

## Time-Domain Electromagnetic and Magnetic Survey over the Kootenay Arc, Southeastern British Columbia (NTS 082F/03, /04, /06)

G. D. Kirkham, Geoscience BC, Vancouver, BC, [kirkham@geosciencebc.com](mailto:kirkham@geosciencebc.com)

W. F. Miles, Natural Resources Canada, Ottawa, ON

S. Paradis, Geological Survey of Canada, Sidney, BC

B. Finley, Dajin Resources Corp., Vancouver, BC

A. Troop, Sultan Minerals Inc., Vancouver, BC

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### Introduction

The Kootenay Arc is located in southeastern British Columbia (BC), in the Omineca Belt of the Canadian Cordillera. It is defined as a lens-shaped belt of highly deformed rocks that extends approximately 400 km from north of Revelstoke to the Canada–United States border. It is located between the Purcell Mountains to the east and the Monashee metamorphic complex to the west (Figure 1).

The Kootenay Arc contains a number of carbonate-hosted zinc-lead deposits, including important past-producers such as Reeves MacDonald, Jersey and HB in the Salmo camp (MINFILE 082FSW026, 082FSW009 and 082FSW004, respectively; MINFILE, 2008), and Bluebell in the Slocan camp (MINFILE 082FNE043). Figure 1 shows the simplified geology of the Kootenay Arc and the location of some past-producers and prospects (Paradis, 2007).

A 4367 line-kilometre (line-km) time-domain electromagnetic and magnetic survey has been initiated as a partnership between Geoscience BC, Natural Resources Canada (NRCan) and two industry partners, Dajin Resources Corp. and Sultan Minerals Inc. The combination of NRCan (federal government), Dajin and Sultan (industry) and Geoscience BC (industry led and funded by the BC provincial government) is a showcase geoscience partnership for gathering valuable geophysical and geological data. This cost-effective strategy will enable a better understanding of the geology of the Kootenay Arc and develop new mineral exploration targets in BC.

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**Keywords:** Kootenay Arc, geophysics, electromagnetic, magnetic  
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### Description of Survey

Prior to launching the survey, work was undertaken by the Geological Survey of Canada (i.e., NRCan) to determine basic rock properties of the geological formations within the proposed survey area, in order to identify which geophysical methods (if any) would be best suited to

- 1) developing an accurate geological map of the survey area, and
- 2) targeting potential base metal deposits within the survey area.

The rock properties study indicated that a time-domain electromagnetic and magnetic survey was best suited to furthering these goals. Potential deposit types anticipated in this region include carbonate-hosted zinc-lead, sedimentary exhalative (SEDEX), molybdenum and tungsten skarns, polymetallic veins and porphyry deposits. The combined electromagnetic-magnetic survey is deemed applicable to exploration for all these deposit types.

Once the survey area was identified, the optimal line spacing for data collection was determined to be 200 m. Potential industry partners were then invited to contribute to the costs of collecting infill data at 100 m spacing. Two companies, Dajin and Sultan, chose to participate in his survey, thereby adding to the total line-kilometres of data to be collected.

In summary, the survey area extends from the United States border east of Salmo to latitude 49 22'N (Figure 2). The survey will acquire time-domain electromagnetic and magnetic data. The electromagnetic system will require a dipole moment with a minimum of 200 000 Am<sup>2</sup>, a dual-axis receiver and a stinger-mounted magnetometer. The traverse flight-line spacing is 200 m with an orientation of 100 , with the addition of the 100 m infill lines as mentioned above. In addition, control lines are to be flown perpendicular to the traverse lines at a spacing of 1000 m, per stan-

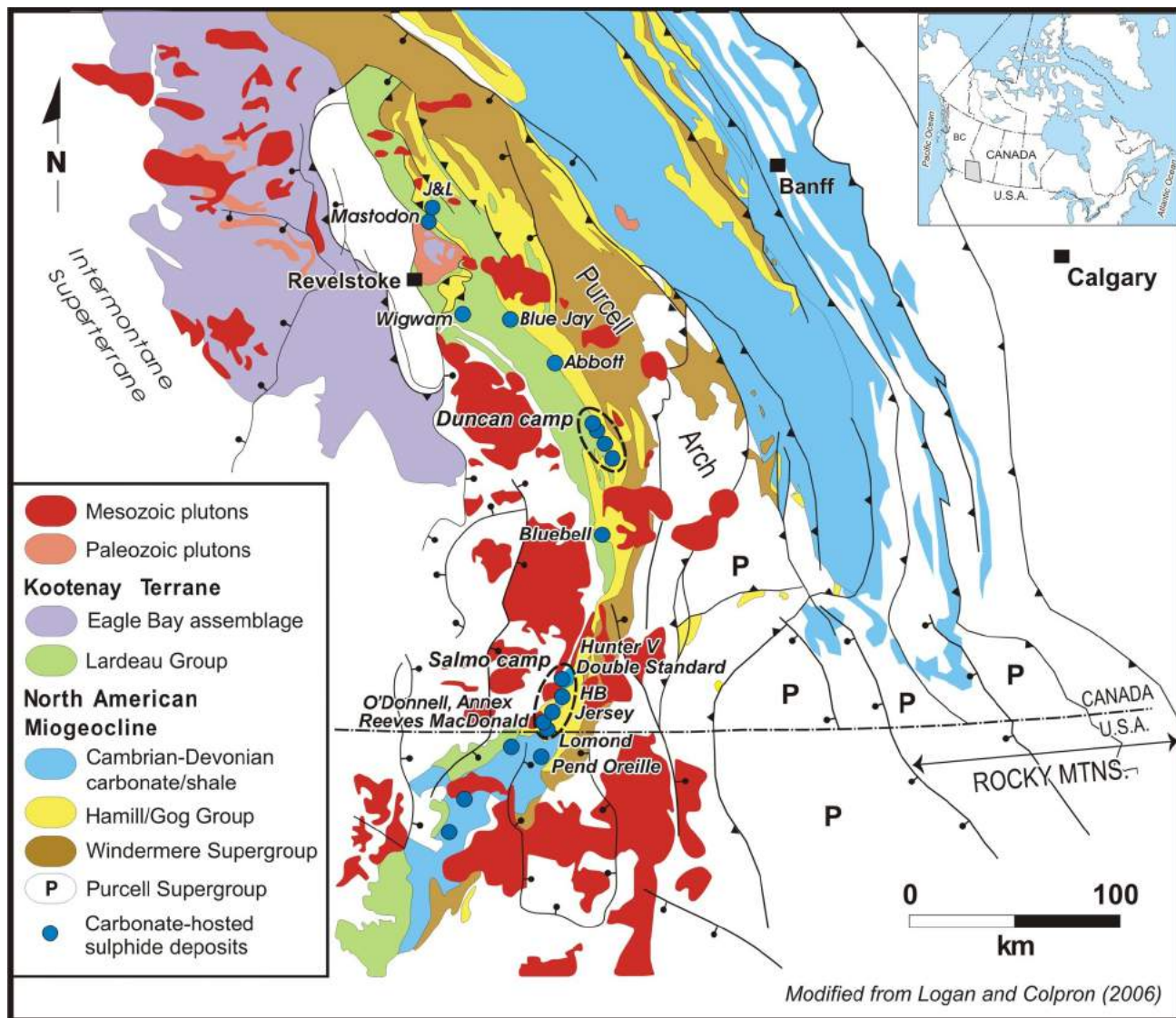
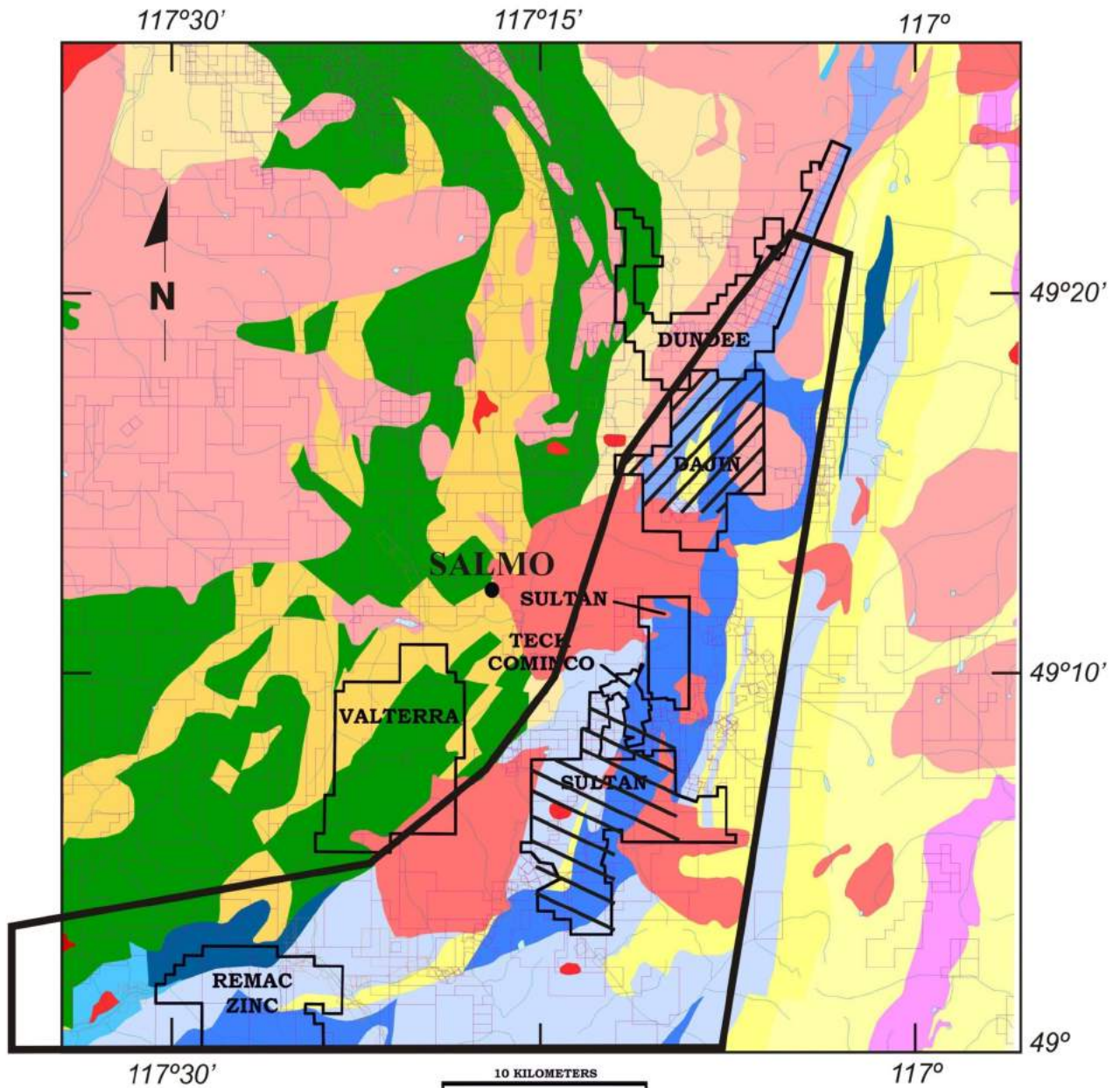


Figure 1. Location and simplified geology of the Kootenay Arc, showing zinc-lead past-producers and prospects (after Paradis, 2007).





**Figure 2.** Area to be covered by Kootenay Arc electromagnetic-magnetic survey, with 100 m infill lines over Dajin Resources Corp. and Sultan Minerals Inc. claims.

standard practice. It should be noted that, due to the rugged terrain, the survey will be by helicopter. The survey will consist of 4367 line-km (including industry infill lines) once completed.

### References

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