

TGS → Sullivan

888155

# THE DISTRICT-SCALE SULLIVAN-NORTH STAR ALTERATION ZONE, SULLIVAN MINE AREA, B.C.: A PRELIMINARY PETROGRAPHIC STUDY

C.H.B. Leitch<sup>1</sup>, R.J.W. Turner<sup>1</sup>, T. and Höy<sup>2</sup>

- <sup>1</sup> Mineral Resources Division, Geological Survey of Canada, 100 West Pender Street, Vancouver, B.C. V6B 1R8
- <sup>2</sup> Geological Survey Branch, British Columbia Ministry of Energy, Mines and Petroleum Resources, #200 - 756 Fort Street, Victoria, B.C. V8V 1X4

Lower Aldridge feldspathic greywacke, siltite and argillite, within a zone extending 6 km south from and stratigraphically lower than the Sullivan orebody, are variably altered to muscovite-pyrite and tourmalinite assemblages which include variable quartz, muscovite, epidote, tourmaline, pyrite and pyrrhotite, lesser sphalerite and galena, and rare chalcopyrite and arsenopyrite. Similar alteration at the Stemwinder and North Star deposits suggests that they are expressions of the same hydrothermal system that formed the Sullivan deposit. Metamorphic grade in these rocks is middle greenschist, as indicated by the assemblage quartz-muscovite-Mg chlorite-albite-microcline-biotite-epidote-garnet, whereas Fe-chlorite appears to be retrograde. Garnet, probably manganese-bearing, occurs only within altered rocks and likely reflects hydrothermal Mn enrichment of the original sediment. The presence of garnet provides an indicator of altered rocks, where other macroscopic criteria are lacking. Other more restricted exploration criteria such as abundant sulphides, tourmalinite and massive non-bedded or fragmental rocks can focus exploration within the garnet-bearing zone. Albite-chlorite alteration, superposed on biotite alteration, is developed adjacent to Moyie sills. Epidote-tremolite "granophyric" alteration may also be an expression of proximity to these sills.