Influence of mineralogical composition and texture on induced polarization (IP) effects in gold-bearing rocks from the Herbert-Brent gold showing, Yellowknife Greenstone Belt, Canada

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On July 29th, 2016, two 400 m long IP/resistivity survey lines, with 5/10 m electrode spacing (multi gradient array), were completed over TerraX Minerals Inc. Hebert-Brent (HB) gold showing. The HB gold showing is located within the Barney Deformation Corridor of the Yellowknife Greenstone Belt (YGB), Northwest Territories. In June 2015, geological mapping discovered significant concentrations of gold in HB situated within an 11 m-wide highly sulphidized sericite-ankerite schist shear zone, hosted in a 10–15 m-wide, quartz-feldspar porphyry. Thirty-three samples were collected from the survey site across the main mineralized zone at 0.45 m increments using a rock saw. This study is designed to explore the viability of different interpretations for bodies (variably gold mineralized and non-mineralized sulphide-bearing zones) that are strongly anomalous in resistivity or chargeability. The resistivity and chargeability of each sample will be determined by using a two-electrode lab apparatus to measure IP effects both in the frequency domain (measuring resistivity as a function of frequency), and in the time domain (determining chargeability from the voltage decay that follows a step change in current across the sample). Detailed textural examination of polished samples using reflected light petrography aided by microXRF (EDS mapping) for point analysis is being used to identify the various mineral phases, and also identify if there are any significant nonsulphide IP sources. Polished thin sections are also being used in order to investigate the dependence of IP effects on sulfide type, concentration, texture, grain shape and size. Once these analyses are completed for each sample, the results will be used to help interpret the vertical IP section of estimated subsurface resistivity and chargeability. Results from these steps will be used to better define lithological and mineralized units in the subsurface and help define drill targets for gold exploration.

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