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**3D modelling and fluid inclusion studies at the  
Moosehead property, central Newfoundland:  
a new perspective on mineralizing fluids  
and controlling structures**

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The Moosehead gold property is located in central Newfoundland, approximately 3 kilometres southeast of the town of Bishop's Falls. The property consists of 90 claims in one license, 9856M, comprising 23km<sup>2</sup>. The Moosehead property is currently held under a joint venture between Altius Resources and Agnico Eagle Mines. Previous exploration has identified concentrations of quartz boulders with gold values up to 442 g/t and drill intersections of up to 170.3 g/t and 413.6 g/t over 1.53 and 0.6 m, respectively. One of the main problems encountered in previous programs has been the extent of till and the lack of outcrop exposure, making geological interpretation and drill target identification difficult.

3D modeling provides a powerful tool for viewing the sub-surface data and understanding the kinematics of structures related to gold mineralization. Three parallel, north-northwest trending mineralized extensional fault structures have been

identified from diamond drilling and geophysical surveys; these structures have been recognized as an important host to gold mineralization. Review of previous data has revealed a series of parallel northeast-trending brittle shear structures that cross cut these structures. Modeling of both series of structures in 3D has allowed an interpretation of their kinematics and suggests that high-grade gold mineralization is concentrated at the intersection of these structure sets. The recognition of such a relationship is significant, and enables a vector for tracing high-grade veins to depth. The property remains largely untested below 100 m depth. A single deep drill hole intersected 278 g/t gold over 0.5 m at 257 m vertical depth.

Gold-bearing quartz veins are texturally complex, with four generations and multistage brecciation recognized. Fluid inclusion studies show that the veins formed from moderate to high temperature (240–400 °C), low- to moderate-salinity (0–10 eq. wt% NaCl) aqueous-carbonic fluids. Gold deposition resulted from the mixing of gold-bearing carbonic fluids with low salinity meteoric fluids. Pressure-temperature modeling of fluid trapping conditions indicates minimum mineralization depths of approximately 5.8 km. Based on the composition of mineralizing fluids and estimated mineralization depths, it can be concluded that the Moosehead property represents an orogenic lode-gold type prospect. Documentation of a deeper, orogenic-style for the Moosehead vein systems, suggests different target vectors for these veins. The combination of these studies has advanced our understanding of the high grade mineralization at the Moosehead property and has proved to be an important tool for identifying new high priority exploration targets.