A Megacrystic K-Feldspar Intrusion in Northwestern Nevada: Petrographic and Pb Isotope Analyses

K. L. BROWN[1]* AND W. K. HART[1]

[1]Department of Geology and Environmental Earth Science, Miami University, Oxford, OH 45056

Cretaceous granitic bodies in the Santa Rosa Range, Nevada include a megacrystic K-feldspar intrusion (Granite Peak Stock - GPS) that is similar to megacrystic intrusions found within the Sierra Nevada batholith.

GPS megacrysts are commonly euhedral, ranging from 1-6cm in length. Microscopy reveals abundant plagioclase, biotite, quartz, oxide, and accessory phase inclusions. Euhedral plagioclase and biotite inclusions are preferentially oriented parallel to zonation boundaries. Quartz inclusions form blebs and elongate stringers. Nearly all megacrysts are oscillatory zoned and display sector zoning that is primarily defined by plagioclase and biotite inclusions.

Microsampling of distinct regions was done using diamond coring bits and a Dremel Tool. Following acid leaching, cores removed from two megacrysts were analyzed for Pb isotopes by TIMS. Analyses reveal no core to rim heterogeneity (avg. 206/204 = 19.075 ± .015; avg. 207/204 = 15.670 ± .020; avg. 208/204 = 38.850 ± .063). These megacryst values are within error of values collected on non-megacrystic GPS feldspar separates, suggesting identical sources.

Our textural observations support a magmatic origin for these megacrysts. However, the Pb isotope data do not allow distinction between a magmatic and subsolidus origin because 1) early-formed megacrysts and interstitial K-feldspars may have crystallized from the same homogeneous magma, and 2) subsolidus modification may have formed the megacrysts at the expense of interstitial K-feldspar grains, yielding K-feldspar megacrysts with the same Pb isotope composition as the non-megacrystic GPS feldspars.