

Monarch Mine Development

January 13, 1934.

Frank Eichelberger

Chas. C. Starr

Mr. Proctor has asked that I write you giving my ideas of the mine development that I believe can properly be undertaken this winter, especially in the event that the mill remains closed. This would consist of the following work:-

(1) Explore for the supposed (Carlton) orebody west of the West Monarch orebody. While there is room for argument on the best method of doing this exploration, I would suggest the following as having many advantages:- Extend #231 crosscut in a northwesterly direction until it encounters the dolomite, then drift along the dolomite contact until ore is encountered, or the expected position of the ore is passed. The vertical distance of the face of #231 crosscut above the dolomite is not known, but at eighty feet east of the present face (or ten feet east of the raise to #205 drift) the dolomite is twenty two feet below the level. The #231 face is also approximately 100 feet above the dolomite at the head of the main incline.

Muck from #231 could be conveniently handled through PD-F raise and the production Drift, or could be handled as formerly.

Since the supposed Carlton orebody is inaccessible, the distance which it will be necessary to drive to cut it can only be estimated, and is thought to be between 250 and 350 feet from the present face of #231 crosscut. Drifting on top of the dolomite would probably make the distance to be driven a little greater, but would result in the work being all on a level, save the driving of inclines or raises, and would give the ore-bearing zone a thorough exploration.

Development of this orebody, if successful, might result in giving information of value to the further development of the present orebodies.

The handling of the waste from this work can be more conveniently done now than when ore is being produced.

(2) Drift south on the ore in #207A raise, storing the ore either in the stope as formerly, or from a spur track off the foot of the Production Drift. If the present ore proves to be of limited extent, the waste may be handled through PD-J raise.

While I have urged in the past that the presence or absence of a trough in the dolomite be determined, as being a deciding factor in further exploration to the south, yet in the absence of data on this point I believe that the presence of ore at frequent intervals forms sufficient justification for further development in this section.

(3) Develop the Kicking Horse orebody by sinking a flat incline from near the center of the orebody on No. 3 tunnel level, this incline to follow the course of the ore downward as nearly as possible. (Say about N 20° W and 7° downward) This work would be designed to outline the extent and attitude of the orebody sufficiently to justify and direct a lower tunnel, later.

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It would have been possible to work at the Kicking Horse every day, thus far, during the winter if ropes had been strung along parts of the trail for safety, and it is probable that no great amount of time would be lost through the remainder of the winter if work were started now.

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San Francisco, Calif.

Jan. 6, 1928.

Mr. Chas. C. Starr,
Care Maj. Gavin Davis,
Field, B.C.

My dear Mr. Starr:-

Mr. E. A. Julian has requested me to present you with my interpretations of the geology of the Monarch and Kicking Horse Mines as deduced from my reconnaissance examinations Nov. 11 and 12, 1927 as a guide to your evaluations of the developed orebodies and prognostications of the future possibilities.

In addition to my own observations, I had the benefit of the experience of a former assistant of mine, Mr. E. W. Watson, who worked in the East Monarch Orebody and who mined all the ore from the West Monarch Orebody. Also he was a regular mountain goat and did more surface work than any other man. Furthermore, I examined the mine under the personal guidance of Maj. A. W. Davis who ^{developed} ~~did~~ most of the West Monarch and Kicking Horse Orebodies.

My deductions are that the orebodies are controlled by:-
(1) unfavorable beds of rock which have been replaced by ore; (2) longitudinal, steep fissures, and; (3) cross fissures which strike about 60 degrees to the longitudinal. Both of these sets of fissures are remarkably continuous, plainly visible on the outcrop and there is practically no faulting. When the three controlling factors intersect, the quantity and grade of the ore are greatest. The ore on only one favorable bed is developed or mined. This bed is beneath a series of pink quartzite and above a black dolomitic limestone. There are other ore outcrops 700 feet above and about the same distance below (near the

C.P.R. tracks) the West Monarch Orebody. There are, therefore, opportunities to prospect or develop nine favorable intersections of favorable beds and longitudinal fissures. Mr. Watson has seen a strong outcrop 3 miles south on the south side of Mt. Stevens which he correlates with the Monarch Orebodies. The ore belt has been definitely determined to be at least 4 miles long, two miles of which is covered by the claims.

The cross-fissure at the north end of the developed ore block in the West Orebody will intersect the longitudinal fissure of the East Monarch Orebody about 120 feet southerly from the East Stope. The best ore should concentrate at the junction of ~~the~~ three controls and extend both northerly and southerly therefrom. Development southerly from the present breast should encounter commercial ore long before the 120 feet is driven.

In general, development southerly along the intersection between the favorable bed and the longitudinal fissure should increase the quantity, width, height and grade of the ore as each cross-fissure is approached and decrease therefrom to a point midway between the cross fissures, then increase again.

The work in the West Monarch Orebody showed that the maximum height of the outcrop was 40 feet and width of 200 feet. The stope is actually 30 feet high but now partly filled with development ore. The engineer for the owner uses an average height of 20 feet, width of 135 feet and length of 350 feet in figuring tonnage. Each of these dimensions I consider conservative. He estimates 3,500 tons of broken ore in the stope.

In the Kicking Horse, I deduced that the locus of the developed orebody begins just east of the main entrance and trends N27W (astronomic) and pitches about 8 degrees downward northwesterly. The workings

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therefore, are driven to the westerly footwall and northeasterly hangingwall. To develop this orebody, it would be necessary to sink an incline in the direction given above or do equivalent horizontal drifting and vertical sinking in order to follow the ore shoot. My cross sections indicate that this orebody has a conservative height of more than 10 feet, maximum width of 150 feet and a length as long as you wish to make it. As this pitching shoot has been developed but a short distance, it would be easy to develop much more ore with little work.

Trusting that you will be able to confirm these conclusions and that they will be of service to you in expediting your examination, I am

Very truly yours,

Wilbur H. Grant.