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GEOLOGIC REPORT on the Mary Ellen Mining Property (Silver, Lead, Zinc.)
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GENERAL GEOLOGY

The ore deposits at the Mary Ellen Mine are partly to completely oxidized lead-silver-zinc vein fillings and some replacements along one main fault and several subsidiary fissures. These deposits and the mine workings are entirely within the Hansen Creek formation, a moderately well-bedded medium to dark gray fossiliferous dolomite of Upper Ordovician age. The Hansen Creek formation is normally underlain by the Eureka Quartzite (Ordovician) which outcrops on the northerly part of White Pine Mountain and also at the Belmont Mine about one-third mile south of the Mary Ellen Mine. No Eureka Quartzite has been encountered in the Mary Ellen Mine workings although these workings are probably in the lower part of the Hansen Creek formation. Medium brown to gray platy limestones of the Pogonip formation (Lower Ordovician here), which underlies the Eureka Quartzite in the normal succession, have been brought into contact with the Hansen Creek dolomite along a major north-southerly trending steep east-dipping normal fault about 2000 feet west of the Phyllis adit. For convenience this fault is referred to hereafter as the Pogonip fault.

Another north-southerly trending steep easterly-dipping normal fault about 200 feet east of the Phyllis adit brings the Nevada formation (Devonian), a well-bedded fossiliferous gray limestone, and overlying dark shales of the White Pine formation (Mississippian) down into contact with the Hansen Creek formation. This fault is hereafter called the East fault.

The Hansen Creek block between the two faults trends north-southerly parallel to the White Pine range, and is about 2000 feet wide at the Mary Ellen mine. The dolomite beds within the Hansen creek at the Mary Ellen mine strike east-westerly and dip 10° to 35° N., in general. Local divergencies are apparently due to distortion near faults. Several recognizable beds within the Hansen Creek have been mapped on the surface, and some of these have been recognized underground.

Brecciated fragments and blocks of Eureka Quartzite are found in both the Pogonip fault on the west and in the East fault. Those in the Pogonip fault are easily explained as drag material originally from below the Hansen Creek. Blocks of Eureka Quartzite encountered in D.D. Hole, No. 1, at the Pogonip fault are explained on this basis. Eureka Quartzite fragments in the East fault are not so easily explained. Some of the fragments observed in a crosscut east of the main camp and below the road are well rounded from abrasion.

The great abundance of Eureka Quartzite boulders in the float north and east of the Mary Ellen Mine suggests that a wedge of Eureka Quartzite occurs between the Hansen Creek blocks and the Nevada and White

Pine formations on the east. This wedge would be thin and brecciated just east of the mine but thicker northward.✓ No outcrops of Eureka Quartzite that are certainly in place so that they would overlie the Nevada and White Pine were found within one-half mile north of the mine. Uphill and westward the quartzite float ceases abruptly at the East fault.

Several faults of minor displacement trending about N. 30° E. to N. 50° E. and dipping 40° to 60° SE. cut the Hansen Creek block. Some of these, including the young Treasure fault on the Mary Ellen property, appear to offset the Pogonip fault. Other less prominent fractures not necessarily faults, strike more north-southerly, dip very steeply to vertical, and are commonly occupied by calcite stringers. Other sets of minor fractures are described below. Parts of some of the northeasterly faults are mineralized.

Apparently, no workable ore deposits occur in the Pogonip or Nevada limestones or in the White Pine shale in the near vicinity of the Mary Ellen property. The main bodies of ore at the Belmont mine are in Hansen Creek dolomite and Eureka Quartzite along a complicated fault system between the two formations. Within the past three years some high-grade lead carbonate and silver ore has been taken from irregular secondarily enriched ore bodies formed at the intersection of fractures in Eureka Quartzite at the Belmont Mine.✓

All the ore removed to date at the Mary Ellen mine has come from structures confined to the Hansen Creek dolomite. Experience at the Belmont, however, suggests that the supposed fault zone between the Hansen Creek block and the Eureka Quartzite wedge along the East fault might be a favorable place for ore deposition.✓