



**GEOLOGICAL INVESTIGATIONS
IN THE GREENWOOD AREA
(82E/2E)**

By B. N. Church

INTRODUCTION

Detailed mapping was initiated following renewed exploration and mining in the vicinity of the old Oro Denoro workings, 9.7 kilometres northeast of Greenwood.

Early in 1975 Granby Mining Corporation began a test operation to prove an orebody estimated by previous work to contain about one million tonnes grading slightly less than 1 per cent copper. When the property was visited in June, excavation had advanced to the third bench in the open pit, and approximately 135 000 tonnes of bedrock had been removed. Subsequently mining ceased pending the results of a percussion drilling program.

The history of Oro Denoro can be traced to the original discovery of copper in the so-called 'Summit Camp' in 1891. Beginning in 1903 the property became an important local mine producing 136,447 tons of ore grading 1.37 per cent copper, 0.027 ounce per ton gold, and 0.225 ounce per ton silver. By 1910 accessible ore had been extracted from five open stopes and 1,000 feet of underground drifts.

After many years of inactivity, prospecting was revived in response to increases in the price of copper. Between 1951 to 1953, Attwood Copper Mines Ltd. carried out a number of geological, geophysical, and geochemical surveys. Later the property was drilled by Noranda Mines, Limited (1955 to 1957) and again by West Coast Resources Ltd. (1965 to 1970). The present testing by Granby Mining Corporation began in 1974.

GEOLOGY

The geology of Oro Denoro is relatively straightforward. Mineralization consists of pockets of pyrite, chalcopyrite, and magnetite in a garnetite skarn. This is mostly a replacement of limestone intruded by an apophysis of the Lion Creek granodiorite stock.

Oro Denoro is centrally located on a 2.4-kilometre-long meridional alignment of skarn deposits, including the Emma and Jumbo on the north and the Cyclops and Lancashire Lass on the south. The host rock for all of these, and many other deposits in the Greenwood area, is the Triassic Brooklyn Formation.

In regional setting, the Mesozoic strata rest unconformably on a basement complex of Precambrian ? gneisses and schists. The sequence is as follows:

MESOZOIC BEDS (mostly Triassic ?)

- Banded limestone (algal mats ?)
- Massive limestone (reef breccias ?)
- Laminar bedded sandstone and siltstone
- Sharpstone conglomerate
- Andesite and dacite volcanic rocks

BASEMENT (Precambrian ?)

- Mostly fine to medium-grained amphibolites interlayered with meta-quartzites and some marble

This assemblage is intruded by Jurassic or Cretaceous granodiorite stocks and dykes and an assortment of Tertiary trachyte and phonolite dykes and sills.

STRUCTURE

While structural relations are not entirely clear in this region because of limited exposure, there is some evidence of significant folding and faulting.

The Mesozoic beds, well exposed southwest of Oro Denoro, trend mostly northerly and dip to the east, the average attitude being $005^{\circ} - 50^{\circ}$ east. Minor folds appear to plunge gently to the northeast.

The fabric of the basement complex is more difficult to identify, since most of the rocks are massive amphibolites. The average bedding attitude determined on a metaquartzite unit is $064^{\circ} - 50^{\circ}$ northwest.

The main fractures trend easterly, coincident with major valley lineaments, and northerly parallel to the principal strike direction of the Mesozoic formations. The two most important fracture attitudes, determined from hundreds of measurements in the Oro Denoro workings and the surrounding area, are $110^{\circ} - 85^{\circ}$ southwest and $005^{\circ} - 82^{\circ}$ east.

REFERENCES

Assessment Reports 67, 117, 178.

Brock, R. W. (1902): Preliminary Report on the Boundary Creek District, *Geol. Surv., Canada*, Sum. Rept.

- Carswell, H. T. (1957): The Geology and Ore Deposits of the Summit Camp, Boundary District, British Columbia, M.Sc. Thesis, *University of British Columbia*, 80 pp.
- Daly, R. A. (1912): Geology of the North American Cordillera at the Forty-Ninth Parallel, *Geol. Surv., Canada*, Mem. 38.
- LeRoy, O. E. (1912): Geology and Ore Deposits of Phoenix, British Columbia, *Geol. Surv., Canada*, Mem. 21.
- Little, H. W. and Thorpe, R. E. (1965): Greenwood (East Half), *Geol. Surv., Canada*, Paper 65-1.
- McNaughton, D. A. (1945): Greenwood-Phoenix Area, *Geol. Surv., Canada*, Paper 45-20.
- Minister of Mines, B.C., Ann. Repts., 1965, pp. 171, 172; 1967, pp. 232, 233; 1968, pp. 233-235.
- Reinsbakken, A. (1968): Detailed Geological Mapping and Interpretation of the Grand Forks-Eholt Area, Boundary District, British Columbia, M.Sc. Thesis, *University of British Columbia*, 114 pp.
- Seraphim, R. H. (1956): Geology and Copper Deposits of the Boundary District, British Columbia, *C.I.M., Bull.*, Vol. 49, No. 3, p. 684.