

ANALYTICAL METHODS

Geochemistry

Analysis of most new samples was preformed by GeoAnalytical Laboratory at Washington State University (WSU). Samples were crushed and hand picked to >60 g each at the University at Albany; in order to assure both sample quality and to provide enough samples for both X-ray fluorescence (XRF) and inductively coupled plasma source mass spectrometer (IC-PMS). Grinding of samples for XRF and IC-PMS was done at WSU, using a tungsten carbide mill and iron equipment respectively (Johnson and others, 1999; web page <http://www.wsu.edu:8080/~geology/Pages/Services/ICP.html> for IC-PMS discussion). Major and selected trace elements were then analyzed by XRF on a single fused glass disk (Johnson and others, 1999) and rare earth, Th, Hf, Ta, and other trace elements were analyzed by IC-PMS at WSU. Estimates of accuracy and precision for both XRF and IC-PMS at WSU are given by Johnson and others (1999) and on the web (<http://www.wsu.edu:8080/~geology/Pages/Services/ICP.html>). Analytical methods for analyses taken from Metzger and others (2002) are given in the Journal of Geology data repository.

The rare earth, Th, Hf, Ta, and other trace elements for samples Bl-179-1, IM-68, and DRJM-16A were done at Union College, Schenectady, New York by James MacDonald. Excellent precision was obtained for the trace elements from these samples, and Pal-889 was run as a standard (see Wirth, 1991 and Romick and others, 1992 for values). Accuracy could not be measured because multiple standards were not run.

REFERENCES

- Johnson, D. M., Hooper, P.R., and Conrey, R. M., 1999, XRF analysis of rocks and minerals for major and trace elements on a single low dilution Li-tetraborate fused bead: *Advances in X-ray Analysis*, v. 41, p. 843-867.
- Metzger, E. P., Miller, R. B., and Harper, G. D., 2002, Geochemistry and tectonic setting of the ophiolitic Ingalls Complex, North Cascades, Washington; implications for correlations of Jurassic Cordilleran ophiolites: *Journal of Geology*, v. 110, p. 543-560.
- Wirth, K. R., 1991, Processes of lithosphere evolution; geochemistry and tectonics of mafic rocks in the Brooks Range and Yukon-Tanana region, Alaska [Ph. D. thesis]: Ithaca, NY, Cornell University, 384 p.
- Romick, J.D., Kay, S.M., and R W., 1992, The influence of amphibole fractionation on the evolution of calc-alkaline andesite and dacite tephra from the central Aleutians, Alaska: *Contributions to Mineralogy and Petrology*, v. 112, p. 101-118.