Chemical Characteristics of Archean volcanic Rocks from the Snare River Area (NTS 850/13), SW Slave Province, NWT

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Seventeen geochemical and petrographic samples were taken from metavolcanic rocks immediately north of the Snare River in the southwestern portion of the Slave Structural Province, approximately 165 km NNW of Yellowknife. Based upon structural and petrological similarities, these rocks have been correlated to the Wijinnedi domain metavolcanic rocks immediately to the east and southeast. The Wijinnedi domain comprises Yellowknife Supergroup mafic to felsic metavolcanic rocks that have a U-Pb zircon age of 2673.3 ± 1.4 Ma. These are conformably overlain by fine grained metasedimentary rocks. Both have undergone low to moderate grade regional metamorphism.

The Wijinnedi samples comprise grey to grey-brown plagioclase and/or hornblende-phyric, massive to pillowed, mafic to intermediate metavolcanic rocks which have been moderately to highly strained. Polyphase deformation and metamorphism are recorded in thin section. Metamorphic mineralogy includes abundant yellow-green metamorphic amphibole with subordinate amounts of retrograde chlorite, tremolite/actinolite and epidote. The metamorphic grade is estimated to be low pressure, lower amphibolite facies. Veining and alteration minerals are modest in the Wijinnedi samples, which suggests that limited mass transfer has taken place. Relic igneous textures are largely absent and include pyroxene and plagioclase phenocrysts.

Whole rock major element geochemistry and normative mineralogy indicate that the rocks have weakly altered igneous compositions. High field strength (HFS) and rare earth element (REE) abundances are very coherent between the samples. Silica values range from 47 to 61 percent; all samples are of subalkaline affinity and can be subdivided into two calc-alkaline and two enriched tholeiitic geochemical suites, based upon their respective rare earth and high field strength

a factor of ten.

Pearce element ratio analysis rejects possible igneous phase fraction
olivine fractionation cannot be ruled out for the fourth. It is interprete
originated in a continental arc-type setting and the enriched tholeiitic s
produced by approximately ten percent partial melting of a depleted m
supports the interpretation that Wijinnedi rocks are correlative to oth
(YKSG) metavolcanic rocks, based on comparative major and trace e