017250

VANCOUVER, B. C., April 19th, 1961.

MR. L. T. POSTLE

MR. K. C. FAHRNI

JEDWAY IRON ORE GEOLOGY

Dear Sir:

During the past week or so, while at Harriet Harbor, I have been able to make a more detailed study of the geology of the iron ore body on the Jessie Mineral Claim than previously. All of the drill cores have now been re-logged and surface rock exposures were gone over again. The geological data has been organized on a more comprehensive set of sections than previously. Some of the conclusions resulting from this study are outlined below.

GENERAL GEOLOGY

All of the ore sections examined lie in the rock which is regionally termed the Older Volcanic Series, close to a capping sedimentary series of limey and tuffaceous rocks known regionally as the Kunga Formation. On the sections the ore extends up to 300 feet into the volcanic formation, although by no means continuous over that distance. The diorite intrusive mass lies close below the footwall of the ore and a system of sills of diorite which approximates the attitude of the older volcanics is one of the principal ore controls. Ore layers lie along the contacts of some of these sills as replacements of garnetized and felspathized volcanic rocks and sometimes the diorite itself is replaced.

DETAILED GEOLOGY

Faulting and Intrusion

From rock and map correlations it now appears that the principal discontinuity in the ore zone is a set of faults, now filled by medium grained dark gray porpheritic dykes. These faults strike north easterly and dip to the northwest at about 75 degrees. The widths of the dykes filling the faults are about ten feet in the ore zone but to the north and south are up to 50 feet wide and make up the wide zone of barren ground between the north ore body and the main ore mass. This fault system is older than the ore and has probably provided access channel ways for the ore bearing solutions. Quartz veins and vuggy fault zones follow dyke borders in several cases. Since the fracturing and offsetting pre-dates the ore emplacement, it is not necessary that equivalent sections of ore occur on two sides of one of the faults. The favorable replacement zone may have been locally cut off from the ore solutions by the dyke. While some other dyke systems and faults are indicated, they do not appear to be of great importance so far as the mining picture goes.

Shapes of Ore Bodies

The faulting system has cut the rocks so that on the longitudinal vertical sections ore outlines occur in more or less rectangular shapes, banded on left and right sides by dykes and on the roof and floor by diorite or volcanic rock and garnet alteration. Spacing between dykes is 80 to 100 feet and the vertical dimension of the ore varies from 10 or 15 feet in the case of the footwall ore band to over 100 feet in the main upper ore and to about 50 feet in the case of ore which will be mined by underground methods. The inclinations of these ore panbels correspond with slopes shown on the cross-sections. Slopes change from 35 degrees at the north end to about 60 degrees on section 25 at the south end of the ore zone.

Ground Conditions

Special note was taken of ground conditions as indicated by drill core. While some gouge and calcite occurs on the dyke borders, these bands are in all cases steep and would not constitute serious mining hazards either in open pit or underground operations. Volcanic and diorite rocks, like the ore itself, are excellent so far as mining strength goes.

Mining Methods

The open pit method of mining the ore will be effective but some close control of drilling and blasting in the pit will be necessary to prevent careless mixing of ore and waste. The color resemblance of ore and the dark grey porphery will be confusing. Dykes are small in the ore zone and will probably constitute an unavoidable dilution. However, the wider dykes should be held in separate blasting rounds so definition of boundaries will have to be made on the ground as work goes ahead.

Below the open pit, mining method can be planned involving open stopes without serious hazard. Faults and dykes will lie in stope walls but backs will be good, solid rock. Long hole drilling in the ore from a raise in the centre of each pannel should work out satisfactorily.

Each stope, because of varying thickness of ore and slope of floor, will require separate detailed planning when underground exploration has determined the geological picture more precisely than is now possible. To draw the ore to a haulage level, a separate raise system in each fault panbel would be desirable to prevent possibilities of caving in raise backs where faults are crossed at small angles.

Other Details

The drill cores are still stacked in boxes at various points above the ore body near the hole collars. All boxes have been tagged with an identification tag in preparation for moving them to a central core shed which should be included in the early construction program.

A conference with B. C. Department of Mines Geologist, Sutherland-Browne, in Victoria on April 6th revealed that some additional work in the vicinity of the Jessie Ore Body is slated for this summer. Arrangements of liaison with Dr. Sutherland-Browne are being made so that full benefits from his work will be available to us as soon as possible.

Respectfully submitted,

Keith C. Fahrni

Keith C. Fahrni,
Chief Geologist.

KCF:el