

**The Duder Lake Au Prospects - archetypes of mesothermal mineralization in the eastern Dunnage Zone**R.A. Churchill<sup>1</sup>, D.W. Coish<sup>2</sup> and D.H.C. Wilton<sup>2</sup><sup>1</sup>*Blackpine Limited, P.O. Box 216, Station "C", St. John's, Newfoundland A1C 5J2, Canada*<sup>2</sup>*Department of Earth Sciences, Memorial University of Newfoundland, St. John's, Newfoundland A1B 3X5, Canada*

The Duder Lake Prospects consist of the Flirt, Goldstash, Corvette and Stinger showings, all of which are epigenetic, arsenopyrite-rich, mesothermal gold occurrences; the Flirt and Stinger are vein-type whereas the Goldstash and Corvette represent altered host rock replacement-type mineralization. The showings occur within the eastern Dunnage Zone of the Appalachian Orogenic Belt of northeastern Newfoundland and are the most intensely studied gold prospects in this tectonic region. The Stinger prospect is hosted by graphitic siltstone of the Ordovician to Silurian Davidsville Group. The other three are hosted by Siluro-Devonian gabbroic rocks that cut the Davidsville Group. The mineralization at the Duder Lake showings is localized to secondary to tertiary structures related to the regionally significant, northeasterly-trending Dog Bay Line; best mineralization is hosted by Riedel shears. Gabbro hosts to mineralization have a well-developed alteration halo which reflects varying CO<sub>2</sub>/H<sub>2</sub>O ratios with distance from the veins. Fluid in-

clusion data indicate homogenization temperatures of ~320°C and salinities of 3 to 7 wt. % NaCl in the ore fluids. O, C, and S isotope data for the occurrences have typical mesothermal values. The ore fluids were probably derived through metamorphic devolatilization of Gander Zone basement rocks and allochthonous cover rocks of the Dunnage Zone during a Silurian orogenic event, resulting in an overall heterogeneous geochemical signature.

The Goldstash showing has been traced for >600 m, is open along strike, and widens with depth. Geophysical data indicate that the host structure continues for at least 2000 m and includes the Corvette Showing.

A geochemical survey, using Fe-Mn oxide coatings on stream pebbles as a medium, indicated anomalous Au, Ag, Sb and As values downstream from the Stinger showing, and suggests that the region of auriferous mineralization may be larger.