67055

Polymict Breccia

221 grams

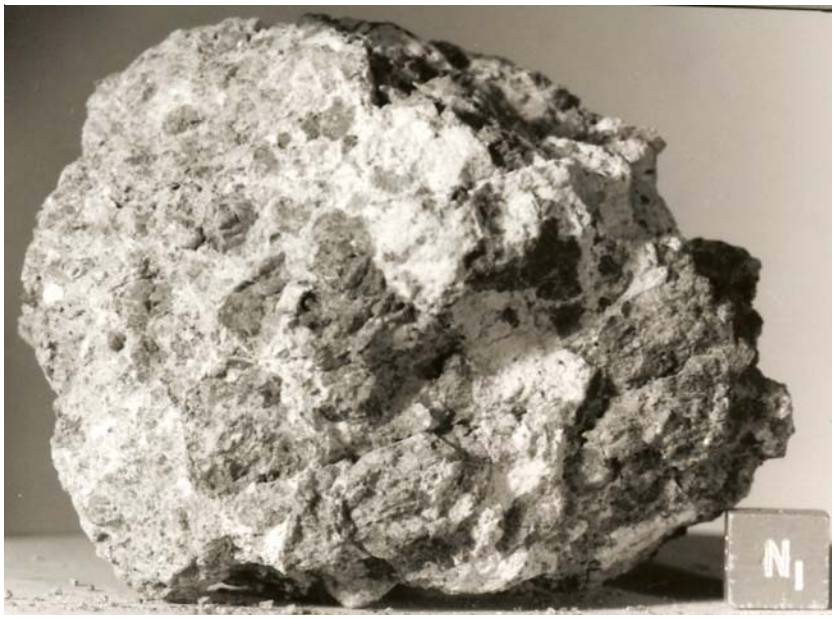


Figure 1: Photo of 67055. Cube is 1 cm.. S72-43892

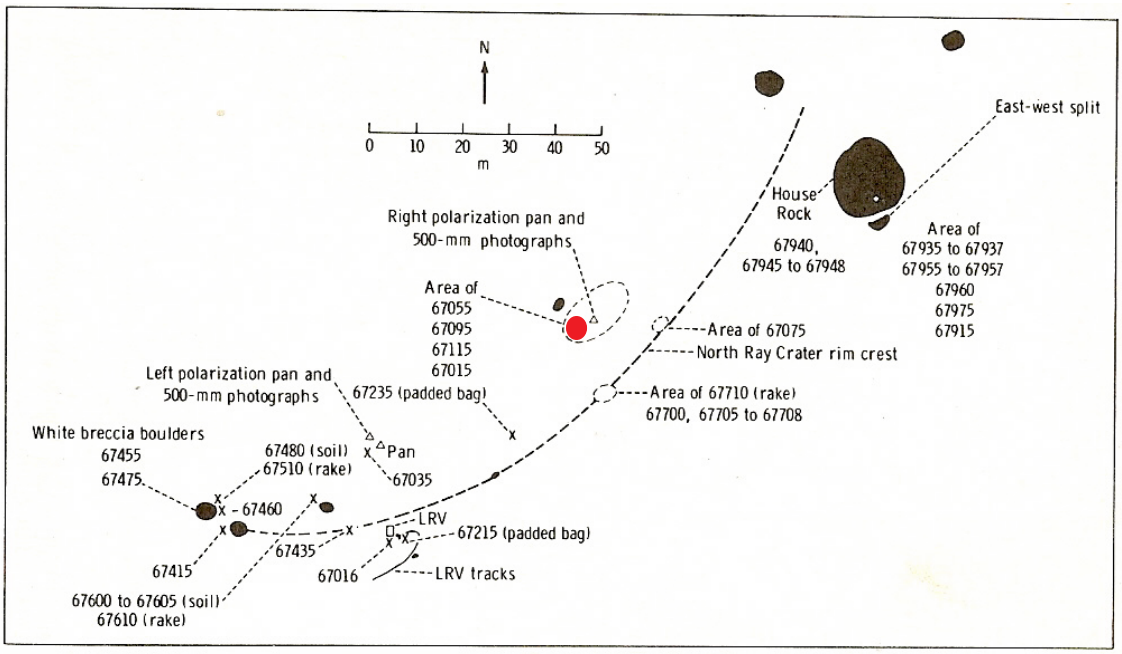


Figure 2: Showing 67055 inside the rim of North Ray Crater.

Introduction

67055 is a black and white breccia collected from inside the rim of North Ray Crater (figure 2). It has relatively high trace element content, but has not been dated.

Petrography

67055 consists of a porous, fragmental, feldspar-rich matrix that includes dark, aphanitic impact melt clasts (figures 1 and 6). The fragmental matrix is made up of

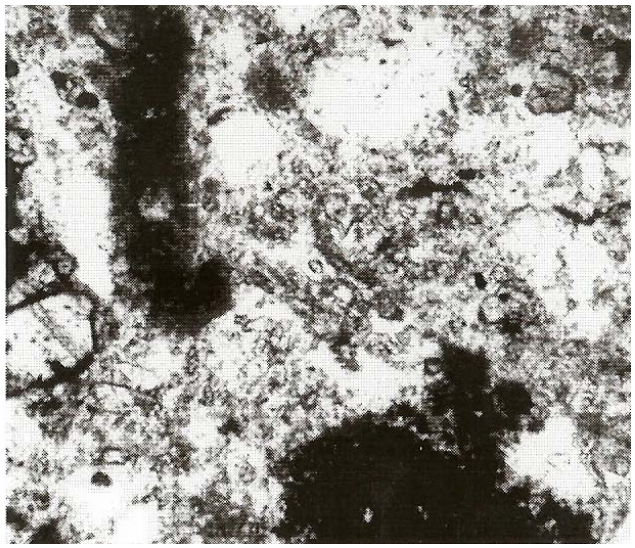


Figure 3: Thin section view of feldspathic matrix of 67055 (Ryder and Norman 1980).

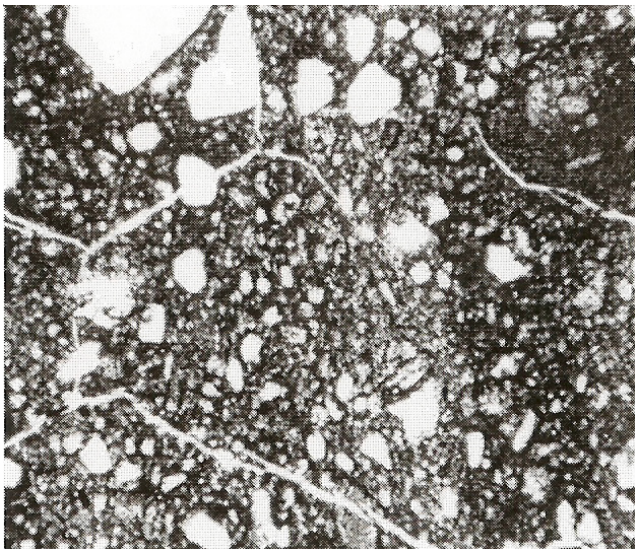


Figure 4: Photomicrograph of thin section of dark apanitic clast material (Ryder and Norman 1980).

>80 % plagioclase (figure 3). Olivine, pyroxene, ilmenite, troilite and Mg-spinel are also present (Ryder and Norman 1980). The clasts of aphanitic material have less plagioclase (~60%) and contain Ni-Fe metal (figure 4). Hunter and Taylor (1981) saw no rust in the thin section they examined.

Lithic clasts include feldspathic granulite, basaltic melt and glassy breccias.

Chemistry

67055 is relatively enriched in trace elements compared with most samples from North Ray Crater, but the REE-

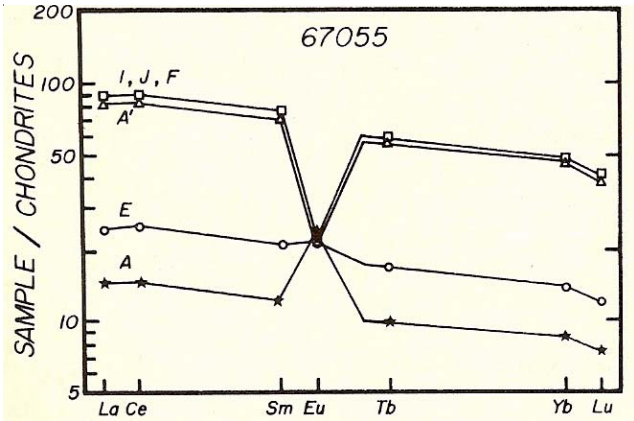


Figure 5: Normalized rare-earth-element diagram for 67055 (Lindstrom and Salpas 1983).

rich component has not been identified. Lindstrom and Salpas (1982) determined the composition of the clasts, but not the bulk rock (figure 5). However, Eldridge et al. (1973, 1975) and Keith and Clark (1973) reported K, U and Th for the bulk rock.

Radiogenic age dating

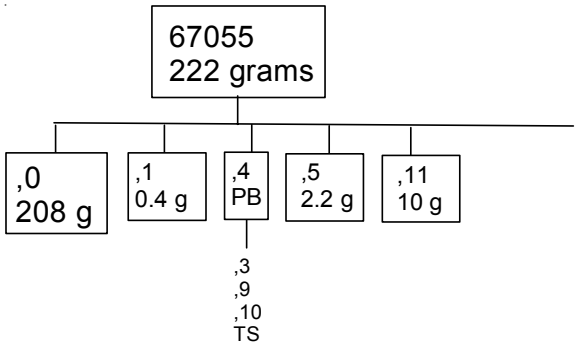
none

Cosmogenic isotopes and exposure ages

Eldridge et al. (1973, 1975) determined the cosmic-ray-induced activity of 67055 as ^{22}Na = 56 dpm/kg and ^{26}Al = 137 dpm/kg. Clark and Keith (1973) determined ^{22}Na = 43 dpm/kg and ^{26}Al = 116 dpm/kg, ^{46}Sc = 3 dpm/kg and ^{54}Mn = 6 dpm/kg.

Processing

67055 was not studied in the original round of allocations and has never received a detailed mineralogical study (i.e. no pyroxene diagram). There are only 3 thin sections of 67055. It has been chipped, not sawn (figure 6).



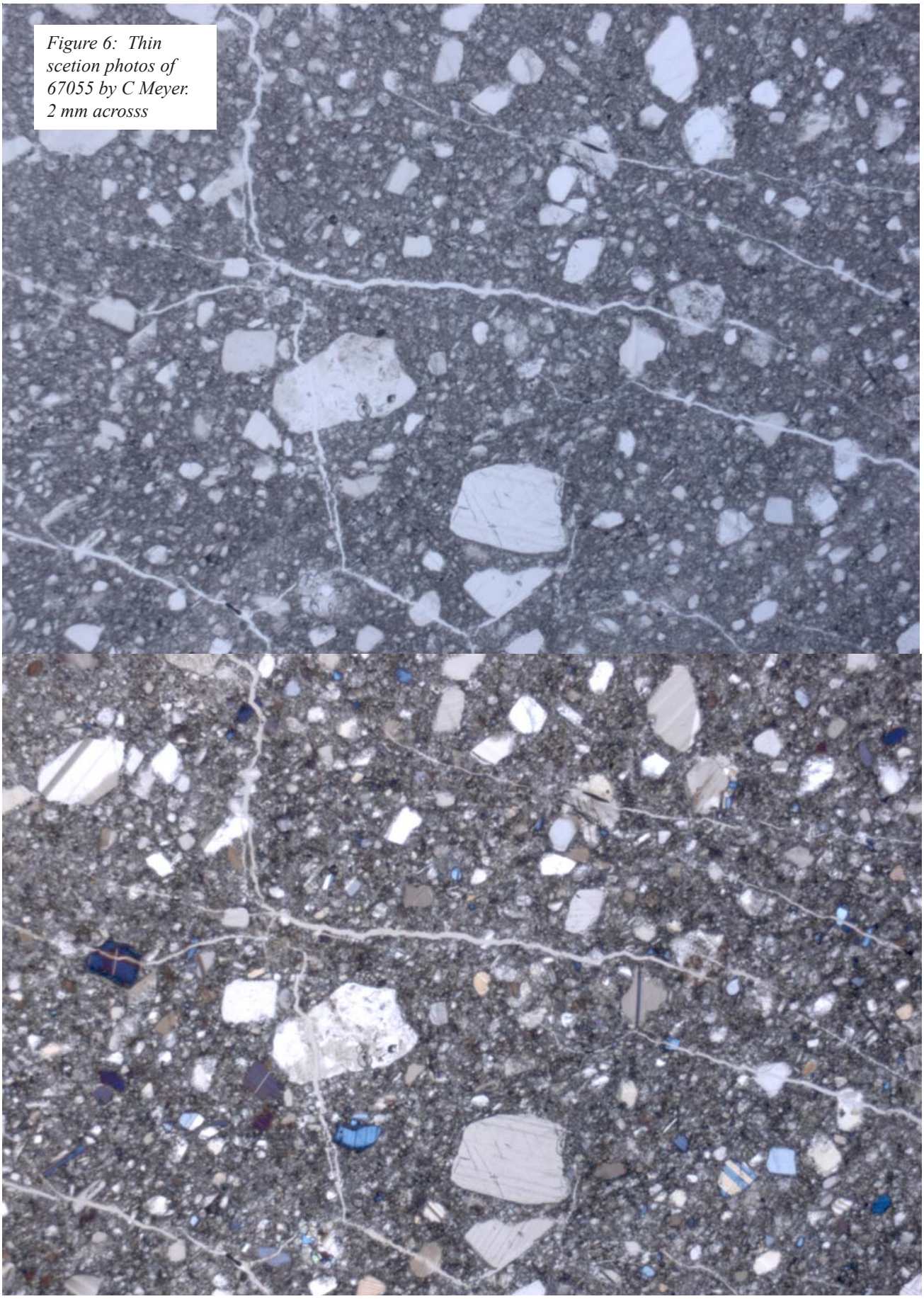


Figure 6: Thin scetion photos of 67055 by C Meyer. 2 mm acrosss

Table 1. Chemical composition of 67055

reference	Eldridge73		Clark73		Lindstrrom and Salpas 1982						
weight					matrix	matrix	matrix	melt rocks			
SiO2 %											
TiO2											
Al2O3					28.6	29.8	21.3	21	20.6	20.4	(b)
FeO					3.86	2.96	8.2	8.02	7.28	7.31	(b)
MnO											
MgO					5.6	4.8	10.6	13.2	12.2	12.4	(b)
CaO					17.2	17.3	13.5	12.3	12.5	12.5	(b)
Na2O					0.564	0.6	0.52	0.57	0.54	0.57	(b)
K2O	0.194	(a)	0.192	(a)							
P2O5											
S %											
sum											
Sc ppm					8	7	13	13	13	13	(b)
V											
Cr					534	439	1090	1190	1185	1162	(b)
Co					16	4	48	40	24	20	(b)
Ni					210	40	720	630	360	255	(b)
Cu											
Zn											
Ga											
Ge ppb											
As											
Se											
Rb											
Sr					203	224	158	188	179	149	(b)
Y											
Zr											
Nb											
Mo											
Ru											
Rh											
Pd ppb											
Ag ppb											
Cd ppb											
In ppb											
Sn ppb											
Sb ppb											
Te ppb											
Cs ppm											
Ba					122	104	250	320	310	300	(b)
La					8	4.9	27.4	29	29.4	28.7	(b)
Ce					21.5	12.5	74	80	78.3	76.5	(b)
Pr											
Nd											
Sm					3.8	2.2	13	13.7	13.9	13.5	(b)
Eu					1.48	1.62	1.51	1.55	1.49	1.52	(b)
Gd											
Tb					0.79	0.46	2.67	2.85	2.76	2.74	(b)
Dy											
Ho											
Er											
Tm											
Yb					2.8	1.72	9.4	9.7	9.7	9.6	(b)
Lu					0.41	0.254	1.34	1.39	1.38	1.35	(b)
Hf					2.76	1.63	13	10.7	10.6	10.3	(b)
Ta					0.42	0.26	1.39	1.47	1.41	1.42	(b)
W ppb											
Re ppb											
Os ppb											
Ir ppb											
Pt ppb											
Au ppb											
Th ppm	3.69	(a)	3.6	(a)	1.23	0.64	4.72	4.8	4.8	4.55	(b)
U ppm	0.98	(a)	0.99	(a)	0.36	0.19	1.27	1.42	1.33	1.38	(b)

technique: (a) radiation counting, (b) INAA

Figure 7: Processing photo of 67055. Cube is 1 inch. S82-27858

References for 67055

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