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REPORT

ON

THE PROPERTY OF

PINNACLE MINES LTD. (N.P.L.)

KAMLOOPS MINING DIVISION

BRITISH COLUMBIA

by

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Vancouver, B. C.

February 1st, 1972.

I N D E X

IN POCKET - 4 maps to illustrate report.

REPORT ON DATA SUPPLIED CONCERNING
A, C, CLE, PIN AND ART GROUPS OF CLAIMS

INTRODUCTION

The writer was requested by the President of Pinnacle Mines Ltd. (N.P.L.), owner of the above claims, to review material available in the Vancouver office of the Company, to make recommendations for further work and to concur or otherwise comment on the report of C. T. Pasieka and J. B. Prendergast.

It is evident that maps and details of past work are not all available at the Vancouver office and there is nothing to indicate the final outcome of work done in 1969 or 1970 by Umex, the Canadian arm of Union Miniere Explorations & Mining Corporation Limited but it is understood this work proved to be inconclusive. It seems evident however that little or no attention was devoted to the south end of the property which covers the generally favorable contact of the batholithic rocks with the older Nicola rocks. It seems that work has been concentrated towards the central axes of the batholith in the north half, probably because mineralization has been found there and has been reflected by geophysical and geochemical surveys the results of the latter are not available to the writer but for reasons given later may be suspect and should take a subsidiary position to geological considerations which will be briefly reviewed.

Location and topography are favorable and except that mid-winter conditions may hamper some surface exploratory work the climate is not unfavorable. Deep overburden including varying thicknesses of glacial till can be a problem, particularly in valleys. It is therefore important that as much data as possible be obtained regarding the nature of the overburden in areas of potential so that geochemical and to some extent, geophysical data can be used intelligently in the placement of diamond drill holes to explore the bed-rock.

SUMMARY AND CONCLUSION

Pinnacle Mines Ltd. (N.P.L.) controls a large block of claims at the south eastern tip of the Iron Mask Batholith on which copper mineralization has been found. Initial efforts to prove up a large tonnage of economic mineralization have been frustrated by deep overburden which apparently involves glacial till. However the geological setting is an excellent one which involves repeated intrusions of varying composition into older rocks involving a volcanic-sedimentary contact and intersecting faults lying between the Iron Mask Batholith and a larger mass of intrusive rocks to the southeast. It is evident that repeated mobilization of minerals must have taken place in an area of potential reservoir structures that could contain an ore-body. Ground to the south and east of holdings of

Pinnacle Mines Ltd. covers some of the favorable ground and according to current claim maps appears to be open. It should be staked if possible. An initial program of percussion drilling to cost about $20,000.00 should then be undertaken to obtain information on which to base a major program of diamond drilling to greater depth.

PROPERTY

The property consisted of 62 contiguous mineral claims held by right of location. These were as follows :-

Claims	Record Numbers
A_1 to A_4 incl.	47777 - 47780
5A to 8A incl.	56758 - 56761
A_9 to A_{12} incl.	47785 - 47788
A_{13} to A_{16} incl.	48071 - 48074
C_1 to C_3 incl.	47789 - 47791
C_4 to C_{18} incl.	47955 - 47969
CLE_1 to CLE_{10} incl.	47792 - 47801
PIN_1 to PIN_2 Fractions	71608 - 71609
PIN_3 and PIN_4	71610 - 71611
PIN_5 and PIN_6 Fractions	71612 - 71613

Claims	Record Numbers
PIN_7 Fraction	71619
PIN_8 to PIN_{12} incl.	71614 - 71618
ART_1 to ART_6 Fractions	81298 - 81303

It appears however that only the 24 claims listed below are presently in good standing with expiry dates as shown:

	Claims	Record Numbers	Expiry Dates
	5A to 8A	56758 - 56761	June 13/72
	ART_1 to ART_6 Frs.	81298 - 81303	June 26/72
*	PIN_1 to PIN_{12}	71608 - 71619	Sept. 16/72
	A_2 and A_9	47778 and 47785	Nov. 19/72

* The PIN claims are all shown as fractions on the claims map but PIN_3, PIN_4 and PIN_8 to PIN_{12} are apparently recorded as full sized claims.

It is understood also that Pinnacle Mines Ltd. obtained and still retains the subsurface rights to all minerals other than gold and silver on district lot 585 Crown Granted May 12, 1890. The boundaries of this lot approximate those boundaries of a block of claims comprising C_1, C_4, C_5 and A_1 to A_6. Thus Pinnacle Mines Ltd. still retains the base metal rights to ground formerly largely covered by the following claims although they have been allowed

to lapse.

Claim	Record Number
A_1	47777
A_3	47779
A_4	47780
C_1	47789
C_4	47791
C_5	47955

This gives it a fairly solid block of ground covering the area of the Joker Adit and Grey Mask Shaft where copper mineralization of interest is evident. See Map 5.

It also retains a number of fractions of unknown acreage scattered through the original claim block also indicated on Map 5 on which it has the rights to all minerals.

Boundaries cannot be defined accurately without a survey on the ground.

REGIONAL GEOLOGY

The body of intrusive rocks known as the Iron Mask Batholith has long been credited for most of the mineral occurrences in the area as they are mostly found along the margins of it or in a few cases close to its central axis.

There is a great complexity of rock types within the batholith and around its margins. The intrusive rocks are of six major types. The two main divisions constituting the greater part of the batholith consist of 1. fine grained rocks varying in composition from diorite to monzonite and classed as microdiorites and micromonzonites and 2. coarse grained rock varying in composition from that of acidic monzonites and syenites to basic pyroxenites. At intervals around the margins are to be found intrusive masses of picrite basalt and serpentine considered to be older than the main mass. Younger

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intrusives are the porphyritic equivalents of some of the older intrusives and are known as the Cherry Creek and Sugarloaf Intrusives. These are considered responsible for much of the mineralization. Peridotite has also been found in the vicinity of some mineral deposits.

Marginal rocks consist of the mainly sedimentary Cache Creek rocks of Carboniferous age, the sedimentary and volcanic Nicola rocks of Triassic age both of which would be intruded rocks and could be mineralized, particularly the latter and the younger rocks of the Kamloops group of Miocene age which consists of sedimentary and volcanic rocks and would not be mineralized.

Alteration (Saussuritization) is usually pronounced in the mineralized areas. The principal minerals found have been magnetite, hematite, pyrite in addition to the copper minerals consisting of chalcopyrite, bornite and lesser amounts of chalcocite, cuprite, azurite and malachite. Native copper has recently assumed a position of major importance as a result of the unique occurrence of this metal, apparently of primary origin recently discovered on the property of Afton Mines at the northwestern tip of the Batholith. A somewhat similar situation could exist at the southern tip of the batholith which will be discussed in the following section. These minerals are not necessarily always found together. For example magnetite may or may not accompany chalcopyrite so that a high magnetometer reading or a low reading could be indicative of copper mineralization.

GEOLOGY OF PINNACLE MINES PROPERTY

The claims belonging to Pinnacle Mines Ltd. straddle the southern end of the Iron Mask Batholith as it was mapped by Carr in Figure 3 of the 1956 Minister of Mines Report (MMR) but do not extend to the western margin as modified in figure 13 of the 1967 MMR except at the very south end.

Copper mineralization within the claim group has been found associated with a band or bands of the Cherry Creek Intrusives lying along the long axis of the batholith, and again at the contact of the older basic picrite basalt intrusives with the main mass of coarse textured rocks of intermediate to acid composition. These would seem to be discrete occurrences despite contentions to the effect that they are related.

By referring to figure 13 of the 1967 MMR it is seen that the oldest picrite basalt intrusives and the youngest Cherry Creek intrusives approach each other towards the southern tip of the batholith and probably intersect. At the northern end of the batholith these rocks are again approaching each other in the general vicinity of the Afton Mines and in addition the Sugar loaf intrusions coalesce with them. These latter have only been found along the southwestern margin of the batholith and so could be present under overburden at the southern tip.

RECOMMENDATIONS FOR FURTHER WORK

On the basis of a theory that concentrations of mineralization are the end product of repeated mobilizations and differentiations of both rock and metallic minerals, the place to look for a commercial concentration of mineral is where there is a complexity of intrusive rock types with obvious hydrothermal alterations and favorable structures such as contacts and intersecting fault zones as shown at the south point of the batholith on map 13 of the 1967 MMR. The subsurface contact between the intrusive rocks and the Nicola Cache Creek Rocks could be particularly interesting.

In their report of August 6, 1969 attached hereto, Pasieka and Prendergast recommended on page 11 that further exploration work should be done in the area lying between the Joker Adit and the Grey Mask shaft.

Two holes P_8 and P_9 the last of a series of holes drilled in the spring of 1969 showed mineralization of interest as indicated on page 9 of the above report. As far as can be determined from information provided no further work has been done in that area.

The writer would recommend that this mineralization, particularly that found in P_9, should be further checked by low cost percussion drilling. The location of holes should be determined in the field, having in mind the importance of cross structures thought to occur here, particularly in the

vicinity of the younger intrusives, ie Cherry Creek Intrusives which are mapped as occurring in this area. The work should be supervised by an engineer familiar with the previous work if possible.

It is believed that geochemistry and geophysics so far done on the property may not all be thoroughly reliable because of the apparent presence of glacial till in the deeper overburden of the valleys and because some of it was done under very adverse weather conditions. It is also believed that hot extractive methods would have been more reliable than the cold methods used. At least hot extraction should have been used to check the cold methods in part of the area.

It is therefore recommended that a preliminary program of percussion drilling be done in the areas of potential interest indicated by Pasieka and Prendergast. In addition to seeking copper mineralization this drilling would provide information on the nature of the overburden and the upper portion of the bedrock. A study of this information and whatever information of value that may be available from past work, having due regard to the presence of alteration and its relation to mineralization and noting the effects of glacial till on the geochemistry, should provide some useful guides for the locating of diamond drill holes for deep penetration of favorable structures in a later stage of exploration. The proposed expenditures are tabulated below.

SUMMARY REPORT

ON

PROPERTY

OF

PINNACLE MINES LIMITED NPL

A, C, CLE, PIN, & ART CLAIMS

KNUTSFORD AREA

KAMLOOPS MINING DIVISION

PROVINCE OF BRITISH COLUMBIA

PROPERTY

The property consists of some sixty-two contiguous located mineral claims as follows:

A1 - 4 incl.	47777 - 47780
5A - 8A incl.	56758 - 56761
A9 - 12 incl.	47785 - 47788
A13-16 incl.	48071 - 48074
C1 - 3 incl.	47789 - 47791
C4-18 incl.	47955 - 47969
CLE1-10 incl.	47792 - 47801
PIN 1 Fr.	71608
PIN 2 Fr.	71609
PIN 3	71610
PIN 4	71611
PIN 5 Fr.	71612
PIN 6 Fr.	71613
PIN 7 Fr.	71619
PIN 8 - 12 incl.	71614 - 71618
ART 1 - 6 Fr. incl.	No record numbers available

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The above located mineral claims are recorded in the Mine Recorder's Office in the city of Kamloops, Kamloops Mining Division, Province of British Columbia.

LOCATION AND ACCESS

The property is situate some five miles south of the village of Knutsford and eight miles south-south-west of the City of Kamloops, B.C. The property lies within the one degree area of the south-east quadrant whose co-ordinates are 50°, 120° N.E. Number 5 Highway traverses the east margin of the property and extends to Merritt some 45 miles to the south. Under normal conditions access is available to all parts of the property with conventional vehicles using several branch roads. Further, the Edith Lake Road traverses the west margin of the property. The City of Kamloops and surrounding area is serviced by P.W.A., C.N.R., C.P.R., and the Trans-Canada Highway.

TOPOGRAPHY AND VEGETATION

The surface of the area presented by the property is that of roughly rolling range-land of low to moderate relief with the hills well-rounded by glaciation. The south east slopes of "Les Roches Moutonees" may be somewhat precipitous. In general, the presence of exposed bedrock surface for geological observation is sparse; the overburden, mainly glacial detritus material, is extensive. Approximately fourty per cent of the area is forest covered, i.e. pine, and spruce with lesser poplar and alder scrub. The open areas support

various grasses and sage-brush to qualify as grazing land and with minor areas under active cultivation of feed crops. Several ponds and sloughs of both permanent and intermittent nature occur on the property and would provide sufficient water for drilling purposes. Elevations range from 2600' to 3500' above sea level.

HISTORY

The area of the property under discussion has been subjected to sporadic mineral exploration since the latter part of the 19th century. Earlier efforts were directed towards the search for gold in quartz veins. Somewhat later efforts prior to 1930 were directed towards the discovery of high grade copper bearing structures as indicated by the numerous exploration pits and trenches.

Such a situation was developed on the Kamloops Copper Consolidated Property where some thousands of tons of high-grade copper ore were mined and milled. Since 1950 several nearby properties lying within the Iron Mask Batholith have developed nominal tonnages of ore grade material, i.e. Cominco Limited, Ajax Property, 10 million tons of 0.5% Copper; Makao Development Limited, 250,000 tons of 2% Copper. Further exploration programs of several other properties in the immediate area have indicated individual sections in drill holes obviously of ore grade.

The area of the property between the Joker adit and Separation Lake has been subjected to sporadic exploration since 1950. In 1955 Commercial Minerals Limited conducted a program of some 5,500' of diamond drilling and minor bulldozer stripping in the vicinity of

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the Joker adit. Several sections of significant mineralizations were indicated. Later this area was subjected to some geophysical surveying, however the results are not available. In the autumn of 1966, Pinnacle Mines Limited, NPL, acquired the property and conducted a magnetic and induced polarization survey over the central portion of the property and carried out some 1200' of drilling. During the summer of 1968, a geochemical soil sampling programme was conducted over the entire property. During the months of August and September the property was geologically mapped on a scale of 1" to 200' and the final map reduced to a scale of 1" to 500'. In December an induced polarization survey over selected areas of the property was carried out. Extreme weather in the area precluded completion of the i.p. survey at that time. The Induced Polarization program previously outlined was completed in the month of May, 1969.

Commencing in February, 1969 a diamond drilling program to the extent of 3,640' was carried out. Some 8 holes were drilled, investigating various geophysical anomalies and surface showings. The results of this drilling are summarized in a later section.

During the month of May an H.D. 25 bulldozer with hydraulically controlled rippers was contracted for from Bond Construction Limited of Kamloops. A trench of the order of 850' in length and some 22' wide with an average depth of 15' was excavated along the bluff running at right angles to the Joker adit. The purpose of the excavation was to more fully expose mineralization observed in the Joker adit and in nearby drill holes.

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DISCUSSION OF RESULTS

Induced Polarization - the Induced Polarization terminated in 1968 due to adverse weather conditions was initiated again in April of 1969. The anomalous conditions termed A,B, and C as described in a summary report by Mr. J. B. Prendergast, January 30, 1969, were further delineated and the area originally covered in this survey expanded to the north and additional coverage was added to the central portion of the property. Anomaly A, centering about the point 62 W on Line 88 North was investigated on the ground. The axis of the anomaly follows a local shear zone with disseminated to massive stringers of pyrite with minimal amounts of chalcopyrite in a shear zone. This ground evidence would justify the extent and intensity of the induced polarization survey however, the mineral occurrence is worthy of further investigation by means of bulldozer trenching in order to more fully delimit the extent of mineralization observed.

Anomaly B, was subjected to sub-surface investigation by means of diamond drilling. Two holes were drilled sectioning the axes of the induced polarization anomaly and revealed a shear zone containing pyrite, both disseminated and as narrow massive veinlets, along with minimal chalcopyrite mineralization. No further work is planned at this location for the moment.

Anomaly C. The southern limit of this anomaly was sectioned by means of a diamond drill hole and revealed a fault structure with associated pyrite and magnetite mineralization. Additional induced polarization surveying to the northwest indicated a substantial area of extremely high chargeability. Subsequent ground investigation

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revealed that the extreme chargeability was due primarily to an underground water system in use by the Shannon Ranch. Further, this buried water system is also used as a ground for the electrification of the Ranch. Sufficient information is available to preclude any further investigation of this induced polarization anomaly.

Anomaly D, has proven to be caused in major part by a similar underground irrigation and water system using metallic conduit.

Anomaly E, commencing at a point 12 W on line 9S North occurs as an anomaly of moderate intensity striking in a northeasterly direction. The axis of this anomaly is coincident with the diorite-peridotite contact. Old workings along this contact have revealed mineralization in the form of massive streaks and blebs of specular hematite and chalcopyrite. Three short diamond drill holes were drilled along this contact and revealed mineralization in the form of weakly disseminated native copper, chalcopyrite, accompanied by massive lenses and disseminated halos of pyrite and specular hematite. No mineralized sections of economic significance were revealed in this series of three holes.

BULLDOZER TRENCHING

In the latter part of May and first part of June, a bulldozer trench of some 850' in length was excavated in the area of the Joker adit. In the immediate vicinity of the adit, one edge of the lenticular body was exposed over an average depth of 13.6'. Along a length of 340' in this vicinity channel samples revealed average copper values of 0.47%.

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Mineralization observed was primarily in the form of malachite and azurite with minimal chalcopyrite. Immediately below the Joker adit was observed native copper in the form of linings of fracture-faces and shear-faces. It would appear that the best values resulting from the presence of native copper are in immediate proximity to the diorite-peridotite contact.

DIAMOND DRILLING

The diamond drilling program carried on in 1969 prior to June 20th entailed some 3,648' of B.Q. and N.Q. Core drilling. Eight holes were completed and the results thereof described as follows:

Hole No. P2 was collared at 90+00N 58+00 West drilling at -45° in an easterly direction. The purpose of the hole was to determine the causative factors of an induced polarization anomaly. Various facies of diorite, microdiorite and cherry creek breccia were encountered containing frequent lenses of disseminated pyrite as well as several shear zones containing pyrite and minor chalcopyrite. A shear zone commencing at 145' over a width of 5' contained chalcopyrite mineralization of economic significance, i.e. 0.50% copper. It would appear then that the induced polarization anomaly would owe its origin to the abundant presence of disseminated and massive lenses of pyrite.

Hole P3 collared at 88+00 N 58+00 W with a similar azimuth and declination to hole P2 was drilled to a depth of 745.6'. Mineralogy and mineralization were similar to that encountered in hole P2 with only minimal short sections of copper mineralization indicated, i.e. 551.6'to 554.4' yielding values of 0.50% copper.

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Hole P4, collared at 92+00N 35+00W was drilled due west at -45°. The purpose of the hole was to investigate a induced polarization anomaly of moderate to strong intensity. To a depth of 525' various facies of diorite were sectioned. No significant copper values were encountered, however an abundance of minor sheared and brecciated zones containing disseminated to massive pyrite offered a plausible explanation for the induced polarization anomaly.

Hole P5 was collared at 102+08 N, 9+98 W and drilled in a westerly direction at-45° in an attempt to section at depth mineralization observed in an old exploration pit, i.e. the Grey Mask Shaft. The hole sectioned several diorite-peridotite contacts which probably represent the transition zone resulting during the forceful intrusion of the peridotite dyke. Mineralization encountered included disseminated to massive pyrite and specular hematite as well as minor disseminated chalcopyrite and native copper. In spite of the apparent abundance of sulphide mineralization, the only section of economic significance was the section 116.2 to 117.8 which yielded 0.42% copper in the form of native copper and chalcopyrite.

Hole P6, drilled to a depth of 355.7' at a declination of -45° in a south-easterly direction, was collared at 108+00N 5+27W. The purpose of the hole was to investigate an induced polarization anomaly of moderate chargeability thought to be associated with the peridotite-diorite contact. The hole was collared in diorite and sectioned the diorite-peridotite contact. Mineralization encountered in the hole included massive blebs of specular hematite and pyrite

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as well as minimal amounts of chalcopyrite and native copper. No mineralized sections containing cupriferous mineralization of economic significance were encountered.

Hole P7A, is a vertical hole collared at 104+72 N 5+81 W and drilled to a depth of 425'. The hole was contained in a transition zone between diorite and peridotite. Several sections of interesting cupriferous mineralization were encountered of the order of .1 to .12% copper consisting of disseminated chalcopyrite, however, no sections of economic significance were indicated.

Hole P8, collared at 82+96 N 17+25 W drilled at a declination of 60° in a south westerly direction was drilled to a depth of 400'. The purpose of the hole was to intersect at depth mineralization observed in the trench in the immediate vicinity of the Joker adit. The hole was cased in diorite, transected the peridotite dyke occuring along the creek valley and re-entered diorite. The transition zone between the peridotite and diorite yielded an 8.8' section running 0.49% Copper at a depth of 100-108.8'. This mineralization was in the form of disseminated chalcopyrite.

Hole P9, collared at 80+39 N 19+79W was drilled at a declination of -45° and in opposition to hole No. P8. A unique situation occurs here in that the fault zone at the point of intersection of this drill hole contained no peridotite. This fault zone from a depth of 101' to 124.4' yielded a 23.4' section of 1.41% Copper. These values are derived primarily from the presence of disseminated native copper lying along and lining the shear planes of the fault zone.

CONCLUSIONS

The areas of abnormal chargeability as indicated by the I.P. induced polarization survey designated A, B, C, and D have been investigated either by surface observation or diamond drilling. These anomalies owe their origin either to pyrite mineralization or to man-made structures and no further work in these immediate areas is anticipated. The area designated E would appear to bear a relationship in space to the mineralized structures known to exist in the area of the Joker adit. A topographic depression connecting these two areas suggests that the fault structures indicated in these two areas are indeed one and the same. Mineralization encountered in diamond drill holes no. P9 and the surface mineralization sampled in the trench area is obviously of ore grade and of great economic significance. Any further work carried out on the property should primarily be concentrated in this area. Efforts should be directed to extending the exposure of mineralization and sampling same in order to arrive at a more complete evaluation.

In addition, disseminated chalcopyrite mineralization has been observed in the area 8+00 N 16+00 W. The exposure of this mineralization is very limited and further investigation by means of bulldozer trenching would be in order.

The area immediately to the east of the Joker adit has been drilled in part by Commercial Minerals. Results of this drilling program are incomplete, however, results available indicate a tonnage of some 75,000 tons grading 0.6% copper available for extraction. This

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mineralized body should be completely delineated so that an economic assessment of the occurrence may be arrived at.

RECOMMENDATIONS

In view of the encouraging results of the drilling and trenching program in the vicinity of the Joker adit area, it is recommended that the mineralized zone be fully delineated by a continuation of the program, i.e. drilling and trenching. Further exploration efforts should be applied to the area lying between the Joker Adit and the Grey Mask area since the two areas are thought to be related in their occurrence along a common linear structural feature.

The extent of the mineralization observed to occur in the immediate proximity to line 8+00 N 16+00 W should be delimited by bulldozer stripping and investigated at depth by means of diamond drilling if necessary. The results of the exploration program recently completed dictate that the program be continued in order to completely delineate the indicated mineralized structures. Such a program would include the following phases.

A. Diamond Drilling - 4000' of B.Q. Diamond drilling to completely delineate the mineralized structure in the vicinity of the Joker adit and to investigate at depth the occurrence of disseminated chalcopyrite mineralization near the south margin of the property.

B. Bulldozer Stripping - 300 hours with a machine of the capacity of an HD 20 with hydraulically controlled rippers in order to investigate the occurrence of

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chalcopyrite mineralization near the south margin of the property and to test the surface exposures of the structure lying between the Joker adit and the Grey Mask shaft.

Such a program would entail the following estimated expenditures:

A.	Diamond Drilling 4000' of B.Q. Wireline Core drilling at $11.50 / foot.	$46,000.00
B.	Bulldozer Stripping 300 hours with HD 25 at $35.00 per hour.	10,500.00
C.	Engineering Supervision and Consulting.	5,000.00
D.	Sampling and Assaying.	4,800.00
E.	Contingency @ 15%	9,945.00
	Total:	$76,245.00

Respectfully submitted,

VELOCITY SURVEYS LIMITED
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J. B. Prendergast, M.A., P.Eng.

Aug 6/69