

013840

December 31, 1966

Atlas Explorations Ltd.,  
330-355 Burrard Street,  
Vancouver 1, B.C.

Gentlemen:

I have been asked to commit to writing my views on the 1966 geophysical exploration carried out by Atlas Explorations Ltd. in the Ross River area of the Yukon Territory. This follows a two day visit to Ross River in July 1966 at the request of Mr. J.S. Brock.

(1) Airborne Surveys

The efficacy of helicopter-borne magnetic and electromagnetic surveys for detecting the Anvil-Vangorda type of mineralization has been well established. The principal limitation appears to be depth. It is questionable that most deposits can be detected at a subsurface depth greater than 100 feet with the electromagnetic method. The magnetic response is more a function of mineralogy, and it can be assumed that there are orebodies in the district that give no recognizable magnetic anomaly.

(2) Ground Surveys

- (a) Magnetic. This method is best used for detailing anomalies detected by airborne work, subject to the same limitations as above.
- (b) Electromagnetic. The problem of abundant graphite raises severe problems in discrimination. A method should be employed that gives an indication of the quality of the conductor, as is the case with the in-phase and quadrature helicopter

Atlas Explorations Ltd.

- 2 -

December 31, 1966

e.m. method. While the Crons instrument is good for ease of operation, reliability and rough terrain, discrimination of conductors is difficult. A method that provides good discrimination as well as depth of exploration is the Turam. For flat-lying tabular ore-bodies of the Anvil-Vangorda type, I would anticipate detectability at a depth of 400 ft.

- (c) Gravity. Variation due to lithologic contrasts is an interpretational problem with this method. However, I favour its use in conjunction with either Turam e.m. or Induced Polarization.
- (d) Induced Polarization. It has been established in all districts containing massive sulphide deposits that this method is applicable and that effective discrimination against graphite is often possible. However, it is considerably more expensive to operate than other mining geophysical methods.

I will be happy to discuss my recommendations for next year's programme at your convenience.

Yours very truly,



D.W. SMELLIE, P.Eng.

DWS:sd