65035 CATACLASTIC ANORTHOSITE, LARGELY GLASS-COATED 446 g

INTRODUCTION: The interior of 65035 is a cataclastic ferroan anorthosite with a glass coat which fractured during its emplacement (Figs. 1a and 1b). Gray clast-like areas within the anorthosite macroscopically appear continuous with the glass coat but the current evidence is not entirely conclusive.

65035 was collected from the south interior wall of a 20 m crater, near the rim of a superposed 2 m crater. Its orientation is known. The glass coat gives the sample, which is coherent, a generally rounded outline. Patina and zap pits are common on the broken, dominantly white side (Fig. 1a) whereas the opposite, smooth glassy side is devoid of zap pits—this latter side, however, was the lunar "up" showing that the rock must have been flipped over a short time prior to collection.

PETROLOGY: Schaal et al. (1979) briefly describe the textures of the glass coat and the anorthosite.

The interior cataclastic anorthosite (Fig. 2) consists of more than 99% plagioclase, with grains up to 3 mm present. The mafic grains are smaller than 20 µm. Microprobe

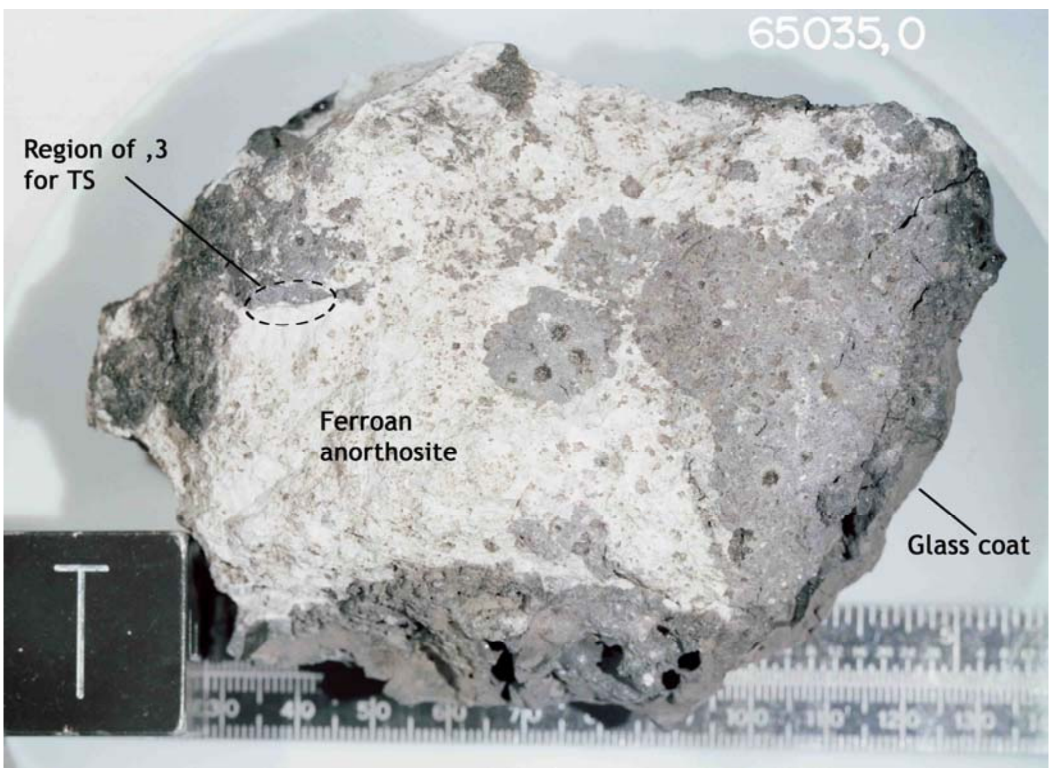

FIGURE 1a. S-79-33984.

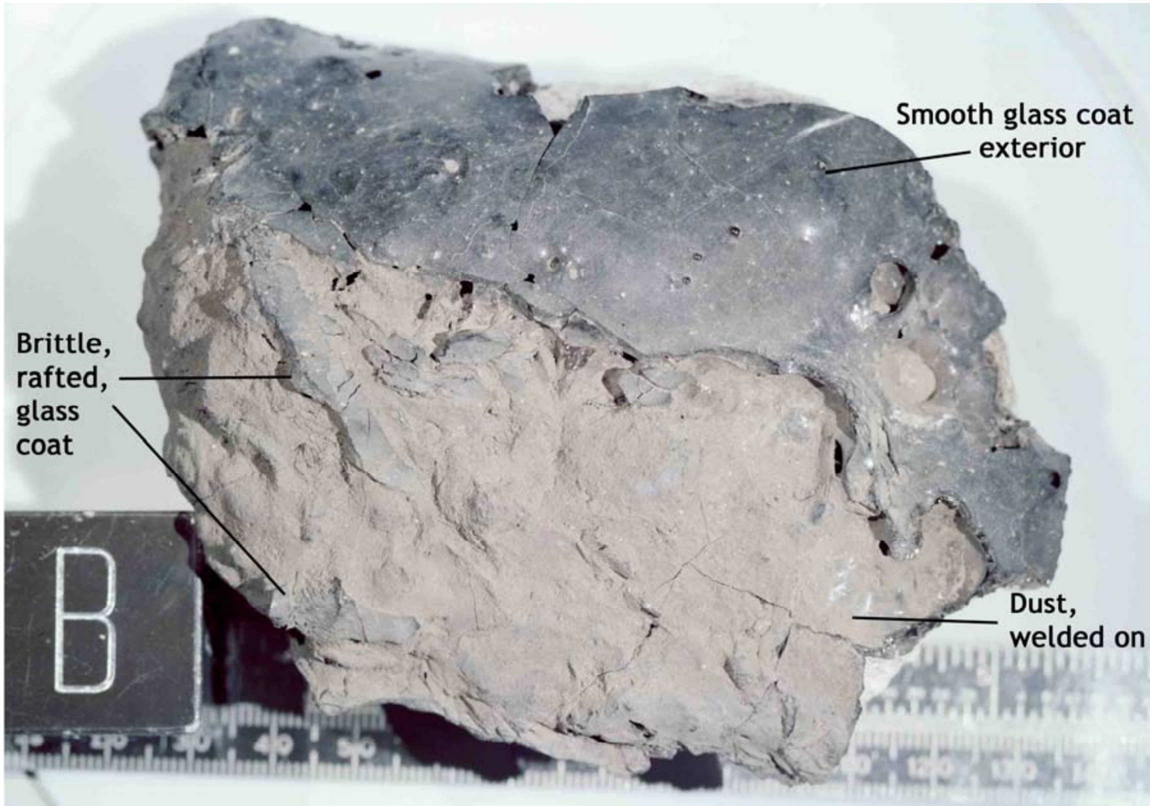

FIGURE 1b. S-79-33985.

analyses (Schaal, pers. comm.) show plagioclase An_{96-97} and a single analyzed pyroxene was $En_{63}Wo_2$. Higher birefringences in some grains show that olivine or augite is also present. Sulfide is more common than very rare specks of Fe-metal, and oxide phases are rare.

The gray clast-rich areas are fine-grained mesostasis-rich basalt (Fig. 2) containing plagioclase clasts (~An_{97}, Schaal, pers. comm.) and abundant Fe-metal/ troilite/schreibersite blebs. Plagioclase laths and olivine crystals are less than 20 μm, and scattered pale-green pleonaste spinels are of similar size. In the thin section area (Fig. 1a) the basalt is finer-grained towards the cataclastic anorthosite (Fig. 2). A thin brown to colorless vein runs along the contact in places but elsewhere cuts both phases. Its composition varies from pure anorthosite (36% Al_2O_3) to 30% Al_2O_3 (Schaal, pers. comm.). It is unknown whether this vein is an extension of the glass coat.

Macroscopically, the coat is glassiest on the exterior, and the contact with the anorthosite is variable from sharp to gradational. In places the obvious glass coat appears to grade into the gray clast-like areas, in others that contact is sharp. The coat was molten or plastic on the inside while the exterior was solid and brittle, and pieces of the exterior were torn off or rafted into the still-molten material (Fig. 1b) either in flight or on landing. Soil adhered to the freshly exposed molten material while the latter was still hot and cannot now be dusted off.

CHEMISTRY: Rancitelli et al. (1973b) report bulk rock K (0.09%), Th (1.65 ppm), and U (0.43 ppm) abundances derived from γ-ray spectroscopy.

EXPOSURE AGE: Rancitelli et al. (1973a) report ^{22}Na and ^{26}Al data from γ-ray spectroscopy. The sample is saturated in ^{26}Al (Yokoyama et al., 1974).

PROCESSING AND SUBDIVISIONS: 65035 remains essentially intact as ,0 (440 g). One loose chip of anorthosite (,4) was made into thin sections and a second chip (,3) of gray clast-like material (glass coat?) and anorthosite (Fig. 1) was also made into thin sections.

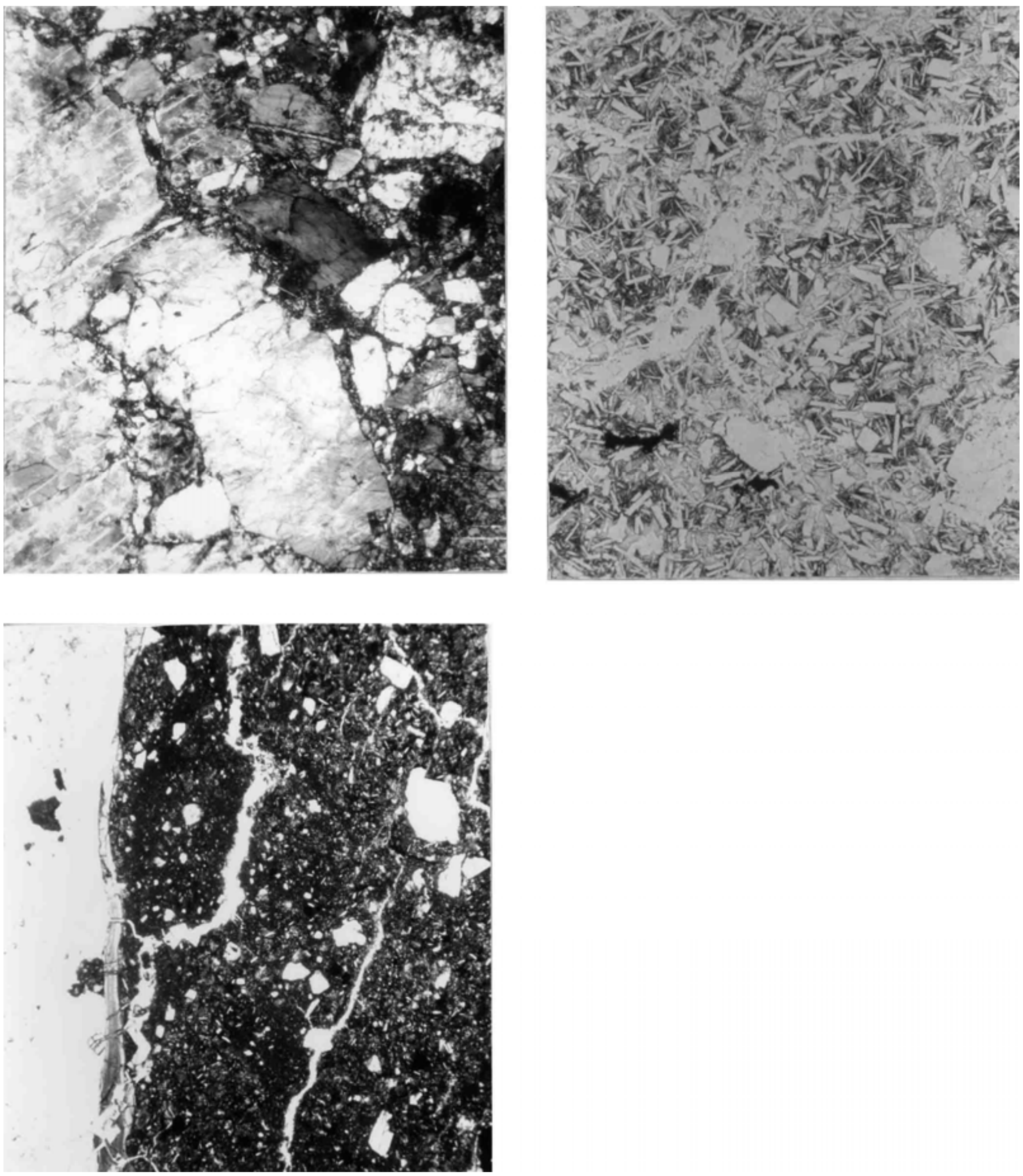

FIGURE 2. a) 65035,8. Cataclastic anorthosite, xpl. Width 2 mm.
b) 65035,5. Basaltic impact melt, ppl. Width 0.5 mm.
c) 65035,6. Basalt/anorthosite, with contact, with glass vein, ppl. Width 2 mm.