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DONALDSON SECURITIES LTD.

PRELIMINARY ASSESSMENT

MOUNT SICKER PROPERTY.

VICTORIA MINING DIVISION

MAY, 1969

W. M. SYMES.

TEL.: BUS. 682-4144
RES.: 987-9520

WILLIAM M. SHARP, P. ENG.
CONSULTING GEOLOGICAL ENGINEER

ROOM 1. 425 HOWE STREET
VANCOUVER 1. B.C.

May 1, 1969

Donaldson Securities Ltd.,
Suite 101-535 Thurlow Street,
Vancouver 5, B. C.

Dear Sirs:

With this the undersigned writer submits his report: 'PRELIMINARY ASSESSMENT OF ORE POTENTIAL & RECENT EXPLORATION AT THE MOUNT SICKER MINES LTD. PROPERTY, MOUNT SICKER, B. C., VICTORIA MINING DIVISION' as requested and authorized by Dr. Jerome.

Respectfully submitted,

W. M. Sharp

W. M. Sharp, P. Eng.

WMS/LA

I N D E X

ACCOMPANYING DRAWINGS:

Drawing No. 1 -	Longitudinal Vertical Section & Plan,	1" = 100'
Drawing No. 2 -	E.M.16 & Topographic Profiles & Geochemical Checks,	1" = 100' & 10°
Drawing No. 3 -	Geological-Assay Plan, Lenora West Underground & Surface,	1" = 40'

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May 1, 1969

PRELIMINARY ASSESSMENT OF ORE POTENTIAL & RECENT EXPLORATION AT THE MOUNT SICKER MINES LTD. PROPERTY, MT. SICKER, B. C., VICTORIA MINING DIVISION

PRELIMINARY:

The writer's examination was accomplished during the period April 14 - 16, 1969; the necessary field guidance and assistance were provided by Mr. J.E. Brooks - interim resident caretaker at the property.

The following text is essentially based on 1967-68 exploration data and background information furnished by Messrs. E.P. Sheppard, P. Eng. - Consultant to Mount Sicker Mines Ltd., T. Tough - associate geologist, and C.B. Field - President of Mount Sicker Mines Ltd. (N.P.L.), Victoria, B.C. Information from these sources comprised: Mr. Sheppard's March 25, 1968 formal report; miscellaneous earlier maps, sections, reports, and correspondence; and verbal explanations and opinions. The writer supplemented the foregoing with general information from Provincial mining reports. The most serious deficiency in the Company's records is the sparsity of general underground and diamond drill sample data relating to earlier mining and exploration operations. The writer was informed that, to this date at least, the Company's and Consultant's considerable efforts to obtain this information have been unsuccessful. However, as earlier exploration was principally directed to a search for extensions of the then-mineable 'North' and 'South' orebodies it is highly unlikely that the old records would contain significant amounts of information relating to subordinate mineral occurrences within the broad, intervening schist panel.

The writer's field investigations included

(a) close-spaced soil sampling, detailed profiling, and geological mapping of outcrops over sections of grid

lines containing more important V.L.f.-E.M. anomalies ('cross-overs');

(b) geological mapping of trench, and accessible tunnel exposures of the principal mine panel - essentially restricted to the west end of the Lenora mine section;

(c) sampling of representative sections within the general mine panel;

(d) general inspection of surface exposures within the Lenora-Tyee interval of the mine panel;

(e) check sampling of disseminated pyritic mineralization near the 'Little Nugget' south boundary - exposed during construction of a new access road, and previously estimated, by the Company's consultants, to average at least 0.5% copper over the 70-foot exposed width.

The prevailing snow cover permitted only a superficial examination of 'main-zone' exposures within the west end of the Tyee-Richard III interval. The writer did not consider it worthwhile to visit the 'Patriarche option' as there are, reportedly, no actual showings to examine, and as the reported geochemical (soil) anomalies are based only on the owner's heavy-metal (zinc-predominant) field surveys.

The writer briefly inspected the Company's field office map-file, and incorporated relevant details of the Lenora workings in his field sketches.

SUMMARY & RECOMMENDATIONS:

The Mount Sicker Cu-Zn-Au-Ag-Pb mineralization was discovered in 1897. Orebodies occur as banded, to massive (replacements) of flatly-pitching drag-folds at both margins of a 100 - 150 foot wide panel of relatively plastic bedded tuffs and graphitic, to ~~talcose~~ schists occurring within a general lithologic section comprising diorite, ~~andesite~~ porphyry, and rhyolite porphyry. The 'mine' panel strikes easterly and dips steeply southward; it has a known strike-length of over 2,100 feet.

The respective parallel, composite ore zones have been designated as the 'North' and 'South' orebodies; the latter has accounted for the bulk of production to date; this amounting to 305,787 tons averaging Au, 0.127 oz/ton; Ag, 2.75 oz/ton; Cu, 3.3%; Zn, plus 5%; Pb, under 1% - all mainly extracted by underground methods. The North orebody

averages 10 ft., in width and 120 ft. in depth; its southerly counterpart has corresponding dimensions of 20 and 150 feet. Future ore potential hinges largely on the possibility that similar strike-attenuated fold structures will occur, repetitively, down-dip.

The writer's sampling disclosed no significant mineralization within central and outward parts of the mine panel - at least within the solely accessible Lenora (west) end of the zone; perhaps more central intervals of the panel, including the reportedly mineralized through-going central fracture zone are more appreciably mineralized (and less thoroughly leached).

Note Lenora X-C offsets wide bulge (squeeze) in graphitic schist band.

From the (sparse) available data the writer estimates an over-all realizable value of $5.00 per ton, or less for the ~~general~~ mine panel, including the North and South ore zones - a marginally mineable grade.

and intervening graphitic talcose schists.

Several self-potential anomalies, suggesting easterly extensions of the main zone, resulted from a 1940 survey. These have been very locally explored by trenching - disclosing local occurrences of dispersed pyrite and very minor Cu-Zn mineralization. From the frequency and sub-parallel arrangement of the S.P. anomalies the writer is inclined to relate the bulk of them to formational pyrite, graphite, wet fractures, or random natural phenomena other than ore zones. However 1969-70 indicates significant Cu-Zn potential within both composite geochem - EM-16 anom. areas on east end

The 1968 V.L.F.-E.M. survey delineates at least three important conductive zones within the general Tyee-Lenora mine area. However, as the survey, and resulting interpretations, do not allow for topographic influences, close proximity to the (Seattle) transmitter, or possible geologic causes - such as conductive fractures, graphitic zones, etc., the writer regards the results as generally non-specific. The writer's soil-sample checks appear to be too localized to assist in the evaluation of the various E.M. cross-overs.

The writer suggests that considerable more preliminary and check exploration is required prior to a full-scale drill program; however, he admits that one or more preliminary 'fans' of holes are basically requisite to even a preliminary evaluation of the principal mine panel.

W. M. Sharp.

GENERAL HISTORY:

The Company's owned and optioned mineral claims respectively aggregate some 800 and 2,540 acres; all are situated on the northerly (Chemainus River) slope of Mt. Sicker, and in the Victoria Mining Division.

The property lies at about five air-miles due north of Duncan, B.C. It is accessible from the main Island Highway via eight miles of secondary road - pending current re-locations.

Electric power for the camp and continued leach-extraction experimental work are provided by a diesel-driven A.C. generator. The camp is adequate for purposes of general exploration.

Gossan outcrops of the Tyee-Lenora south orebodies after exposure by forest fire were discovered in 1897. Underground exploration of the separately-owned Tyee and Lenora claims was initiated in 1897, 1898 respectively. An amalgamation of the separate interests was made in 1900, resulting in the Lenora-Mount Sicker Mining Company. In 1926 the properties were taken over by Ladysmith Tidewater Smelters Ltd., continuing development and mining operations until 1929. Sheep Creek Mines Ltd. optioned the Tyee, Lenora, and Richard III properties during 1939-40 and accomplished some underground development and diamond drill exploration (no records available). Between 1942-47 the mine was operated by Twin-J Mines Ltd., who produced copper and zinc concentrates for Wartime Metals Corp. during 1942-44, and for open-market sale during 1946-47. Vancouver Island Base Metals, Ltd. explored and operated the property between 1949-52.

Include P(s) detailing undeveloped ore discoveries.

The present group became interested in the property in 1964, during which year they mined and shipped surface ore to Tacoma; subsequently, Mount Sicker Mines Ltd. was formed to expedite renewed exploration. In 1967 this Company engaged Bio-Metals Corp. Ltd. to investigate the feasibility of leach extraction of copper from the main ore zone and dumps; the results of heap-leaching trials to date do not indicate this to be a practical or profitable extractive process.

During 1967 E.P. Sheppard & Associates Ltd. geologically mapped the mine surface and adjacent areas.

Start

During 1968 magnetometer and V.L.F. electromagnetic surveys were carried out by Geotronics Surveys of Burnaby, B.C.;

in the same season the Company cross-trenched the general mine panel in the vicinity of the Lenora no's. 1 and 2 portals, and also a strike interval of the South zone above no. 1 adit.

PRODUCTION SUMMARY:

	Tons	Au, oz/ton	Ag, oz/ton	Cu. %	Zn. %	Pb. %
South Orebody:						
Lenora (1898-1907)	78,983	0.132	3.5	3.75	No record	No record
Tyee (1901-1909)	168,290	0.145	2.6	3.8	" "	" "
Richard III (1903-1907)	5,405	0.136	3.1	2.3	" "	" "
Sub-total	252,678	0.140	2.9	3.76	(?)	(?)
North Orebody:						
Twin-J (1943-44)	34,893	0.075	2.05	1.32	6.12	0.60
Twin-J (1947)	8,295	0.061	1.91	1.05	3.23	No record
V.I. Base Metals (1951-52)	9,754	0.032	1.59	0.44	3.66	0.44
Present principals (1964)	167	0.100	2.26	3.04	No record	No record
Sub-total	53,109	0.065	1.94	1.10	5.2	(0.6)
Total	305,787	0.127	2.75	3.3	(voided)	(voided)

Approximate gross value @ 1969 metal prices = $45 per ton

The ore has been described as a very fine-grained mixture of pyrite, chalcopyrite, and sphalerite (marmatitic variety). Gangue minerals comprise quartz, chert, barite, calcite; included wall-rock material consists of grephitic, sericitic, and talcose schists. In view of the general, dense ore texture and mineral composition, the writer supposes that past operators found it difficult to produce economically-suitable grades of concentrate for the general market; on the basis of the apparently complex ore metallurgy, the writer further assumes that the current realizeable value of the past production, after flotation concentration, would be about $30 per ton. — better w/ fine ground + selected reagents

CURRENT ORE ASSESSMENTS:

Measurements on Dwg. No. 1 show that the projected areas of:

(a) 'South' zone stopes is 135,000 sq. ft.

(b) 'North' zone stopes is 51,000 sq. ft.

From this, and the recorded tons of ore produced, the respective average thicknesses are:

(a) South zone 20 ft.

(b) North zone 10 ft.

The average gross width of the N-S productive zone is 150 ft. Of this roughly 30 feet is valued (net) at $30 per ton. Assuming that 10% of the remaining 120 ft. comprises mineralization of equivalent grade, and that tonnage factors of ore and schist, respectively, are 10 and 12.5 c.f./ton, the bulked-value of the section is computed:

42' x $30	126 ft. - $
108' x 0	0 "
150'	126 ft. - $; average = $0.84 per cross sect.-ft.

Weighted average = ~~11.8~~ 12.0 x 0.84 = ~~$9.90~~ 10.08 per ton, realizeable value.

Also, as it is doubtful if the drag-fold orebodies would occur with a frequency approaching one-half of the gross mineable vertical range of the zone, the average grade of bulk-mined material would be $5 per ton, or less. In the writer's opinion this would represent a marginally mineable grade.

In his ore calculations (p.8) Mr. Sheppard infers a 'combined' width of 50 feet, including peripherally-dispersed mineralization; however, he does not suggest how he would treat the intervening, sparsely mineralized schists with reference to tonnage-grade calculations or mining (cost) estimates.

From the foregoing, it is apparent that factually-based estimates of either ore reserves or mining costs are currently precluded by reason of the lack of geological, and assay data over potentially-mineable widths and depths of individual, or composite mineral zones.

GEOLOGY & MINERALIZATION:

The mine area is underlain by a series of cherty tuffs, graphitic schists, andesites, quartz feldspar porphyry, and diorite.

Cherty tuffs and graphitic schist together form a band 100 to 150 feet wide that extends through the mine workings for at least 2,100 feet, and possibly more. The general strike and dip of this band are N 70° W and 70° south, respectively.

Orebodies occur as more-or-less massive, banded replacements of sections of intensely (drag) folded ~~cherty~~ ~~tuff~~ and related graphitic schist.

All previously-mined orebodies lay within the separate 'North', and 'South' zones; these are generally parallel to the above-noted formational trend, lie some 150 feet apart, and are separated by an intensely sheared, crenulated, and folded panel of graphitic, cherty, and talcose schists. The ore minerals comprise intimate mixtures of iron, copper, zinc, and lead sulphides.

The composite North orebody has strike and dip dimensions of 1,700 and 120 feet respectively; it varies from one to ten feet, and more, in thickness. The composite South orebody has corresponding dimensions of 2,100, 150, and 20 feet respectively. By reason of thrust and lateral displacement on an intervening major fault zone, it lies some 150 feet higher in the vertical section than its northerly counterpart. Other (formational) faults bound the general zone.

Two ore types occur. The 'barite' ore consists of a fine-grained mixture of pyrite, chalcopyrite, zinc blende, and sparse galena in a gangue of barite, quartz, and calcite. 'Quartz' ore, occurring as lenticular masses replacing barite ore or the schists, consists mainly of chalcopyrite and subordinate pyrite, with scant, to trace amounts of sphalerite and galena.

Both ore zones ~~are probably~~ part of one general synclinal fold; hence, mineralization may be expected to 'bottom' at some finite distance below 3-level horizon.

All of the available data, comprising the results of old sampling of the Lenora North zone on No. 2 level and the writer's recent sampling of the accessible parts of the Lenora No. 2 portal crosscut and the few Lenora surface exposures, are shown on Drawing No. 3. The underground assays more-or-less conform with reported mined grade; however, widths are significantly, in general, less than the reported (and computed) 10-foot average. Probably the ore sections sampled relate to narrower elements of the general North drag-fold.

The writer's sampling and visual estimations of the No. 2 crosscut mineralization indicate, at least locally, that the panel of mixed schists separating the principal mineral zones is negligibly, to very sparsely mineralized; however, it must be admitted that severe leaching - evident in those surface and underground exposures sampled by the

writer, could have markedly reduced the original mineral content of rocks adjacent to the North and South zones. On the other hand, the graphitic schists appear fundamentally barren or, if anything, sparsely mineralized ~~only~~ by reason of late additions of secondary copper and zinc minerals. Assays from surface samples also indicate relatively unimportant mineralization of the intervening schist panel. But note graphite pod narrows to few 10's of Ft or pinches out over most of strike extent of main panel.

The writer's sole check sample of reported mineralization distinct from the main ore zone was taken on a pyritic shear zone traversing the southerly boundary of the Little Nugget claim; this assayed 0.10% copper across the exposed 56' section, or markedly lower than the reported 70' of at least 0.5% copper visually estimated by Mr. Sheppard and/or his associates.

EVALUATION OF GEOPHYSICAL DATA:

1. Self-Potential Survey:

These were made in 1940 and were carried out to define possible extensions of the ore zones into the Richard III ground. A number of more-or-less-parallel anomalies were delineated. Trenching on two of these has disclosed significant amounts of pyrite with minor amounts of zinc and copper. The larger proportion of the anomalies is untested.

In general, S.P. indications can be misleading in that they result from numerous natural phenomena; many of these are unrelated to actual sulphide mineralization. Trenching would provide an adequate preliminary evaluation of the bulk of the inferred 'sulphide targets'. also largely less to depth of water table.

2. V.L.F.-E.M. Survey:

This was performed over the central 28 claims of the total property. The writer field-checked 5 lines covering the Lenore-Tyee interval, and including and extending northward of the general ore zone. The survey, by Geotronics Surveys, comprised only station-by-station measurement of dip angles which were assumed to be entirely relevant to the local inclination of the 'horizontal' or magnetic component of the V.L.F. field. Normally, precise interpretation of V.L.F.-E.M. surveys in mountainous regions such as Mt. Sicker incorporate the local topographic dip-angle; in this instance this was not done. Note Barringer uses 'Fraser filter' technique - see geophys. file.

The writer has plotted the Geotronics V.L.F. profiles for sections 4E to 12W, inclusive. In addition, the topographic

dip-profile has been deduced from the available topographic maps and his own measurements. The writer infers that the V.L.F. profile is non-specific where it generally conforms to the topographic profile; where it is obviously unconformable with the topographic profile, and is marked by steep, vertically extensive cross-overs, it should be fairly specific. However, the survey does not differentiate between 'geological' and 'mineral' conductors, so is generally non-specific in this regard. The writer suspects that graphitic zones and/or wide, wet fracture zones are responsible for some of the stronger anomalies.

The writer's geochemical soil-sampling within V.L.F. -anomalous line-sections does not provide clear evidence of greater Cu-Zn mineralization within these particular zones; however, the apparent lack of real geochemical contrast may be due, in part, to the rather restricted check-sample coverage.

Geophysical opinion is somewhat divided with regard to the validity of interpretations based on readings taken within localities situated relatively near the V.L.F. transmitter. As the Mt. Sicker area is relatively close to the Jim Creek Seattle source the Geotronics interpretation could, for this reason only, be very much in doubt.

In consideration of all of the foregoing ambiguities the writer is not inclined to accept the current V.L.F. survey results without further independent geophysical check-work. In any case factual assessment of at least representative sets of each type of anomaly-geophysical and/or geochemical-should be based on direct exposure by trenching and, possibly, follow-up (shallow-to-deep) drill exploration.

In conclusion, it appears that at least a limited program of 'wildcat' drilling will be mandatory for a preliminary assessment of the actual ore potential of Mr. Sheppard's prime target. However, the writer doubts that the target warrants much more than a single fan of holes (1,500 lin. ft.) on one selected cross-section, and which would be completed only if adequate core recoveries were made on the initial hole.

Respectfully submitted,

W. M. Sharp

W. M. Sharp, P. Eng.

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