

SAMPLE NUMBER: MAC-10: 364.1m: 396708

SUMMARY:

This is an excellent quenched sparsely augite+plagioclase+olivine-phyric basaltic lava with a distinctive texture, reminiscent of boninites. It may be from a geochemically and petrographically mappable unit.

THIN SECTION DESCRIPTION:

This is a beautifully preserved, quenched augite+plagioclase+olivine-phyric basaltic lava, one of the best I have seen from the MRV. It is composed of about 2-4 modal% of small rather stubby lath-like prisms of perfectly fresh augite, rarely longer than 0.5mm, much less abundant elongate microphenocrystal laths of albitized plagioclase, and a few rare former small olivine phenocrysts completely replaced by microcrystalline silica, but retaining typical olivine shape and occasional reddish chromite euhedral inclusions. These are set in a groundmass of former glass charged with acicular to prismatic tiny augite microlites and very elongate tiny albite needles and thin laths. The glass has altered to albite, which is the background 'matrix' in which all the groundmass microlites and phenocrysts are set.

Small bright yellow epidote granules are the main alteration phase besides albite, and are clearly produced from Ca released in albitization of calcic plagioclase and glass. Chlorite is remarkably rare, making up probably less than 1 modal% of this basalt, in strong contrast to the usually much more chlorite-rich and altered Hellyer basalts. Sparse calcite overprints the rock and occurs in a few thin veinlets, and secondary polycrystalline quartz also occurs in small fracture fillings.

The texture of this rock is distinctive and unusual within the Hellyer basalts. It is transitional to boninitic, and reminds me of only a single sample I have seen before, from Doug Jack's thesis (I think no. 334207, but I can't remember exactly if this is the one-compositionally it is trending to boninite). I would like a piece of this for careful analysis and REE study if I may. It may be a distinctive and recognizable unit, although more work would have to confirm this.