76275

Impact Melt Breccia
55.93 g, 6.8 x 4 x 3 cm.

INTRODUCTION

Sample 76275 was chipped from Block 1 of the big boulder at Station 6 (Wolfe and others, 1981; Heiken et al., 1973). It contains distinct clasts of white feldspar (or anorthosite) in a dark, fine-grained, clastic matrix. This sample has not been well studied.

PETROGRAPHY

Sample 76275 is a clast-bearing, nonvesicular, blue-grey breccia (Fig. 1). The modal mineralogy of 76275 is about 50% plagioclase, 40% low-calcium pyroxene, with minor amounts of augite, olivine, ilmenite, armalcolite, and metallic iron. The texture of the fine grain matrix of 76275 is poikilitic to subophitic and similar to that of 76295 (Simonds, 1975; Simonds et al., 1974). The matrix is finer-grained than for the other samples of the large boulder (Fig. 2). The grain size of matrix feldspar is <10 pm, pyroxene <25 pm. The matrix consists of low-calcium pyroxene ($Wo_4En_{60-73}Fs_{19-26}$), minor augite ($Wo_{30-40}En_{44-57}Fs_{12-15}$), Olivine ($Fo_{70-76}$), and feldspar ($An_{81-97}$) (Fig. 3).

Misra et al. (1976) have studied the complex metallic nickel-iron particles included in 76275 (Fig. 4).

WHOLE-ROCK CHEMISTRY

Phinney (1981) and Simonds and Warner (1981) report preliminary major element data for matrix and clasts in 76275 (Table 1). The blue-grey matrix, tan matrix, and vesicular clast all appear to have compositions like those of the matrices of the rest of the samples of the large Station 6 Boulder. Higuchi and Morgan (1975) find that the trace siderophile element composition of all the samples of the Station 6 Boulder form a tight grouping (meteorite group 2) on compositional diagrams. Sample 76275 has a higher abundance of these meteoritic elements than the matrices of 76015 and 76215 (Table 2, Gros et al., 1976).

Figure 1: Sample 76275, showing light and dark clasts in an aphanitic blue-grey matrix. Cube is 1 cm. S73-15081.

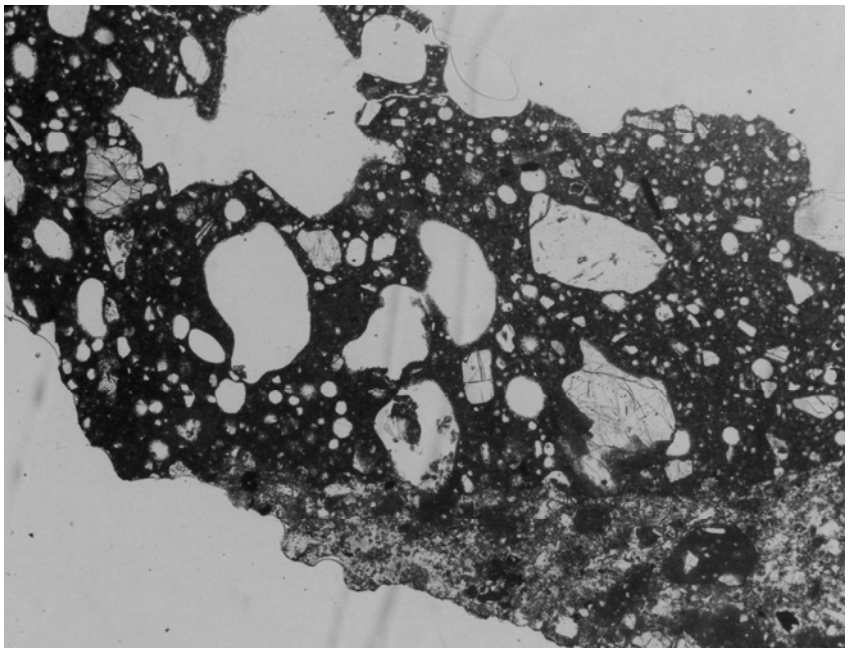

Figure 2: Photomicrograph of matrix of 76275,56. Vesicles are not typical. Field of view is 4 x 5 mm.

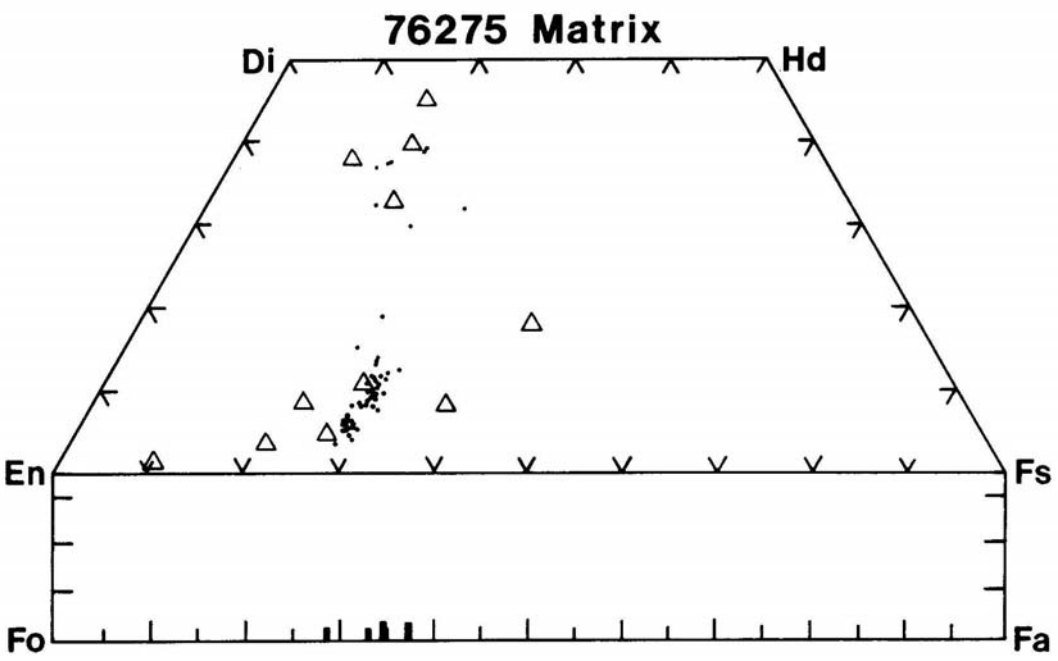

Figure 3: Electron microprobe analyses of minerals in matrix of 76275. From Phinney (1981).

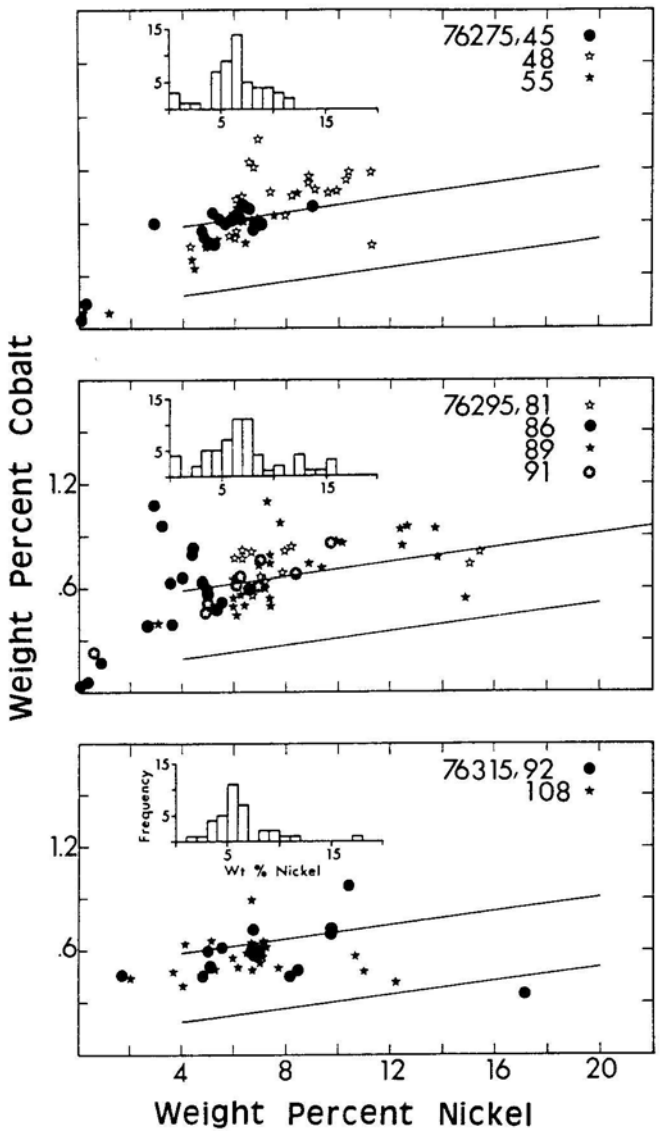

Figure 4: Ni vs. Co analysis of iron grains in 76275 compared with other Station 6 breccia samples. By Misra et al. (1976).

SIGNIFICANT CLASTS

Several large, white clasts with distinct boundaries can be seen in the photos of the broken surface of 76275 (Fig. 1). These obvious clasts deserve to be studied.

RADIOGENIC ISOTOPES

Cadogan and Turner (1975) determined an Ar plateau age of 4.02 ± 0.04 b.y. for 76275 (Fig. 5) This is somewhat older than the other Ar ages for this boulder.

COSMOGENIC RADIOISOTOPES AND EXPOSURE AGES

The Apollo 17 samples (including 76275) provided a unique opportunity to study the energy spectrum (and potential angular anisotropy) of the incident proton flux from the August 1972 solar flare (Rancitelli et al., 1974; Keith et al., 1974). Table 3 compares the induced activity of 76275 with other samples of the boulder.

MAGNETIC STUDIES

Gose et al. (1978) have carefully studied the remanent magnetization of 26 subsamples from the Station 6 Boulder. The direction of

magnetization after alternating field demagnetization of breccia sample 76275 was found to be scattered for this clast-rich sample. Gose et al. propose that, the natural remanent magnetization of impact melt breccias is the vector sum of two magnetizations, a pre-impact magnetization and a partial thermoremanence acquired during breccia lithification. The large scatter of magnetization direction of 76275 implies the predominance of pre-impact magnetization in this sample.

PROCESSING

The processing of sample 76275 was delayed and the Phinney consortium did not complete their analyses (Phinney, personal communication).

The largest remaining piece (,0) weighs 38 g. There are 16 thin sections.

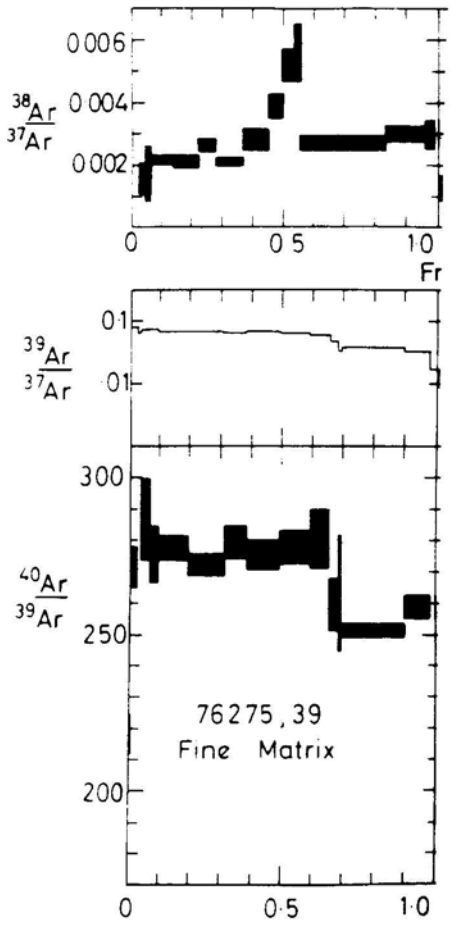

Figure 5: Ar-Ar release diagram of matrix of 76275. From Cadogan and Turner (1976).

Table 11: Whole-rock chemistry of 76275.
From Simonds and Warner (1981) and Phinney (1981).
(Cautionary note: These preliminary analyses were made by fused bead electron microprobe analyses, R. Brown, analyst)

Split Technique	,24 EMP tan matrix	,32 EMP vesicular clast	,38 EMP blue-grey clast
SiO_2 (wt%)	47.14	47.16	46.67
TiO_2	1.65	1.43	1.36
Al_2O_3	18.7	17.68	18.63
Cr_2O_3	0.15	0.19	0.19
FeO	8.54	8.91	8.41
MnO			
MgO	9.22	11.20	10.85
CaO	12.06	11.30	11.37
Na_2O	0.72	0.70	0.70
K_2O	0.34	0.22	0.28

Table 2: Trace element data for 76275. Concentrations in ppb.
From Gros et al. (1976).

	Sample 76275,33 (a)		Sample 76275,33 (a)
Ir	7.76	Ag	1.22
Os	8.6	Br	72.7
Re	0.725	In	12.4
Au	5.1	Bi	<0.5
Pd	19.8	Zn (ppm)	4
Ni (ppm)	387	Cd	8.8
Sb	2	Tl	1.4
Ge	383	Rb (ppm)	3.67
Se	125	Cs	196
Te	9.8	U	2350

Table 3: Solar flare induced and natural activity of 741275 compared with other samples.
From large solar flare, August 1972.
a) Keith et al. (1974); b) Rancitelli et al. (1974); c) O'Kelley et al., (1974)

	Sample 76215 (a)	Sample 76255 (b)	Sample 76275 (b)	Sample 76295 (b)	Sample 76295 (c)
dpm/Kg					
^{26}Al	56 ± 3	79 ± 4	110 ± 3	71 ± 4	67 ± 5
^{22}Na	60 ± 4	71 ± 4	100 ± 3	64 ± 3	54 ± 4
^{54}Mn	22 ± 17	38 ± 9	103 ± 20	69 ± 26	38 ± 15
^{56}Co	45 ± 6	37 ± 4	86 ± 9	35 ± 5	41 ± 7
^{46}Sc	5 ± 3	3.9 ± 1.2	7 ± 2	6.4 ± 2.6	5 ± 2
^{48}V					
Natural activity					
Th (ppm)	4.6	2.33	5.69	5.76	
U (ppm)	1.27	.58	1.40	1.55	
K (ppm)		2900	2250	2300	