

## Preliminary investigation of the Wedge Mine, NTS 21 O/8E

J.A. Walker

*Geological Surveys Branch, New Brunswick Department of Natural Resources and Energy,  
P.O. Box 50, Bathurst, New Brunswick E2A 3Z1, Canada*

The Wedge Mine is located on the north bank of the Nepisiguit River 40 km southwest of the city of Bathurst, NTS 21 O/8E. This Cu-rich massive sulphide deposit had a lifetime production totalling 1,503,500 tonnes grading 2.88% Cu, 1.61% Zn, 0.65% Pb, and 20.6 g/t Ag. Detection and subsequent drilling (total 20,000') of an EM anomaly in 1957-1958 by Cominco resulted in the discovery of the deposit.

Previous interpretations placed this deposit at the contact between felsic volcanic rocks of the Flat Landing Brook Formation (unit OFLB) and sedimentary rocks of the Patrick Brook Formation (unit OP). Results of this study would suggest that the position of this deposit is stratigraphically lower and similar to that of the Brunswick deposits. The rhyolite, quartz-feldspar porphyry (QFP), felsic tuffs and related sedimentary rocks in the footwall should be assigned to the Nepisiguit Falls Formation (ONF). Rhyolite in the deep footwall (ONF or older) are problematic since they display REE profiles similar to unit OFLB but appear to be stratigraphically below rocks assigned to unit ONF. Feldspar-phyric to aphyric rhyolite east of Forty Mile Brook are dissimilar to those in the footwall of the deposit and are tentatively assigned to the Spruce Lake Formation. The hanging wall sequence is in tectonic contact with the massive sulphides and comprises intercalated slate, wacke and mafic volcanic rocks of the

Boucher Brook Formation (OBB).

According to Douglas, Cu is concentrated in coarser grained pyrite in the thicker parts of the deposit to the west, and along the north side of the lens adjacent to the rhyolite/QFP contact. Fine grained pyrite and narrow bands of sphalerite and galena are associated with the south side of the ore lens and in the eastern end of the deposit. The Cu to Pb+Zn metal zonation coupled with a discordant stringer-zone, sericitic, silicic, and chloritic alteration on the north side of the deposit suggest a southward-younging sequence.

The structural geology in the area of the Wedge deposit is complicated. The earliest fabric, an  $S_0/S_1$  layer parallel foliation, distinguished by differential layering, was produced during  $D_1$  thrusting. The second deformation ( $D_2$ ) is responsible for the distribution of rock units and is characterized by the development of tight, upright to east-plunging  $F_2$  folds. The  $F_2$  folding event reoriented earlier  $S_0/S_1$  so that it strikes  $060^\circ$ - $075^\circ$  and is vertical to steeply north-dipping at surface. At the 300' level the structure becomes horizontal and then dips  $065^\circ$  south. As the  $D_2$  event progressed, thrusting brought rhyolite of the Spruce Lake Formation over the Footwall sequence from the east. Subsequent oblique movement along a northeast-striking fault caused dextral south-side-down offset of the orebody.