15327 CLAST-RICH GLASSY MELT BRECCIA ST. 7 12.4 g

INTRODUCTION: 15327 is a coherent, dark, polymict breccia with a prominent white clast (Fig. 1). 15327 is very unusual. It consists of dominantly coarse clasts (larger than 0.5 mm) embedded in a pale, clear, microvesiculated glass which also appears to occur partly as a surface coat glass. The white clast appears to be a pristine cumulate spinel-bearing troctolitic anorthosite. Zap pits are present, including a 3 mm one in the white clast (Fig. 1). 15327 was collected as part of the rake sample from the north-east rim of Spur Crater.

Figure 1. Post-saw view of 15327. S-71-59204

PETROLOGY: 15327 is a polymict glassy breccia, but it is not a regolith breccia. The glass matrix is clear and continuous (Fig. 2a) in contrast with the opaque, multigenerational matrix of regolith breccias. It occupies about 10% or less of the sample. Glass forms a coat in places (Fig. 2b) but this could be a separate glass. Dowty et al. (1973b) described 15327 as a polymict microbreccia whose clasts are mainly lithic and mineral fragments. Feldspar is predominant, but large pyroxenes and spinels are also present. All the minerals have a mosaic extinction. Hlava et al. (1973) presented analyses of glass fragments; green glass compositions are rare but a variety of glass compositions exists.

Clasts are of two main varieties, one a series of impact melts, the other pieces of an apparently single noritic/troctolitic anorthosite. The impact melts are dominantly crystalline and range from plagioclase-phyric (Fig. 2c) to microsubophitic and micropoikitic. The anorthosite fragments appear to be fragments strung out from the

larger white clast visible in Figure 1. Hlava et al. (1973) presented mineral analyses for the large fragment in ,7, showing a restricted set of mineral compositions: calcic plagioclase ($An_{96-97.5}$, Fe <0.08%), magnesian olivine (Fo_{89}); and magnesian pyroxene, diopside ($En_{49}Wo_{48}$) with some orthopyroxene (Fig. 3). Most fragments are very plagioclase-rich; a defocussed beam analysis by Dowty et al. (1973b) has 32.3% Al_2O_3. Several fragments have good to excellent cumulate textures preserved, with curving grain boundaries; the fragments have been lightly shocked but not cataclasized. One fragment in ,9 has an excellent cumulate texture (Fig. 2d), has olivine and plagioclase which appear the same as those in other fragments, but has the added distinction of containing pink spinel as the dominant phase, occurring as two grains with a curving boundary. The spinel is only faintly pink, partly because the section is thin. Coupled with the presence of spinel as large (up to about 400 microns) mineral fragments elsewhere in 15327, this suggests that the large white clast in 15327 is actually a spinel-troctolitic anorthosite, akin to those in 15445. Simonds et al. (1975) referred to 15327 as a cataclastic annealed coarse-grained rock, but this designation is not in accord with either the macroscopic observations nor with any of the thin sections.

PROCESSING AND SUBDIVISIONS: Because 15327 was so coherent, it was sawn, the butt end providing ,1 and ,2 (Fig. 1). ,2 became the stub for thin sections ,7 to ,10. No other subdivisions or allocations have been made.

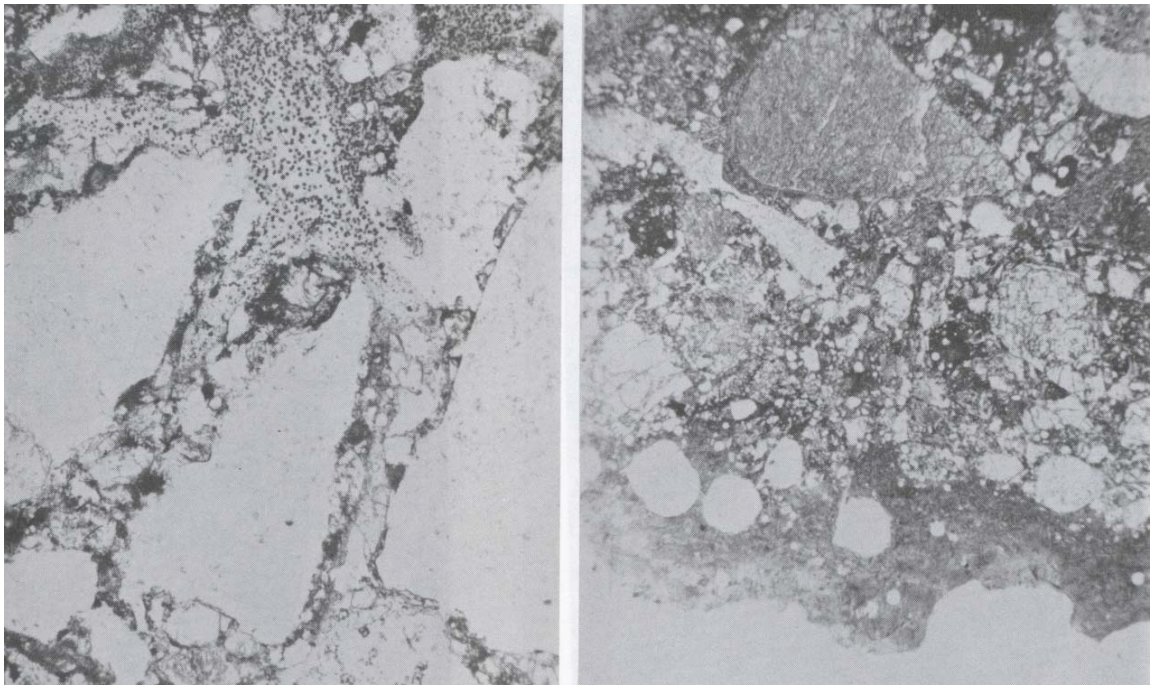

Fig.2a Fig. 2b

Figure 2. Photomicrographs of 15327.
a) 15237,9, showing clasts of the anorthosite immersed in a continuous, clear, microvesiculated glass. Transmitted light. Width about 600 microns,
b) 15327,10, showing polymict breccia with glass matrix and vesicular glass coat. Transmitted light. Width about 2 mm.

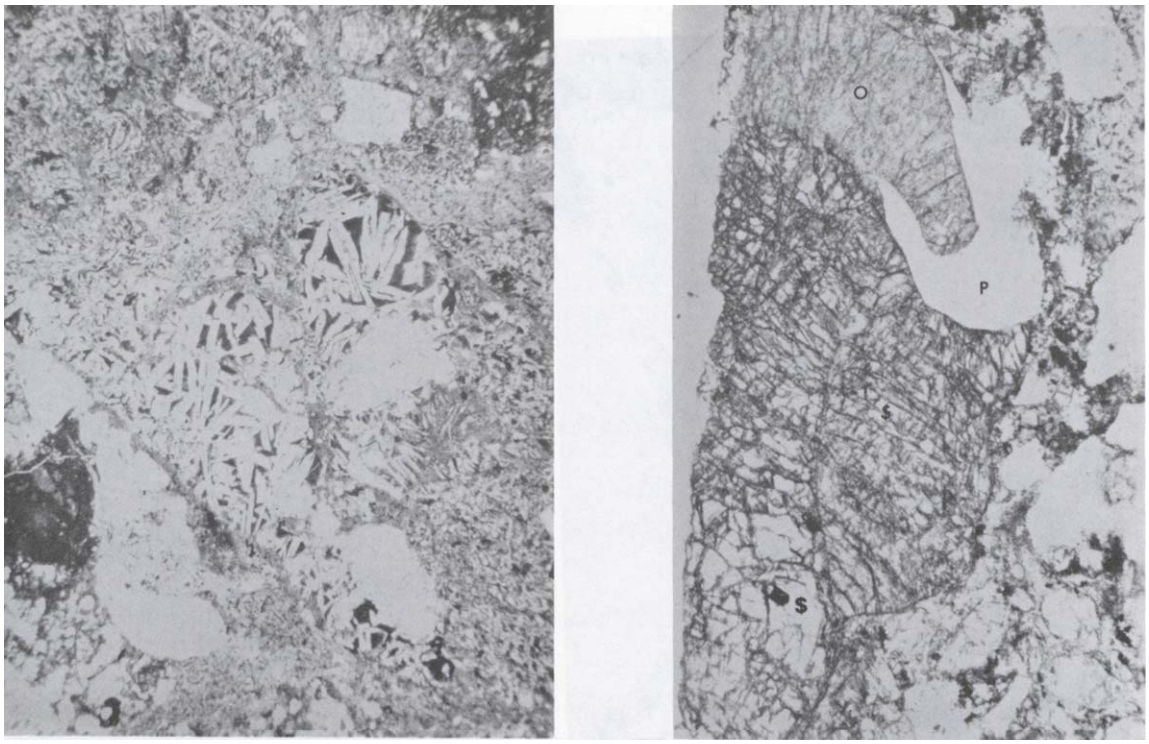

Fig. 2c Fig. 2d

c) 15327,10, showing fragments of plagioclase-phyric impact melts embedded in glass. Transmitted light. Width about 2 mm.
d) 15327,9, showing spinel cumulate clast. Transmitted light. Width about 600 microns. 0 =olivine, $ = spinel, P = plagioclase.

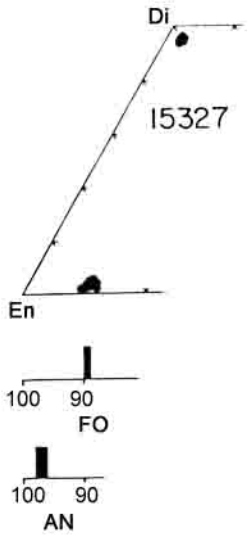

Figure 3. Compositions of minerals in anorthosite clast in 15327,7 (Hlava et al., 1973).