

INTRODUCTION: 65785 is a light gray, coherent, basaltic impact melt that contains a large (5 mm) coarse-grained, spinel troctolite clast (Fig. 1). It is a rake sample and lacks zap pits.

PETROLOGY: Brief petrographic descriptions of the basaltic matrix and the spinel troctolite clast are given by Warner et al. (1976b). Dowty et al. (1974b) describe the spinel troctolite clast in more detail.

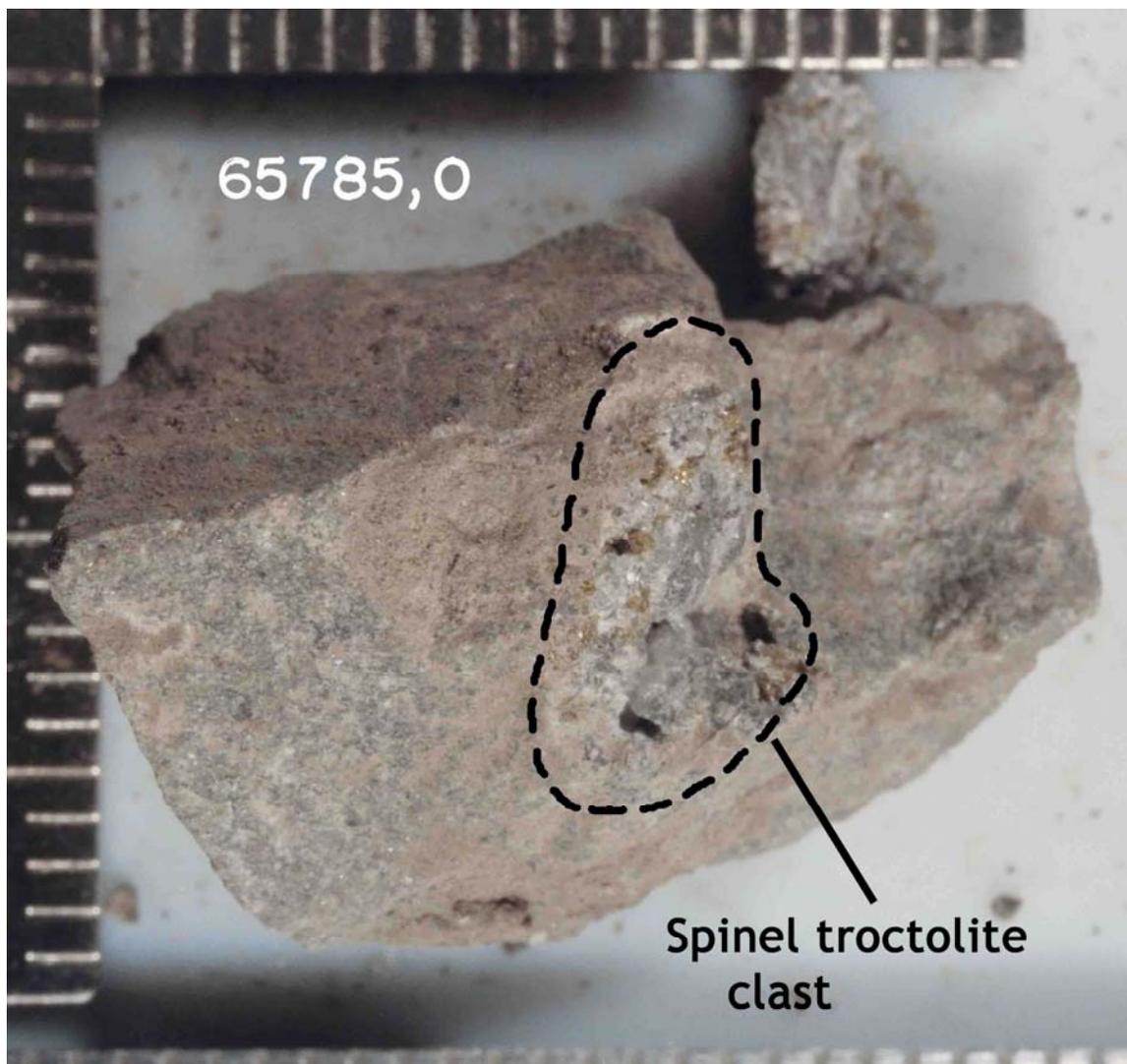


FIGURE 1. Smallest scale division in mm. S-72-48821.

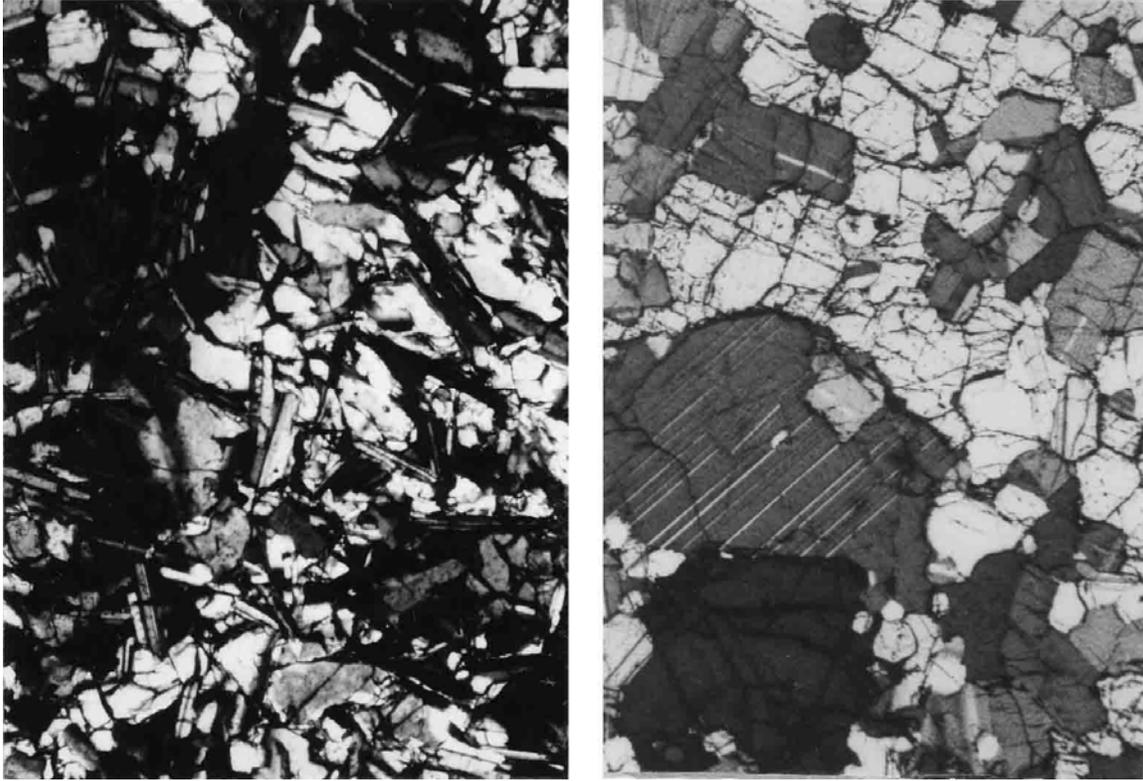


FIGURE 2. a) 65785,4. Basaltic melt, xpl. Width 2 mm.
 b) 65785,3. Spinel troctolite clast, partly xpl. Width 2 mm.

The spinel troctolite clast consists of ~65% plagioclase (0.1-1.0 mm), ~5% spinel (most of which is accounted for by a single 1 mm grain), and the remainder olivine (Fig. 2 and photomicrograph in Dowty et al., 1974b). Except for a few tiny grains, all of the olivine in the section studied by Dowty et al. (1974b) and Warner et al. (1976b) occurs as a single large poikilitic crystal. This clast is much more plagioclase-rich than the pink spinel troctolite clast in 67435. Mineral compositions are shown in Figure 3 and tabulated by Dowty et al. (1974b, 1976). Accessory phases include low-Ca and high-Ca pyroxene, ilmenite, armalcolite, Zr-rutile, Fe-metal (2-25% Ni, 0.5-1.5% Co), troilite, whitlockite, farringtonite (Mg-phosphate) and K-feldspar. The metal compositions suggest that this clast is not chemically pristine. Longhi et al. (1976) discuss the Fe-Mg partitioning between olivine and plagioclase in this clast.

The matrix is a fine-grained, basaltic impact melt (Fig. 2) with equant to lathy plagioclase (~0.1 mm long) and ophitic olivine and pyroxene (up to 0.3 mm). Xenocrysts are absent. Mineral compositions are slightly less magnesian than in the spinel troctolite clast (Fig. 3). Accessory phases include spinel, armalcolite, Fe-metal, schreibersite, zirkelite (?), whitlockite and apatite. Mineral analyses are tabulated by Dowty et al. (1976).

CHEMISTRY: Major and trace element analyses of the basaltic matrix are given by Murali et al. (1977) and Ehmann et al. (1975). Jovanovic and Reed (1976b) present

halogen and other trace element abundances for the matrix. Microprobe defocussed-beam analyses of the matrix and the spinel troctolite clast are reported by Warner et al. (1976b) and Dowty et al. (1974b). Eldridge et al. (1975) give whole rock abundances of natural and cosmogenic radionuclides. Ca and K data are presented by Schaeffer and Schaeffer (1977) in an Ar geochronological study of the basaltic matrix.

The gamma-ray data of Eldridge et al. (1975) show the whole rock to be rich in incompatible elements (K 1850 ppm, Th 3.03 ppm, U 0.97 ppm). This is confirmed by the analyses of the matrix, which also show a high Mg/Fe, consistent with the mineral compositions (Table 1). The spinel troctolite is compositionally distinct from the bulk matrix, having much more alumina and less silica and alkalis (Table 1).

RADIOGENIC ISOTOPES/GEOCHRONOLOGY: An ^{40}Ar - ^{39}Ar plateau age of 3.97 ± 0.02 b.y. was determined for the basaltic matrix by Schaeffer and Schaeffer (1977) (Fig. 4). Large amounts of low temperature gas loss with ages increasing from 1.38 b.y. to 3.47 b.y. and a high temperature drop-off to 3.70 b.y. are noted by Schaeffer and Schaeffer (1977).

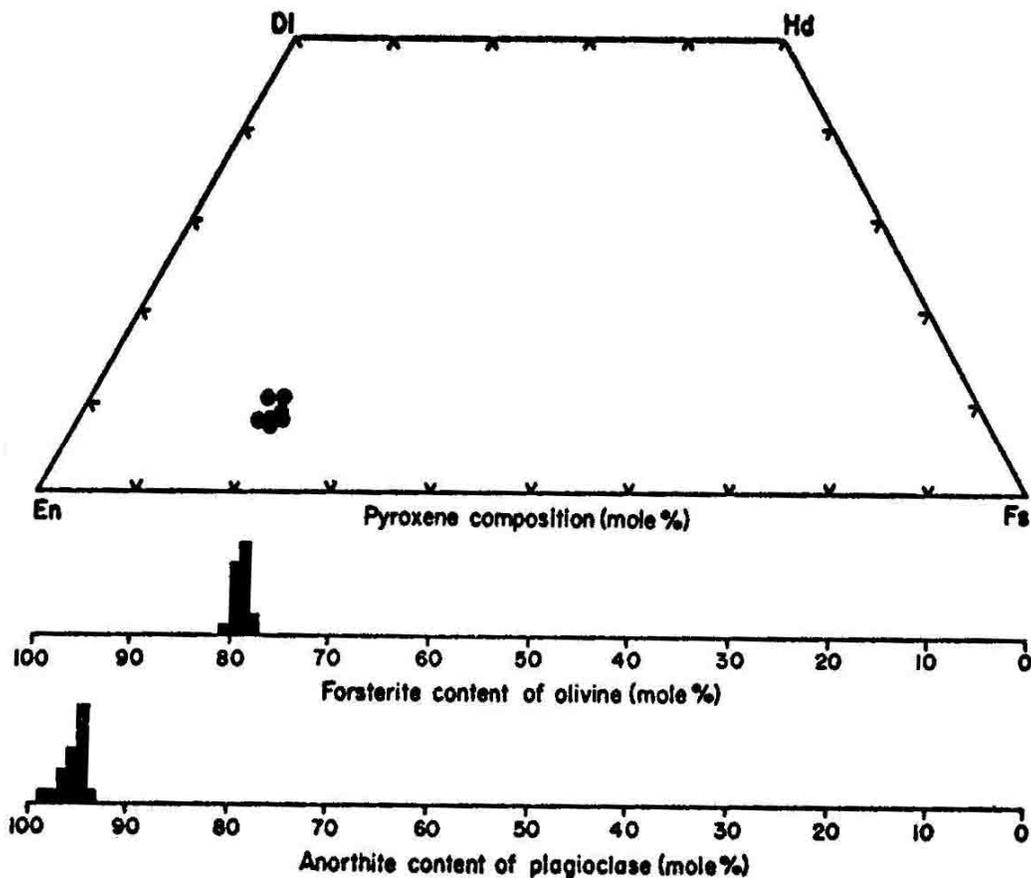


FIGURE 3a. Mineral compositions for host basaltic melt; from R. Warner et al. (1976b).

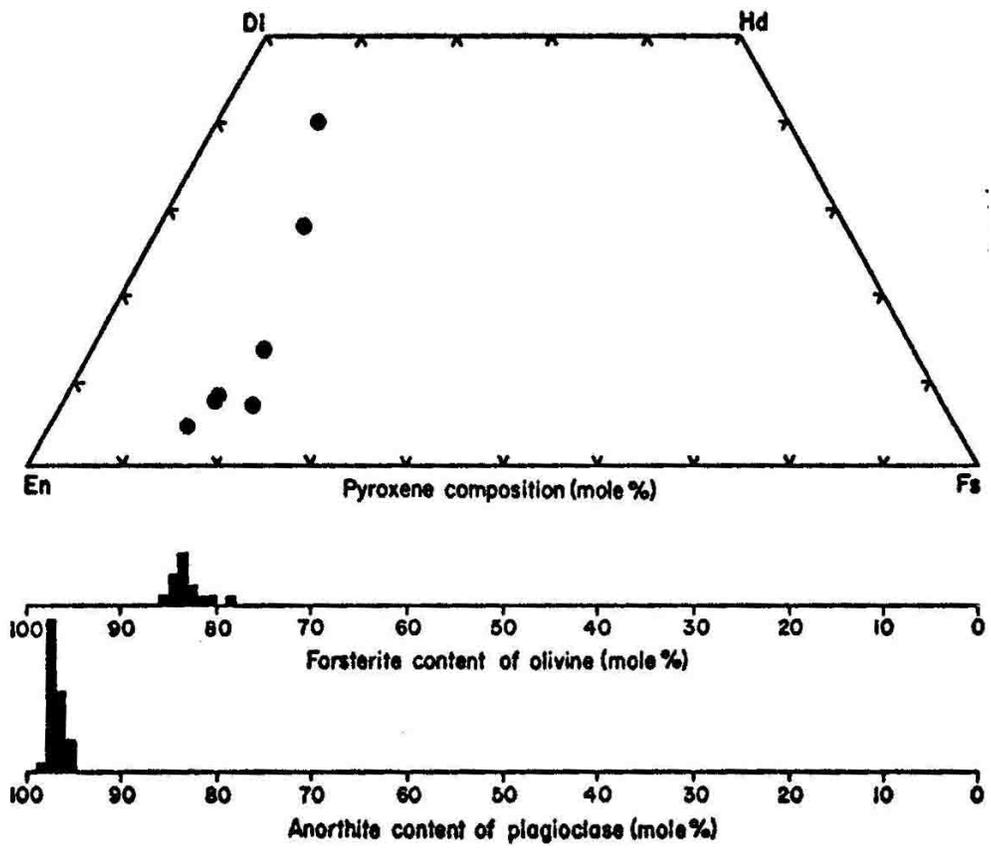


FIGURE 3b. Mineral compositions for spinel troctolite clast; from R. Warner et al. (1976b).

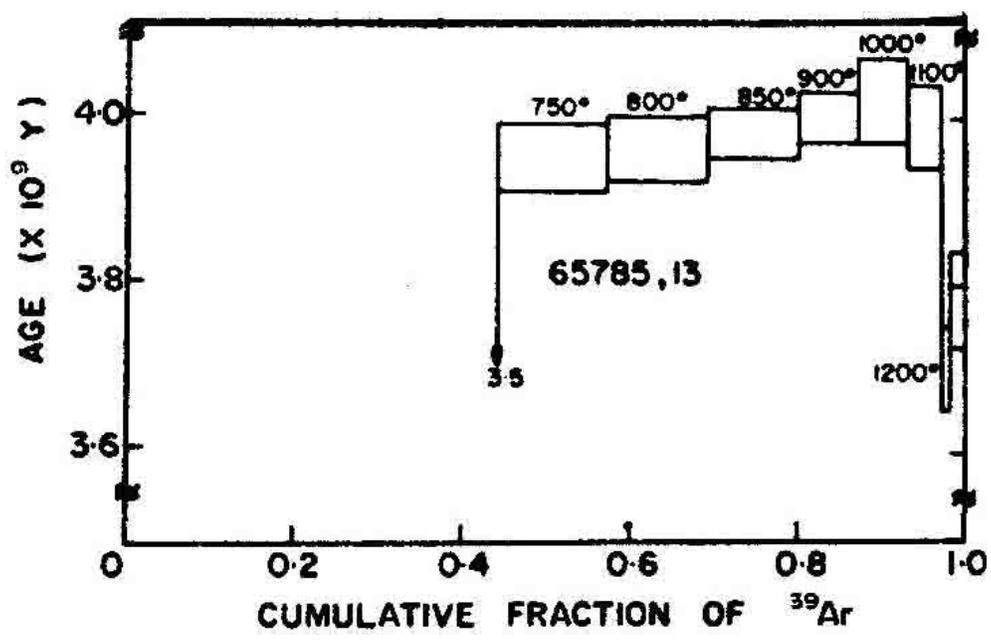


FIGURE 4. Ar release; from Schaeffer and Schaeffer (1977).

TABLE 1. Summary chemistry of 65785 lithologies.

	1) <u>Basaltic matrix</u>	2) <u>Spinel troctolite clast (DBA)</u>
SiO ₂	46.0	41.1
TiO ₂	0.7	0.07
Al ₂ O ₃	23.4	29.9
Cr ₂ O ₃	0.165	0.18
FeO	6-7	3.7
MnO	0.08	0.3
MgO	10-12	9.6
CaO	~14	14.8
Na ₂ O	0.54	0.29
K ₂ O	0.26	0.04
P ₂ O ₅	0.12	0.04
Sr		
La	19.2	
Lu	0.91	
Rb		
Sc	9.9	
Ni	302	
Co	22	
Ir ppb	7	
Au ppb	14	
C		
N		
S		
Zn		
Cu		

Oxides in wt%, others in ppm except as noted
 1) from Ehmann et al. (1975) and Murali et al. (1977)
 2) from Warner et al. (1976b)

RARE GASES/EXPOSURE AGES: Whole rock ²²Na and ²⁶Al data are provided without comment by Eldridge et al. (1975). An ³⁸Ar exposure age of 271 m.y. is calculated by Schaeffer and Schaeffer (1977).

PROCESSING AND SUBDIVISIONS: In 1973 several small chips were allocated as ,1 to Keil for petrography. In 1975 the rock was extensively subdivided producing ,8 - ,19 for allocations. ,8 (3.39 g) is the largest single piece remaining. Most of the large spinel troctolite clast (Fig. 1) resides in ,8.