

Geofile 2014-1

Lithogeochemical data from the Late Triassic Rayfield River nepheline-normative syenite pluton, 70 Mile House, BC

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Geofile 2014-1 synopsis

Geofile 2014-1 contains analytical results from samples collected during a two-week field investigation at Rayfield River conducted as part of the on-going BC Porphyry Deposit Initiative (Hickin et al., 2014). The central Nicola Arc project; a component of this initiative focused on the geological setting and copper-gold mineralization of the Late Triassic alkalic Rayfield River pluton. The pluton, 20 km east of 70 Mile House consists primarily of nepheline-normative hornblende syenite, but also includes a leucosyenite phase, and dikes of quartz-normative monzonite, pegmatite, and quartz-feldspar porphyry. Copper mineralization is widespread but generally low grade.

Samples were collected from the area within and surrounding the Rayfield River pluton which is exposed through a 67 km² erosional window in the Miocene Chilcotin basalt of the Cariboo Plateau (see Logan and Schiarizza, 2014). The composition, age and location of the Rayfield River pluton suggest that it is part of the highly prospective Late Triassic (205-200 Ma) Copper Mountain magmatic belt. For a province-wide overview of the prolific Late Triassic – Early Jurassic porphyry copper-gold deposit epoch, see Logan and Mihalynuk (2014).

Two groups of samples were submitted for analysis. Samples of the first group displayed indications of alteration and/or mineralization in a location that was not previously known, or from where it was deemed important to analyze a broader suite of elements than had been reported previously. Samples of the second group were selected as representative of separate magmatic phases or different epochs and analysis was undertaken on unaltered, fresh rocks for geochemical characterization. Samples of the first group were analyzed by Inductively Coupled Mass Spectroscopy (ICP-MS) following a strong multi-acid digestion of a 0.25 g sample (Group 1Ex) at Acme Analytical Laboratories (Vancouver) Ltd. of Vancouver (henceforth Acme). Samples of the second group were analyzed by ICP-MS at Actlabs (WRA + Trace4lithoresearch) following lithium metaborate/tetraborate fusion. Further details of analytical procedures including limitations such as interferences, can be obtained from the company websites.

All samples were prepared at either Acme in Vancouver or at Actlabs in Ancaster. Samples were pulped in a mild steel disk mill following sample reduction to pea-sized fragments in a jaw crusher using steel plates (potential for Fe ± Cr contamination).

References

- Hickin, A.S., Rowins, S.M, Jones, L.D., and Madu, B., 2014. British Columbia Geological Survey annual program review 2013. In: Geological Fieldwork 2013, British Columbia Ministry of Energy and Mines, British Columbia Geological Survey Paper 2014-1, pp. 1-14.
- Logan, J.M., and Mihalynuk, M.G., 2014. Tectonic controls on Early Mesozoic paired alkaline porphyry deposit belts (Cu-Au \pm Ag-Pt-Pd-Mo) within the Canadian Cordillera. *Economic Geology*, in press.
- Logan, J.M. and Schiarizza, P., 2014. The Rayfield River pluton, south-central British Columbia (NTS 92P/6): geologic setting and copper mineralization. In: Geological Fieldwork 2013, British Columbia Ministry of Energy, and Mines, British Columbia Geological Survey Paper 2014-1, pp. 15-27.