DATE: | SEPT. 30th, 1978 |

TABLE OF CONTENTS

| | |
|---------------------------|---|
| Introduction | 1 |
| Claims | 1 |
| History and previous work | 1 |
| Geology | 1 |
| Drill Program | 1 |
| Core storage | 1 |
| Qualifications | 1 |
| Statement of costs | 2 |
| Location Map | 3 |
| Drill Log, MK-78-8 | 4 |
| " " " "-9 | 5 |

In Pocket

Geological Map, 1:5000, 82M/4MK-1

INTRODUCTION

The 82M/4 MK Group is located on the Adams Plateau, north of Shuswap Lake, and is accessible by good logging roads.

CLAIMS

The property consists of the following claims:

A-1, A-2, record numbers 128831, 128832.
Fox 1-4, record number 490
MK-1 to 4 inc. record numbers 565 to 568.
Hiltec, record number 114

all in the Kamloops M.D., totalling 44 units and held by Craigmont Mines Limited.

HISTORY AND PREVIOUS WORK

Lead-zinc-silver showings have been known on the property for many years. Various surveys, stripping and drilling were done by Giant Metallics and others in the 1960s and earlier, but no records of this work are available. The property was optioned to Craigmont by Orell Copper Mines Ltd. in 1976 and geochemical, magnetic, electromagnetic surveys and four drill holes totalling 222 metres completed in 1977. A Vector EM survey, based on the Crone PEM unit, was completed in 1978.

GEOLOGY

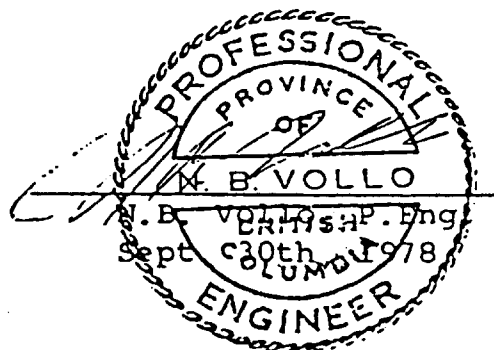
The property is underlain almost entirely by pyritic, siliceous, bedded tuffite, with minor thin limestone units, of the Eagle Bay Formation. Narrow zones of massive pyrrhotite-sphalerite-galena occur conformably within this sequence.

DRILL PROGRAM

Two holes were drilled to intersect projected Vector EM anomalies at depths of 60 and 170 m respectively. Narrow zones of heavy, barren, sulphides were intersected near these projected depths.

CORE STORAGE

The program was supervised and the core logged by the author who obtained a B.A. in Geology from the University of Saskatchewan in 1950, an M.Sc. in geology from McGill University in 1959 and has practised his profession for 28 years.



Report for Orell Mines Limited
on B.C. & M.K. groups
Adams Plateau

by
J.M. Black, P.Eng. January 20, 1979

SUMMARY

Two seasons of field work (1977 & 1978) have been completed on the B.C. and M.K. claim groups of Orell by Craigmont Mines Ltd. This work included laying out a grid and mapping roads and geology. This was followed by geophysical surveys, including E.M. 16 and magnetometer and by a geochemical survey. Maps were prepared for copper, zinc and lead. At the end of this work, during the first field season, seven holes were diamond drilled on each of the groups. In 1978 a loop survey was made on the M.K. group and five possible deep-seated sulphide occurrences were located. Two of these were drilled. On the B.C. group, an additional ten holes were drilled to explore known anomalies and mineralization.

This drilling totalled 686.2 m. on the M.K. and 1,606 m. on the B.C. properties, that is, a total of 2,289 m. or 7,500 feet. This, added to drilling done by Cominco, Giant Metallics and Orell, totals 4,807 m. or 15,750 feet. This is a large amount of drilling and has added a great deal of knowledge as to the type, extent, nature and grade of the mineralization on the two properties.

A large property payment was payable to Orell at the end of September and, for this reason and because of Craigmont's interest in a similar type of deposit, farther north in the North Thompson valley at which it was getting encouraging results, Craigmont decided against continuing the option on Orell's properties.

The results of Craigmont's work have been received and are discussed here.

In discussing results, particularly as to grade and tonnage, some results from Cominco's drilling and sampling in 1949 and Giant Metallic's drilling and sampling in 1966 and 1967 are used.

The two groups included are the B.C. group in the south (comprising claims Zinc 1/6 and B.C. 1/4, inclusive) and the M.K. group which comprises Al, A2, Fox 1/4, M.K. 1/4 and two Hiltex claims which are under agreement to option.

These are complex mineral zones with, in places, some copper, zinc and lead and, with the zinc, recoverable amounts of cadmium. Also, appreciable silver and some gold are present. In addition, magnetite is present in most of the zones. If a large enough tonnage of ore is developed and a fair-sized mill installed, the ground up magnetite may be sold to the large coal-washing plants in the Rocky Mountains.

GEOLOGY

Outcrops are sparse, generally, except where some trenching has been done. The claims are underlain by sedimentary rocks (mostly argillaceous) and volcanic rock (mostly tuffaceous). Quartzite, chert, limestone, flows and agglomerates, are also present. The beds are mostly grey, light and dark colored and mostly are in thin beds, a few millimeters in thickness.

Interbedded with these, are zones in which magnetite and the sulphides pyrrhotite and pyrite are common and sphallerite, chalcopyrite and galena are less common. Some high-grade samples commonly contain substantial amounts of silver and some gold. With the ore minerals, are quartz, epidote, chlorite, garnet, calcite and zoisite, etc. These zones or beds appear to have formed intermittently while the sedimentary-volcanic complex was accumulating. Probably the deposits were formed by exhalations from the volcanoes that contributed volcanic material to the sequence.

The high-grade zones with a high zinc and lead composition are less than 3 feet thick. Others, of lower grade, are about 11 feet thick and some are much wider. Judging from the continuity of geophysical anomalies, some of the occurrences are very long, especially on the B.C. group, where lengths of as much as 1,400 m. or 4,600 feet are seen.

These occurrences grade into the beds below and above and generally conform to the bedding. Judging from some geophysical anomalies, the mineral zones curve along strike and may do so down the dip. These changes in attitude may reflect variations in attitude of the bedding, caused by local deviations or rolls. Also, judging from the geophysical anomalies, high-grade mineral zones may be discontinuous.

The beds of the sedimentary-volcanic series strike east-northeastward and dip moderately to gently northwestward and so do the mineral beds. In a central part of the M.K. group, where the major mineral occurrences have been found, the bedding strikes more nearly westerly. This change in attitude may reflect a structural change that was conducive to mineral accumulation.

At the Mosquito King, the mineralization is predominantly lead, zinc, silver and on the B.C. group, the same metals are present and also copper.

The rocks and mineral beds are cut by dykes. These range from coarse, nearly granitic to fine and andesitic. Most of them strike northward and dip steeply.

GEOPHYSICS

The B.C. group (see Figure 1).

The map of magnetic anomalies is lively with positive anomalies generally south of negative ones. The values range from +40,000 gammas to -21,500 gammas. The anomalies tend to be somewhat irregular. Most of the positive ones are at known outcrops of magnetite and pyrrhotite and other sulphides.

They are in an arcuate-shaped belt that extends northwestward across the group. Most of them strike east-northeastward. They are from 200 to 1,000 m. long and about 50 m. wide.

Anomalies in the central part of the belt and some at the south of it, have not been explored by drill holes.

E.M. anomalies. These tend to be long and regular, though a few curve slightly. They range up to 1,400 m. long and are generally less than 100 m. wide. They are generally in the same belt as the magnetic anomalies and there is one in the southwest that is not related to magnetism. They tend to be north, that is, down dip from a positive magnetic anomaly and probably are caused by

good conductivity a short distance below the weathered outcrop of the mineral zones.

There are fewer E.M. anomalies than positive mag. anomalies, which suggests that there may be magnetic minerals exposed at the surface which are not close enough together to constitute a conductor.

The one that nearly coincides with a major mag. anomaly, is at a major magnetite occurrence which has not been drilled. This also applies to several lesser ones.

The M.K. group

Magnetic anomalies. The map is very lively and comprises many long anomalies trending west-southwestward. Most of them are straight. Some are as much as 1,400 m. long and most are narrow (about 40m.). Some are as much as 100 m. and some negative ones are as much as 150 m. wide.

Most of the anomalies are in pairs with a long positive anomaly, north of which is a slightly shorter negative one. In a few places a negative anomaly is south of a positive one. Values range from +9,040 gammas to -7,538 gammas.

The trend is not everywhere the same as the exposures of mineralization which strike more nearly westerly.

E.M. anomalies. These are much less common than the mag. anomalies and are generally widely separated. They are mostly in the southwest.

On the A/1, A/2, two major anomalies correspond to the known mineralization. One northwest of these appears to be caused by the mineralization known as Ball Park. This one is significant because it extends for 400 m. which is about twice the length of good grade that has been indicated by drill holes 77(3) & (4) of Craigmont.

One on the Hiltec claims may be the extension of the Ball Park anomaly and another on these claims is the northeastward extension of the main anomaly on the A/1, A/2 claims. Both of these anomalies are probably caused by mineralization similar to that exposed at the main showings of the A/1, A/2 claims.

Another major anomaly extends northeasterly of the group Fox 1/4 and has been explored by only one hole of Craigmont near the southwest end of it. Others occur in central Fox 1/4, and on the west limit of M.K. 4 and near the west limit of M.K. 1. Several short ones occur on the M.K. 4 claims that appeared to be aligned with the main ones on the A/1, A/2.

Loop survey. Five anomalies were found, indicating possible massive sulphide mineralization at depths from 70 m. to 400 m. These five anomalies do not correspond closely to the E.M. and mag. anomalies.

Two of these anomalies, with possible sulphide occurrences at depths of about 70 m. and 200 to 250 m., were drilled, without intersecting any substantial bodies of mixed sulphides.

GEOCHEMISTRYThe B.C. group

Copper. The strongest anomalies are in the north central part of the group. These are irregular and broad and appear to possibly have had their shape modified by surface conditions. Most of the major ones have been drilled without coring significant copper mineralization.

A small one on the baseline is aligned with and appears to be caused by an extension of mineralization that causes a long important E.M. anomaly.

Lead. The strongest anomalies (up to 1,910 parts per million) are in the central and eastern part of the group. Their shape has been modified by surface factors and they appear to be elongated down slope to the east. The major anomalies have not been drilled.

Zinc. The anomalies are mostly in a broad belt that extends northwest in the northeastern and central part of the group. Most of these are elongated in an east-northeast direction and presumably are related to mineralization conformable with the bedrock structure. Others appear to strike more nearly eastward, down the slope and probably have been modified by surface drainage.

The anomaly with the highest values (830 ppm.) has been drilled without intersecting sphalerite mineralization. Most of the moderate anomalies have been drilled, though not where the geochemical values are highest, without encountering much sphalerite.

A zinc occurrence in argillites in upper China Creek, for some reason causes no anomaly. However, towards the northeast, along the presumed strike of the occurrence, two small zinc anomalies extend from near the presumed strike directly down the slope. The general area is slightly anomalous for lead. In addition, an E.M. anomaly extends far to the northeast. This includes that section of the occurrence that (as shown by three diamond drill holes 12, 14 and Ex 1) is indicated to contain zinc ore. This leads to the belief that the occurrence continues for the length of the E.M. anomaly far to the northeast. This is beyond the point so far explored by drill holes and the possibility of finding more of this mineralization is good. Its extension of lower grade has been intersected by holes 15 and 17 of Craigmont. Holes 13 and 16 appear to be southwest of the ore body.

This absence of a zinc anomaly over a zinc occurrence is evidence that, in this area, even slight zinc anomalies may be worth investigating.

This E.M. anomaly (associated with zinc mineralization) is near the upper contact of a rhyolite group as mapped by Craigmont. Towards the northeast, the E.M. anomaly crosses this contact and appears to be caused by something within the rhyolite. This suggests that the occurrence started to form while the rhyolite was accumulating and may have continued to form after all the rhyolite had accumulated.

GENERAL

Exploration of geochemical anomalies alone has been disappointing. They may have been caused partly by fairly recent disturbance of the soil by bulldozers or by float not in place. On the other hand, drilling of geophysical

anomalies has resulted in intersecting mineralization even if it is of low grade. It appears that the geophysical anomalies are caused by mineralization in place. Some of these anomalies are very long and they have not all been explored, especially at the most favorable sections such as where the geophysical response is greatest or where geochemical anomaly suggests that one or more of the ore sulphides may be present.

DESCRIPTION OF ZONES

The B.C. group

These are numbered by letter, starting in the north.

- A. This is a geophysical anomaly that has been drilled. However, most of the core is dyke rock and information is incomplete. Non-dyke core contains some sulphides. This anomaly needs to be drilled from a point further east.
- B. This is a magnetic anomaly with geochemistry. Hole #3 is drilled west of the anomaly. A hole needs to be drilled farther east where the anomaly is wider.
- C. This is a E.M. anomaly and part of a mag. anomaly. It has been drilled by holes 6, 9 and 11 of Craigmont and 10 and 11 of Giant Metallics. #6 cored 1.5m. that ran 1.65% Cu; .44% zinc; .04 oz per ton gold and .58 oz per ton silver. #9 cored 5.7m. that ran .23% zinc and within this there may be high-grade sections. Another section across one meter, ran .41% Cu and .015 oz gold per ton. In 10 and 11 of Giant Metallics, an average of two intersections cored 13.8 feet of .28% Cu that was not assayed for zinc, gold or silver. This zone has a very long geophysical anomaly and may contain a very large tonnage.
- D. This is a geochemical anomaly and Craigmont hole #2 did not intersect any zone.
- E. This causes a geophysical anomaly which was explored by Craigmont's holes #7 and #8. #7 was mostly in dyke. #8 cored several sections with minor copper and zinc. This needs to be drilled further east, near the widest part of the anomaly.
- F. This causes a mag. anomaly that has not been drilled.
- G. This causes a high E.M. and high mag. anomaly and sulphides are exposed and it has not been drilled.
- H. This causes a long, strong E.M. anomaly and a magnetic one. It has been explored by B.C. #1 which cored numerous sections with copper and zinc. It needs to be explored towards the northeast, near the E.M. maximum.
- I. This causes a long E.M. anomaly, with mag. and geochem. anomalies at the northeast end. This has been explored by G. M. #9 which ran .2% Cu across 10.8 feet and .005 oz per ton gold across 4 feet. It is also exposed in eight trenches near G. M. #9 and possibly at the road to the northeast, running .49% Cu across 12 feet. These results average .21% Cu across 7.68 feet. These were not assayed for other metals. This zone may also contain a very large tonnage.
- J. This causes a long E.M. anomaly and a short mag. anomaly and, possibly associated with it, are lead and zinc anomalies in the northeast. It has not been explored by a drill hole.
- K. This causes a long E.M. anomaly and a slight mag. anomaly. This occurrence is discussed above. A substantial tonnage has been indicated by holes #12 and #14 and Ex 1. It may continue much farther to the northeast and possibly also to the southwest.

L. This causes a strong lead and weak zinc anomaly and it may be related to an extension of a mag. anomaly. It has not been drilled.

M. This causes an E.M. anomaly 700 m. long, which aligned with weak zinc and copper anomalies. It has not been drilled.

| <u>RESERVES INDICATED</u> | <u>Tons</u> | <u>Cu%</u> | <u>Pb%</u> | <u>Zn%</u> | <u>Ag oz per ton</u> | | |
|---------------------------|-------------|------------|------------|------------|----------------------|------------------|------------|
| Mosquito King | 9,600 | - | 4.0 | 4.4 | 1.9 | | |
| Sunset | 2,320 | - | 3.71 | 4.74 | 1.16 | | |
| Sunset S. E. | 4,750 | - | 3.96 | 7.0 | 2.5 | | |
| Ball Park | 25,000 | - | 1.77 | 2.66 | 2.36 | | |
| Total | 41,670 | - | 2.67 | 3.68 | 2.2 | | |
| Zinc | 163,000 | .19 | .53 | 2.43 | 1.45 | <u>Au oz/ton</u> | <u>Cd%</u> |
| | | | | | | .001 | .024 |
| Total | 204,670 | about .2 | 1.00 | 2.72 | 1.60 | - | - |

RESERVES POSSIBLE

Zone "C" 300,000) about .2 Cu plus
 " "I" 359,000) possible other metals

VALUE

Discounting current prices in U.S. funds (by 40% to allow for smelter charges and losses) and converting to Canadian funds, gives values for five metals as shown here:

| <u>Metal</u> | <u>Grade as %</u> | <u>lbs.</u> | <u>Price</u> | <u>Value</u> |
|--------------|-------------------|--------------------------------|--------------|--------------|
| Cu | .2 | 4 @ 93-37 = 4 @ 56 = | | 2.24 |
| Pb | 1.00 | 20 @ 42-17 = 20 @ 25 = | | 5.00 |
| Zn | 2.72 | 54.4 @ 38-15 = 54.4 @ 23 = | | 12.50 |
| Cd | .025 | .5 @ 2.50-1.00 = .5 @ 1.50 = | | .75 |
| Ag | 1.6 oz | 1.6 @ 7.25-2.80 = 1.6 @ 4.45 = | | 7.12 |
| | | | | 27.61 |

| | <u>Oz Au</u> | <u>Value</u> |
|------|----------------------|--------------|
| Au | .001 | .25 |
| Mag. | 10% = 200 lbs @ 1¢ = | 2.00 |
| | | 2.25 |

Assays of high-grade pulp samples from 1978 drilling yielded cadmium assays that ran slightly less than 1% of zinc assays.

Without the magnetite, this is of ore grade if sufficient tonnage can be found to permit building of mill of a fair size. The possibility of finding more

ore at the Zinc and Ball Park showings, is very good. The possibility of changing the possible ore to indicated ore and of finding additional values is also good. In addition, more ore may be found in several undrilled anomalies.

GENERAL

The E.M. anomalies are long and straight and are generally conformable to the general trend of the nearby rocks and it may be concluded that they are caused by bodies of mineralization that conduct electricity well and that are substantially different from the underlying and overlying beds. At each point where they have been drilled, each body contains abundant magnetite and pyrrhotite and, with these are generally sphalerite and galena and chalcopryrite and they also carry some silver and gold.

The strongest indication of where, along the length, it is most useful to explore, can be where the anomaly is strongest or where a geochemical anomaly associated with the E.M. anomaly, indicates some of the ore sulphides may be present.

A longitudinal profile was constructed along a plane at right angles to holes 10 and 11 of Giant Metallics and holes 6, 9 and 11 of Craigmont. The anomaly caused by the zone explored curves and probably the zone does also, so the profile is not exactly along the plane of the body. For this reason, the intersections of mineralization in the core are not aligned as in a continuous body.

Most of the zones contain appreciable magnetite. If the indicated tonnage can be considerably increased so that a fair-sized plant can be built, the recovery of magnetite becomes of importance. In ore dressing, the crushed ore, presumably, will travel over a magnetized belt that will separate magnetic fragments from non-magnetic. This probably will be done as early as possible in the flow sheet in order to reduce the tonnage of feed that is handled in further stages.

The magnetic product, which would comprise mostly magnetite, could be ground finer if necessary and cleaned and then probably would be suitable for sale to the large coal-cleaning plants in the Rockies. These use finely-ground magnetite as a heavy media in which coal and associated shale, etc. are separated. The coal floats in the the heavy media and the shale, etc. sinks.

The gold and silver content is attributed to small amounts of chalcopryrite, galena and, possibly, sphalerite and pyrite in the sample. This encourages belief that, in the long zones, sections may exist in which ore sulphides are present in large enough amounts to constitute ore. Such sections probably contain appreciable gold and silver. One such section was cored by Craigmont in D.D.H. #6 in 1977. This ran .165% Cu, .44% Zn, .04 oz Au and .58 oz Ag across a width of 1.5 m. Such sections may be sought in the strongest and widest sections of the E.M. anomalies and, possibly, also where a geochem. anomaly suggests the presence of ore sulphides.

Some of the surface samples assayed as much as .49 Cu across 12 feet. Some sphalerite and galena may also have been present. However, Giant Metallics was exploring when lead and zinc were selling at comparatively low prices and their samples were not generally assayed for these or precious metals.

Prices have changed appreciably and relatively since that period. Copper prices are now about 45% greater, whereas current lead and zinc prices are about 250% greater and silver and gold have increased about 400% and 700%.

From Craigmont's results it can be seen that the zinc content is equal to or greater than the copper content. To the extent that this is generally true, the zinc content of many of the unassayed sections cored by Giant Metallics, may be appreciable. The sphalerite in the cores tends to be not obvious and, for this reason, is not noted.

The cadmium content was not determined at the time of drilling. Recently pulps from high zinc samples were run for cadmium and it was found to be high - almost 1% of the zinc. An ore that runs 2.5% zinc, runs almost .025% Cd, which is almost $\frac{1}{2}$ lb. per ton, which is probably recoverable.

CONCLUSIONS

Two areas have been explored and numerous mineral zones have been partly delineated by geology, geophysics, geochemistry and by drill holes. The results are tabulated above. The grade is of interest and, potentially, a large tonnage may be found.

Prices for metals have advanced considerably since work by Giant Metallics was done in 1967.

Some of the more prominent geophysical and geochemical anomalies have not been drilled.

Increases in tonnage are probable at the Ball Park and Zinc showings, where significant anomalies extend beyond limits so far drilled. It is likely that, if other sulphides are present in some of the possible ore, the value may be raised to as much as that now estimated for the indicated ore. Additional drill intersections could raise its category to that of indicated ore.

Long anomalies need to be drilled at several points along their length in order to find sections that may be of ore grade.

The positive magnetic anomalies are generally south of the E.M. anomalies and are probably close to the surface expression of the mineral zones. This surface expression is further away from the collar of the drill holes than the E.M. anomaly and, in some holes, the zone may not have been intersected.

The anomalies are generally long and the tonnages may prove to be much greater than calculated now. Also, some of the anomalies have not been drilled and the possibility of finding ore at some of them is good.

The occurrences are flanked by mineralization of lower grade. If a large tonnage becomes indicated, the cut-off figure can be lowered and some of the marginal material may be reclassified as ore and the indicated tonnage, accordingly, increased.

If some of the showings on the M.K. ground do not extend to great depth, they may be mined by surface stripping.

RECOMMENDATIONS

A. Surface:

- 1) Sampling of zones on B.C. claims that were not sampled by Giant Metallics.
- 2) Trenching of the strongest E.M. anomalies where no exposures exist.

B. Drillings:

- 1) Holes where there is a good chance of confirming known mineralization or by drilling a strong geophysical anomaly.
- 2) a. Holes that will explore known zones which have not been assayed for all metals of significance.
b. Holes that will explore weaker geophysical anomalies and those that will explore geochemical anomalies that have not been confirmed by geophysical anomalies.

C. Samplings:

Sampling and assaying the cores for any possible extension of zones for all metals of significance.

The lower end of the E.M. anomaly on the zinc showing is at about 1,220 m. which is at about 4,000 feet on a steep, east-facing slope. The upper showing on the A claims is at 1,750 m. which is at about 5,750 feet on a flat-topped knoll. It is expected that the snow will be gone at the lower level by mid June, which is much earlier than it will be at the upper level.

DRILL PROGRAM

First Stage

- 1) Zinc zone (K). At least three widely-spaced holes along strike, toward the northeast extension of the zone. If these recover mineralization of commercial or near commercial grade that at least three other holes be drilled to explore the zone at depth.
3 @ 45 m. = 135 m.; 3 @ 50 m. = 150 m.; Total 285 m.

- | | | |
|----|--|-----|
| 2) | (J) Central 2@ 45 m. | 90 |
| 3) | (I) At southwest end, near pb high, 2 @ 45 m. | 90 |
| 4) | (I) At northeast, near geochem anomalies & mag. high and surface showings. 2 @ 45 m. | 90 |
| 5) | (H) Toward northeast end. 2 @ 45 m. | 90 |
| 6) | (G) Toward northeast end at highest intensity. 2@ 45 m. | 90 |
| 7) | (C) " " " " " " 2@ 45 m. | 90 |
| | | 825 |

Some of the holes may need to be deepened if the zones dip more steeply than anticipated.

Second Stage

| | |
|---|-----------|
| 1) Mag high between D.D.H. 4 & 9, away from dyke. 2 @ 30m. | 60 m. |
| 2) " " north of B.C. 1. 2 @ 30m. | 60 |
| 3) E.M. and mag. high, middle of Fox 1/4. 1 @ 40m. | 40 |
| 4) Ball Park. 1 @ 20m. | 20 |
| 5) E.M. anomaly in the southwest of Hiltec. 1 @ 25m. | 25 |
| 6) On A1, E.M. anomaly west of M.K. central. 1 @ 30m. | 30 |
| 7) Hiltec, E.M. anomaly in southeast. 1 @ 30m. | 30 |
| 8) Northeast part of E.M. anomaly on Fox 1/4. 1 @ 30m. | 30 |
| 9) Zinc anomaly in south part of north half of B.C. 2. 1 @ 30m. | 30 |
| 10) Copper high, west of Craigmont #3. 1 @ 30m. | 30 |
| 11) Mag. high near southwest corner of M.K. 1. 1 @ 30m. | 30 |
| 12) Mag. high in north of M.K. 1. 1 @ 30m. | 30 |
| 13) Two zinc highs in south of M.K. 4 which may be extension of M.K. central zone. 2 @ 30m. | 60 |
| 14) Zinc high near west boundary of Fox 1/4. 1 @ 30m. | 30 |
| 15) Zinc lead high at northeast corner of Hiltec. 1 @ 30m. | 30 |
| 16) Lead high on base line at 9,450 m. east. It may be near a mag. high. 1 @ 30 | <u>30</u> |
| | 565 m. |

Total both stages is 825m. + 565m. = 1,390m.

Additional drilling may be needed of any target with encouraging results.

Checking geochemical anomalies on Lichen can be done by geologist while drill is being moved. Sampling Scotch Creek silts for geochemistry can be done by local crew.

The number of drill targets is large and they require a large amount of drilling. The estimate used here of \$35.00 a meter is about the same as that paid by Craigmont. If a contract near this price can be obtained, the same size of core is recommended. A large number of short holes is recommended and a fair proportion of time will be spent, moving and setting up.

| <u>Stage 1</u> | | <u>Stage 2</u> | |
|--------------------------------------|-----------------|-----------------------|-----------------|
| Mobilization | \$ 2,000 | | |
| Drilling 825m. @ \$35 | 28,800 | Drilling 565m. @ \$35 | \$19,600 |
| Geologist, 2 months | 3,600 | Geologist, 2 months | 3,600 |
| Truck | 1,500 | Truck | 1,500 |
| Board | 1,000 | Board | 1,000 |
| Assaying | 2,000 | Assaying | 2,000 |
| Consulting | 1,000 | Consulting | 2,000 |
| Travel | 500 | Travel | 1,000 |
| Demobilization | 1,000 | | |
| | <u>\$41,400</u> | | <u>\$30,700</u> |
| Sampling silts in Scotch Creek, etc. | | | 2,000 |
| Assaying | | | 1,000 |
| Report | | | 500 |
| | | | <u>3,500</u> |
| Bulldozing geophysical anomalies | | | 2,400 |
| | | Total | <u>\$78,000</u> |

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Consulting Geologist

Report for Orell Copper Mines Ltd.

on Lichen Group

by

J.M. Black, P.Eng. January 20, 1979

Program of exploration and prospecting, including a ground magnetometer survey and bulldozer trenching, has almost been completed. This is an area generally south and west of the mineral occurrence described in the initial report on this property.

At the showing a dark lens or cylinder of mineralization, probably of volcanogenic origin, is between a limestone (marble) and some volcanic beds. These beds strike southwesterly and dip northwestward.

Along strike to the southwest, argillites and volcanics are interbedded and neither is in a large enough unit to be mapped separately. Limestone occurs as a few thin interbeds. The argillites appear to be weak and have crumpled during deformation and the structure is complex.

Three gossans were found and trenched. At the largest a fault is exposed which appears to disrupt the adjacent beds only slightly. It strikes 30° east of north and dips almost vertically. It is up to 2 ft. wide and is completely filled with gouge, either rusty near the surface or blue-green at depth. This gouge appears to be rock flour caused by the grinding of the rocks. Ten feet below the surface a sample ran .044 oz. gold per ton and .29 oz. silver per ton. At the bottom of a deep trench, 20 ft. below the surface, a similar sample ran .010 oz. gold per ton and .20 oz. silver per ton. These samples show that solutions containing small amounts of precious metals had access to the fault. However, because of the gouge, which is practically impervious, the solutions could not circulate freely and so very little vein material could develop. Elsewhere along such a fault, where there is little gouge; solutions may have circulated more freely, and formed vein material. This could be where the rocks involved are hard and less easily ground down.

At the second gossan, small amounts of galena and sphalerite are present in argillite. This material is of low grade.

At the third gossan, a trench exposes a reddish mud which is somewhat similar to mud exposed near the mineralized lens. This mud contains less than .02 oz. gold per ton and .08 oz. silver per ton and very little sulphides and is not of economic interest.

The area is cut by many quartz veins, some of which are as much as 2 ft. wide. The average thickness is about 8 in. Some of these are well-mineralized with galena. Their silver content is moderately high and is about 1 oz. silver per percent of lead. In this respect, they are like veinlets in the volcanics

close to the volcanogenic occurrence. They are likewise similar to veins in the argillites in the southwest part of the property.

The veinlets in the volcanics, with a high silver content as does the volcanogenic material, were considered to be remobilized volcanogenic material.

However, such veins are now known to be so widespread that it seems probable that they were formed by hydrothermal solutions that emanated from a cooling granite-like mass that presumably underlies much of the area and which outcrops at one point.

The geochemical survey found anomalous readings above such veins. There, the soil is slightly lighter in color, probably because of the presence of abundant quartz grains. If any extensive anomaly is found, it may be caused by several such veins, fairly close together.

The magnetic anomalies are slight and do not appear to be related to the trend of the beds. It had been hoped that the manetics would outline areas of low and high magnetism and that these would reflect the presence of limestone and volcanics, respectively.

The geochemical anomalies are moderately weak and of limited extent. They are numerous and probably those outlined around a few sample points and for only one metal are of little significance. However, where two or more metals are anomalous in the same area, they may have significance and twelve of them have been located.

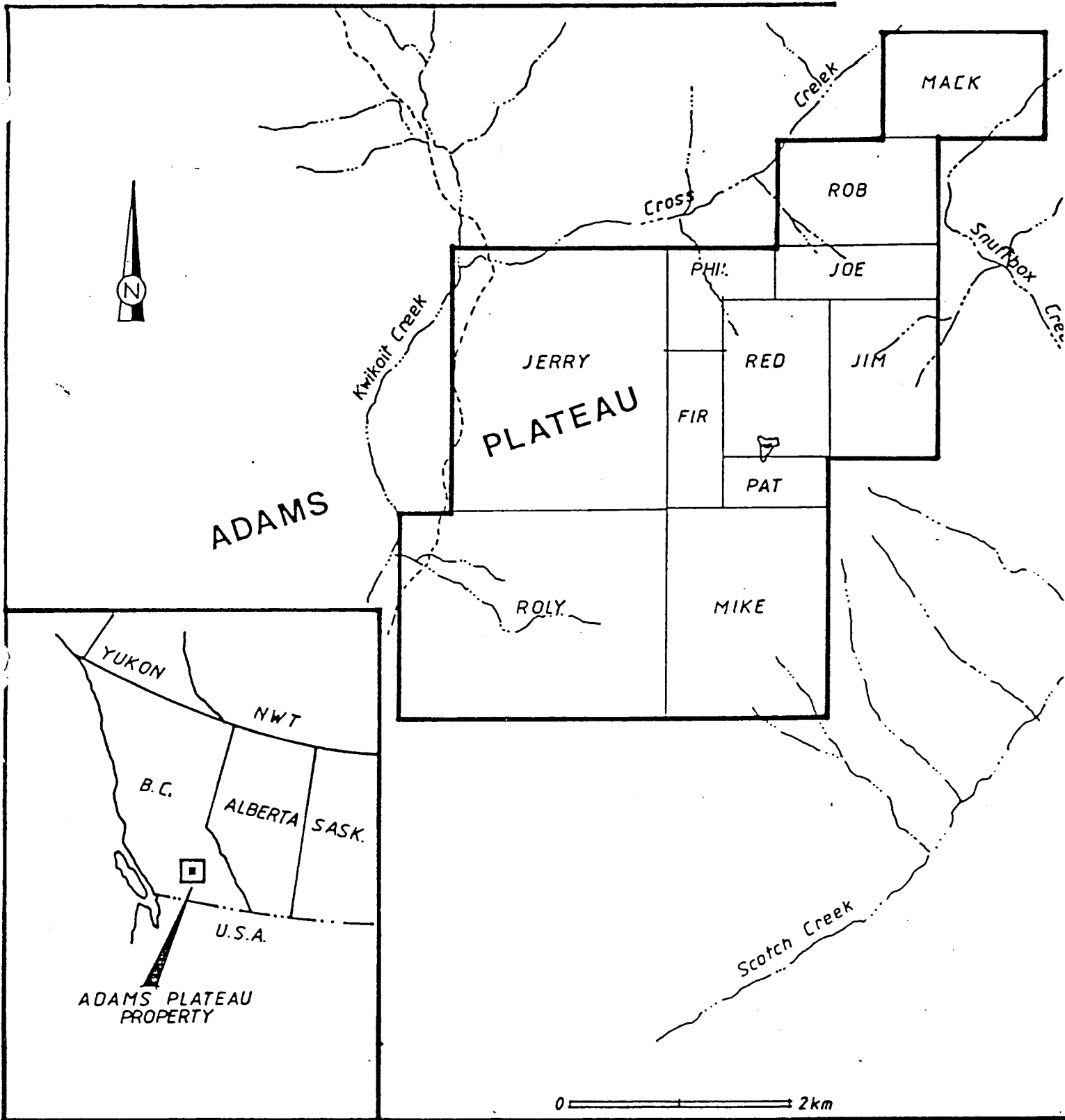
These outlined areas tend to be aligned in a direction that strikes southwestward and so they may have some relationship to the structure. They may be related to mineralization at some cross structure or, possibly, to veins more closely spaced than the average spacing.

RECOMMENDATIONS

Resample in detail each of the twelve areas where sampling has shown coincident anomalies exist to find out if they can be confirmed and enlarged.

After such results are available, resample the most intense anomalies, at greater depth, to find out the attitude of the mineral zone or zones causing the anomaly.

J.M. Black, P.Eng., Ph.D.
Consulting Geologist



ORELL COPPER MINES LTD.

ADAMS PLATEAU PROPERTY



SILVER LICHEN CLAIM GROUP

Report for Orell Copper Mines Limited
on Bowler Creek, Mosquito King, Lichen Groups
Adams Plateau

Lichen

This prospect was geologically mapped by a geologist with much experience in this kind of geology and some experience in this area.

Geochemical sampling was done to check some results of previous season's work and to extend the limits of the area surveyed geochemically.

A new mineralized occurrence, similar in appearance to the original discovery, was found towards the end of the field season.

Bowler Creek

Three holes were drilled towards a known previously drilled mineral zone. This zone dips moderately and curves and was drilled on a steep slope where its extension could not be projected with certainty.

A few thin intersections were obtained, each of which could not be considered with certainty to be the extension of the zone sought. An interval of 410 feet along strike between the old holes and the new proved to be too great. Another hole is needed to reduce this interval. Such a hole will possibly core the zone where it is more certainly recognizable. This will establish more accurately its attitude as well as its thickness and grade.

Numerous holes were drilled towards the causes of geophysical anomalies. These cored zones about 20 feet thick, comprising mostly pyrrhotite and some magnetite. These contain minor chalcopyrite and samples mostly ran about 0.20% Cu. or less. Sphalerite and galena are present in very small amounts. Samples ran low in gold and silver.

Mosquito King

This area was geologically examined. It was found that structurally it is more complex than it appeared to be previously. Numerous drag folds suggest that folding is very complex.

A main showing on the claims was drilled and blasted and some ore mined. This was trucked to Trail where it was combined with some ore shipped earlier and which had been stored at Salmo. A total of 161.6 dry tons was smelted.

Metal prices late last fall were lower than they have been in recent months and some what lower than current prices. The average grade of the ore smelted was about 7 ounces silver per ton and almost 19% combined lead and zinc. After deducting freight costs, and smelter deductions and charges, the sum received was \$15,736.00. This was shared with the mine contractor who did the mining so Orell netted \$6,379.00 or \$40.00 per ton.

These results demonstrate the high costs resulting from shipping a raw ore. Freight is paid on the waste in the ore. Smelter charges are high because the smelter operates more efficiently on separate lead and zinc concentrates than on a natural combined ore.

J.M. Black, P. Eng., Ph.D.
Consulting Geologist
March 10, 1980



ORELL COPPER MINES LTD.

POST OFFICE BOX 1386 SALMON ARM, BRITISH COLUMBIA, V0E 2T0 TELEPHONE (604) 832-4939

(The name has been changed to ORELL RESOURCES LTD. as of May 23, 1980)

June 6, 1980

To The Shareholders:

The following agreements are subject to regulatory approvals.

ADAMS PLATEAU MINERAL CLAIMS

We are finalizing an agreement with Brinex Ltd., a wholly owned subsidiary of Brinco Ltd., whereby Brinex will be granted the right to acquire a 70% undivided interest in our Adams Plateau Claims. Brinex will earn its 70% interest by preparing a feasibility study. The agreement is for a period of 5 years and has annual payments of \$5,000.00 or 10% of amounts expended on exploration which ever is greater.

We have optioned in by way of letter agreements dated January 26, 1980 and May 12, 1980 from Allan Hilton, 18 mineral claims (44 Units) in the Adams Plateau area. We have paid Hilton \$2,000.00 cash and the balance of \$5,500.00 with 127,500 Treasury Shares which is due July 31, 1980 (\$4,000.00 and 40,000 shares) and August 31, 1980 (\$1,500.00 and 87,500 shares). We are negotiating with Brinex to have it assume our obligations to Hilton.

The total area of interest in the Adams Plateau is comprised of Mosquito King Claim Group (8 Claims, 54 Units), Bowler Creek Claim Group (5 Claims, 52 Units), Silver Lichen Claim Group (13 Claims, 96 Units) and the Hilton option in of 18 (44 Units). The large size (in excess of 14,000 acres) contains many outcrops of mineralization.

The exploration crew of Brinex has moved in on June 2 and 3, 1980 to commence geological mapping. The early start in exploration should enable a large number of the claims to be examined before the field season ends.

The agreement with Brinex provides that we can continue highgrading or milling ore from the A1 and A2 and Hiltec 1 and 2 Mineral Claims. Shipments to the smelter in 1979 averaged 7 ozs. Silver and 18% combined Lead and Zinc. A contractor is interested in mining and negotiations are continuing.

PRINCE OF WALES ISLE, ALASKA

We are in the final stages of completing a lease agreement whereby we will obtain a 5 year lease of 7 unpatented lode claims having known showings of Gold-Silver-Copper mineralization situated on Prince of Wales Island, Alaska. The lessor is SEAX, an Alaska general partnership. We are undertaking a field examination of the claims on June 9, 10, and 11 with David Kuck, Professional Geologist to prepare a work program on the claim group.

Assays from channel samples taken by El Paso Mining & Milling Co. ran 2 ozs. Gold and 10 ozs. Silver.

Rent under the lease will be (in U.S. funds) \$100 the first year, \$1,000 in the second year, \$5,000 in the third year, \$10,000 in the fourth year and \$20,000 in the fifth year. In addition, SEAX will receive 2½% of net smelter returns from ore shipped from the property and we will assume the liability to pay an additional 2½% of net smelter returns to El Paso Mining and Milling Company.

will have the right at any time during the term of the lease to acquire a 100% interest in the mineral claims, subject to the aforementioned net smelter return royalties, for \$500,000 (U.S.).



ORELL RESOURCES LTD.

POST OFFICE BOX 1386, SALMON ARM, BRITISH COLUMBIA V0E 2T0 - TELEPHONE (604) 832-4939

July 22, 1980

1980 SEMI-ANNUAL REPORT TO SHAREHOLDERS

A firm underwriting of stock has been arranged with Bond Street International Securities Ltd. of 301-580 Granville Street, Vancouver, B.C. V6C 2K3, Telephone (604) 687-7521 (Kamloops Office 604-374-3144).

A Statement of Material Facts will contain the full details of the underwriting when the Vancouver Curb Exchange and Superintendent of Brokers have given their approval.

We have also arranged a private placement of 150,000 shares at 30¢ per share. This sum was to assure settlement of loans and accounts payable. This agreement is still to be approved by the Vancouver Curb Exchange and Superintendent of Brokers.

The directors have advanced sums to the company to maintain the operations and have also made arrangements to meet the drilling costs of the oil plays due to spud this month.

The Flagstaff Mine on Prince of Wales Island, Alaska consisting of 7 unpatented lode claims was examined June 9, 1980. We are awaiting an engineer's report on a work program. The tunnel is in good condition and can be re-opened with no difficulty. The Flagstaff vein has a strike length in excess of 5000 feet and a vertical range of at least 1300 feet. Assays taken by El Paso Mining & Milling Company returned good gold and silver values. The lease agreement has now been executed by all parties.

The oil plays in Macon and Shelby Counties, Illinois, U.S.A. are due to spud near the end of this month. Other oil and gas involvements are being investigated.

We are completing negotiations on acquiring a mineral water spring west of Bella Coola called Eucott Bay Hot Springs. Terms have been agreed but are subject to our obtaining an acceptable engineering report. We undertook a field examination of the Spring on May, 5 1980. It appears that a market for the water would be in the United States. Any final agreement is subject to approval by the Vancouver Curb Exchange and Superintendent of Brokers.

We have been unable to come to acceptable terms on an option agreement with Brinex Ltd. on our Adams Plateau Claims. We have terminated negotiations and directed that their field crew withdraw from our claims. We will be re-opening negotiations with other major companies that have indicated an interest in the claims.

We have trenched a vein on the A1 and A2 claims of the Mosquito King Claim Group. The trenching was over 600 feet of the total 2,000 feet of the exposed part of the vein. The vein has an average thickness of 2 feet and dips 45° to the North. Folding is quite common. The vein changes direction to a northerly strike and a substantial amount of ore has accumulated at that point. Mining and stock piling of the ore is planned. Further trenching is to be done. Shipments to the smelter from this vein in 1979 averaged 7 ozs. silver, 10% lead and 8.5% zinc.

The attached financial statements as at June 30, 1980, are for your information.

Respectfully submitted on behalf of the board of directors.



C.C. Kane . President