

CONDENSED REPORT ON GEOLOGY OF MAMMOTH-STANDARD MINE AREA
OF THE WESTERN EXPLORATION CO. LTD.

By

Charles C. Starr.

INTRODUCTION:

The purpose of this geological study during the summer of 1951 was to determine whether conditions were favorable for the occurrence of an orebody in the Mammoth vein-shear to the west of the present mine workings, and more specifically between the Monarch tunnel and Emily Creek.

GENERAL NOTES:

The Mammoth vein-shear in the present mine workings strikes east and west and dips 45 degrees south. From the Monarch gulch the outcrop is covered to the Breakover Ridge, some 300 feet west, and is again covered for 1600 feet west to Emily Creek where it has been opened by two small cuts.

No major fault was found in the area studied except that along the Mammoth vein. The throw of this fault is estimated to be around 300 feet, with the hanging-wall (south) side having moved down and eastward with relation to the footwall side.

THE ROCKS:

The rocks of the area belong to the upper part of the Slovan Series of Triassic age (Dr. C. E. Cairnes), and consist of argillites, quartzites, limestones and tuffs with occasional porphyritic dikes and sills. These rocks, with the exception of limestone and the porphyritic rocks, were originally laid down under water in an approximately horizontal position by sediments from an earlier land surface and eventually consolidated to rock by heat and pressure. The limestone was formed in place, during periods of little erosion, by coral.

Later, earth movements possibly due to the intrusion of the Nelson granite mass, folded and crumpled the sedimentary rocks while they were still deeply buried; still later movement developed the vein and fault fractures.

STRUCTURE:

The area mapped lies in a section folded into the shape of a flattened reversed "S", with the Mammoth mine situated near the upper eastern turn of the "S".

STRUCTURES FAVORABLE FOR ORE IN THE SLOCAN AREA:

Provincial geologists, who have spent several seasons in the study of the Slocan District as a whole, have kindly given me a verbal summary of the conditions under which bodies of ore occur in practically all of the profitable mines of the district. These conditions may be summarized as follows:-

1. A zone of intense crushing and brecciation to form passages and open spaces through which the mineralizing solutions can penetrate and deposit their contained minerals.

2. Areas in which the beddings of the rocks have a rather flat west dip, where the vein has a roughly east and west strike and a south dip, as most of them do. The reason for this is that most veins were faults before they were mineralized and that the hanging-wall rocks moved down and eastward in relation to the foot-wall rocks, thus causing the motion to be across the ends of the broken beds rather than more nearly parallel to them, and therefore tending to shatter them and form a breccia.

3. Practically all of the productive orebodies of the district occur where the vein makes an obtuse angle with the bedding of the rocks. Where the bedding planes are bent or folded so that they make an acute angle with the vein, or are parallel to it, the brecciation is absent, a mud gouge takes its place and the ore pinches out.

4. No rock type seems especially favorable or unfavorable for ore except that thin-bedded slaty argillites, which do not occur in the area under consideration, are unfavorable.

FAVORABLE LOCI FOR ORE IN THE MAMMOTH-STANDARD AREA:

The Mammoth vein in the Monarch tunnel lies in, or nearly in, the bedding planes of the rock and has an abnormal strike of N 60° W, and dips 60° southwest. It seems quite certain that this vein will, within a moderate distance westward, break away from the bedding planes and take its normal strike of approximately east and west. When this occurs conditions will, I believe, be favorable for the formation of an orebody; say anywhere between two hundred and eight hundred feet west of the vein-crossing in the Monarch tunnel, and at the approximate elevation of the tunnel.

Geological conditions appear to be even more favorable for ore between 1500 feet and 1700 feet west along the vein from the Monarch tunnel.

SUMMARY AND RECOMMENDATIONS:

The Monarch tunnel seems to be at a good elevation from which to prospect the vein and the "hot spots" mentioned above, and has the advantage of not requiring a new camp or road to explore the two favorable areas.

Indicated geological conditions at the "hot spots" comply well with conditions under which ore has formed in other producing mines of the district, and I believe that the chances of developing important new ore are sufficiently good to justify the driving 1700 feet west along the vein from the Monarch tunnel, and I recommend that this be done.

Respectfully submitted,

Chas. C. Starr

Charles C. Starr, P. Eng.
413 Granville St.
Vancouver, B. C.

February 20, 1952.