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File Silmonac – Kamkotia Burkam J.V.

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Attached: "Summary of Exploration meeting," Aug. 24/72. Wm. Hogg.

September 11, 1972

Management Committee,
Kam-Kotia-Burkam Joint Venture,

Gentlemen:

INTERIM REPORT NO. 72-3
RE EXPLORATION - DEVELOPMENT PROGRAM

General

The following summaries relate to my August 21-25, 1972 visit to the operation - this, fortunately more-or-less coinciding with visits by Messrs. Walkey and Buller. This joint attendance of a majority of the management and geological personnel directly concerned with the project resulted in several lively and informative discussions of the various geological and operational aspects of current and proposed exploration. Some of the opinions advanced and decisions reached, which are admittedly only tentative, or subject to change as the program develops, are included with this report.

In this report I have attempted an interpretation of the mine geology - submitted with the hope that it will explain some current theories concerning ore controls, and the underlying reasoning on which some of the current recommendations are based. Hopefully, it will also promote critical discussions of this particular geological approach to the exploration problem.

Summary - Personal Field & Office Work

Aug. 21: Review exploration with Mr. Hogg - particularly the results of diamond drilling from 4690 W Lateral and of advance in 4625 #2 x-cut; discuss geological aspects of mapping and core-logging with Messrs. Redshaw and Olson; commence up-dating personal set of 20-scale mine maps.

Aug. 22: Inspect current exploration headings and drill cores with Messrs. Hogg, Redshaw, and Olson, and discuss geological details. Discuss mine geology and exploration with Mr. Buller.

Aug. 23: Inspect 4690 and 4855 W. Lat. drill cores with Mr. Buller and check-log d.d.h. K-125. Make detailed inspection of 4625 #2 x-cut with Messrs. Buller, Hogg, Redshaw, and Olson. Participate in office discussions re layouts for initial drill-exploration from 4625 #2 x-c; continue additions and revisions to 20- and 100-scale maps, with attendant discussions.

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Aug. 24: With Mr. Buller on check-logging d.d. holes K-124, -133, -135, with particular attention to significant changes in lithology and/or core-to-bedding angles (re indirect evidence of intersection of lode elements).

Participate, with Messrs. Walkey, Buller, and Hogg, in detailed discussions on mine geology, possible ore controls, and proposed exploration of the lode within and beyond the general mine locality.

Continue 20/100 scale revisions and additions with supplementary drill-hole plotting.

Aug. 25: With Messrs. Hogg and Buller re detailing exploration layouts and schedules.

Investigate, with Messrs. Redshaw and Olson, feasibility of exploring Jennie Ridge-Evening Basin lode interval via long-hole core drilling from a surface site in the easterly part of the basin.

Sept. 1: Study E.B. Mayo 1951 report, with local additions of relevant detail to 100-scale plan.

Sept. 7: Up-date 20-scale x-secs via plots of original log and check-log data; transfer 20-scale geological and advance detail to 100-scale plan.

Sept. 8: Continue Sept. 7 detail.

Sept. 10 - 11: Complete above; plot lode contours, incl. revisions on 20- and 100-scale plans.

Current Geological Interpretations & Concepts

At present, the mine "footwall section" is much better exposed and understood than the corresponding "hangingwall section". As a result, there has been a general tendency to base geological assessments of ore potential rather too exclusively on apparent footwall-to-lode relationships, and thus overlook possibly more significant hangingwall-to-lode relationships. Foreequally

(a) Footwall Section: Rocks in the footwall of the mine lode are principally argillites, quartzites, and gradational varieties of these. A pervasive alteration, which produces massive siliceous, to banded siliceous-silicate assemblages is most evident in rocks relatively near to the lode, but particularly so in the vicinity of the larger granitic-to-dioritic ('porphyry') bodies. Most of the footwall section, excepting that part of it which is penetrated by the easterly 600 feet of 4755 E. Lateral, comprises medium to thickly bedded or layered brittle argillites and quartzites.

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In E-W vertical section bedding, going downward through the section, rolls from easterly to westerly dips at about the 5050' ('Queen Bess' fold axis) horizon. Between the 5050' and 4800'(?) horizons the general section appears to dip flatly westward. Below the 4800' horizon bedding dips are predominantly westward, but with frequent pronounced ('west-panel drag') reversals to easterly dips to, and through the 4625' horizon. Below this, the bedding section is essentially west-dipping to about the 4000' ('Payne' fold) horizon - with local exceptions occuring within regions of the Payne axis which are confused by multiple overturning, flat-slicing, or are locally distorted by massive intrusions of porphyry or diorite.

The most distinctive and influential element of the footwall section is the steeply dipping (or plunging) section of porphyry and quartzite penetrated by, but lying largely to the east of the (N-S vertical plane through) 4625 crosscut. This comprises the 'central footwall buttress' over which a temporary but significant southerly deflection of the lode-strike occurs.

(b) Hangingwall Section: The writer suspects that, beyond the 'productive' and 'potentially productive' intervals or areas of the lode, the general pattern of (displaced) hangingwall bedding structures is roughly similar to those occurring within the footwall section. However, within the productive, or substantially mineralized area of the mine lode evidence provided by a number of widely separated openings suggests a condition of general conformity of lode and hangingwall bedding attitudes. In regard to this situation the 'lode' is defined as the (average 10'-40' wide) zone of intense shearing and fracturing within which the bulk of the ore, 'ore-grade' mineralization, and typical gangue minerals occur - usually over only a part of the section.

In earlier reports and during recent discussions, the specific configuration of hangingwall bedding structure has been termed a 'lode panel'. At this time it appears advisable to redesignate it as a 'transverse panel' (see Mayo, 1951, pps. 18, 25, 29). Such panels have been noted at various widely separated (strike and dip) intervals of the general Standard-Mammoth-Carnation lode system, and they do not appear to be localized to specific rock types, or to specific elements of the Slocan Fold. On the other hand, they show a general (apparent?) tendency to relate to lode elements and/or intervals with general E-W strikes and dips less than 40 degrees. Their general field relationships also indicate that they formed prior to the general period of lode development. However, it is locally obvious that some 'conformable' assemblages of beds relate to lode displacements. The lode may 'split' within transverse panels; however, bedded shears may be due to either lode splits or to inter-bed displacements relating to the development of the transverse panel itself.

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P. Billingsley attributed the occurrence of transverse panels to a sharp southward down-warping of the axial planes of overturns (where beds are approx. horizontal) (Mayo, P.29). However, this explanation would not appear to fit all such occurrences.

Evidence provided by the relatively few workings which penetrate beds over the lode, some drill cores, and, indirectly, the character and structural configuration of the lode itself within the mine locality suggest that the mine transverse panel apexes at about the 4900' horizon and co-exists with the lode between 10,300 E and 11,500 E (ref. 4690' horizon). Its strength in 4690 #2 x-c indicates that it will, at least locally, extend down-dip for a few hundred feet below the 4690' horizon. However, as transverse panel development, porphyry intrusion, lode-arching, and silicification appear to comprise inter-related phenomena, it is quite possible that other transverse panels have developed where combinations of these attendant features are present. On this basis, it is fairly possible that a transverse panel has developed over, and up-dip of the large porphyry body intersected by the Silmonac 5-W (3996) Lateral - and, possibly over other such bodies to the east of this.

(c) Ore Controls: The productive part of the 'mine lode,' as indicated by the present extent of the workings, situates within the interval where it deflects (strike and dip) over the 4625 porphyry-quartzite footwall buttress - resulting in a broad, somewhat crenulated, flatly south-plunging nose. The principal ore bodies occur on the flanks and apex of this nose.

The shape and/or orientation of minor fold and fracture structures within a lode provide a statistical basis on which to determine relative footwall-hangingwall displacements. The majority of those observed within the mine lode indicate that, relative to the footwall section, the hangingwall moved almost horizontally along the strike of the lode, but generally towards the east.

The position of the easterly group of orebodies, situating on the 'lee side' of the arch or nose, is in accord with one of main Kelowna Ex. criteria relating to optimum ore situations; however, the other conditions, necessary for the development of "open-space" conditions, are only very locally present. Also, on the basis of usual Kelowna criteria, the west (main) orebody should not situate on this 'tight' interval of the bend. In view of the existing structural relationships, it seems fairly apparent that a relatively unique system of structures provides the necessary 'open-space' conditions within the lode. Evidence gathered to date indicates that these comprise zones of crumpling and fracturing — pitching and striking across, or quite obliquely to the

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line of lode displacement, but with plunges locally influenced by structural-litholigical variations within the footwall buttress.

It appears unlikely that significant crumpling would occur within the lode if it were bounded on both walls by strong or at least relatively competent east-dipping or west-dipping beds. On the other hand, the indicated situation, presumeably one in which it is underlain by a firm (inflexible) buttress and overlain by a conformable panel comprising rocks of varied thickness and competence, is one which would appear to be favourable to the development of such crumple-fracture zones. The success of the current 'hangingwall' exploration is at least partly contingent on the possibility that the above conditions and structures, as well as open-space conditions relating to dip-rolls, will persist for, or re-occur at significant distances below the 4690 and 4625 horizons.

Observations - Current Exploration

1. 4690 West Lateral: West of Sec. 10,300 E the lode weakens, and perhaps strands out to an extent which makes it difficult to identify in the drill core. The results from drilling yet to be done at Sec. 9725 E may, or may not indicate some change of lode strength or attitude. With reference to the latter possibility, it would be adviseable to extend hole K-124 to about 200'.

2. 4855 West Lateral: The situation here is similar to that relating to the 4690 W Lateral.

Recommendations - Continuing Exploration

These are as agreed upon at the Aug. 24, 1972 meeting and as listed in Mr. Hogg's subsequent memorandum, but with minor revisions as noted in Mr. Buller's letter of September 5, 1972; hence, they need not be repeated here. However, in reference to Item 6, it is doubtful that a suitable drilling site exists. The construction of an access road to the foot of the 'Jennie' ridge is feasible. However, construction and maintenance of an access road and drilling bench beyond this point could be difficult, in that bedrock within this area could be overlain by at least 50 feet of coarse, unstable talus. Also, should the foregoing prove to be quite feasible, there is still considerable doubt that the local east-dipping assemblage of hard and soft rocks would not deflect the contemplated 1400'-1500' drill hole beyond controllable limits.

Respectfully submitted,

W. M. Sharp.

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