78135

Ilmenite Basalt

133.9 grams

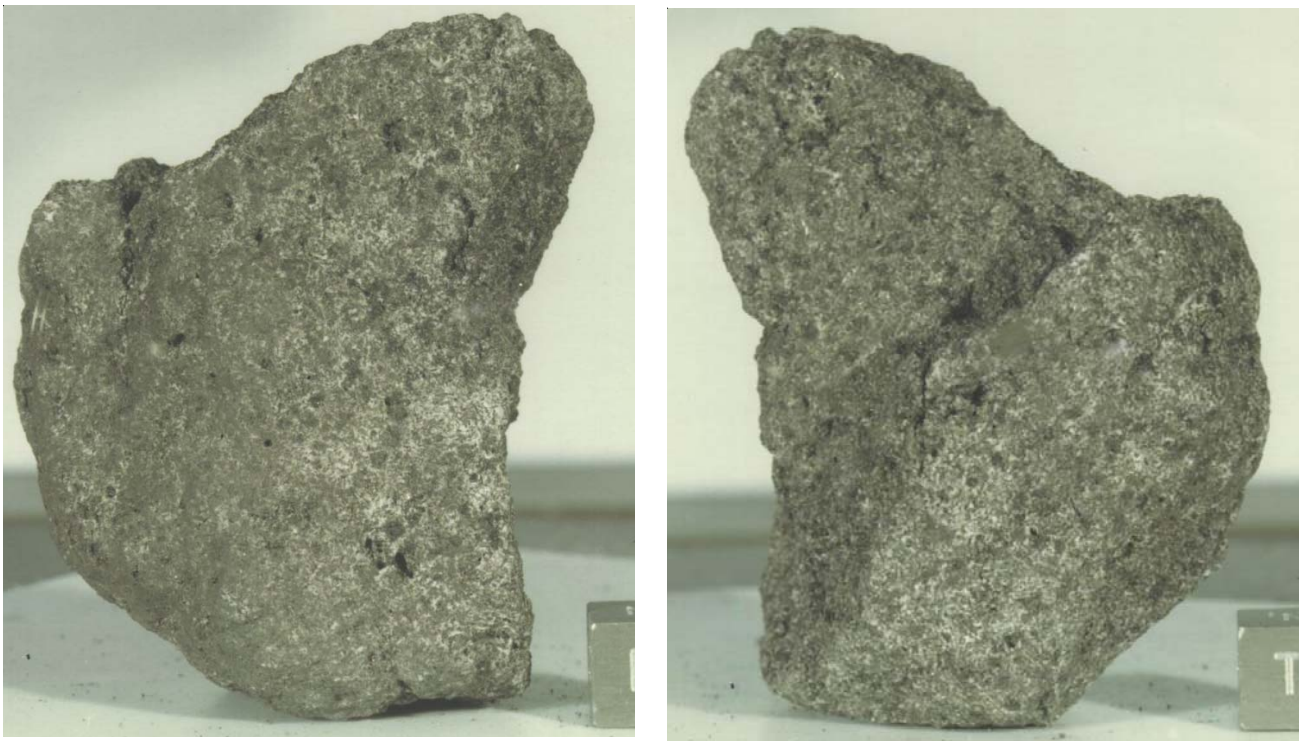


Figure 1 a, b: Two side of 78135. NASA S73-15004 and 15003. Cube is 1 cm.

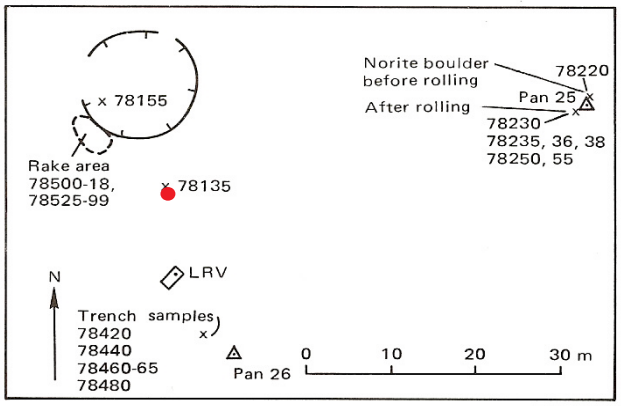


Figure 2: Location of 78135 on map of station 8, Apollo 17.

Introduction

78135 is a medium-grained ilmenite basalt collected from the regolith at station 8, Apollo 17.

Petrography

Brown et al. (1975) give the mode. In general, mineral chemistries have not been reported, although Brown et al. (1975) determined the composition of a Zr-rich mineral (table 2).

Mineralogical Mode for 78135

	Brown et al. 1975
Olivine	0.3
Pyroxene	50.7
Plagioclase	20.6
Opaques	24.4
Silica	4
Mesostasis	-

Chemistry

Keith et al. (1974) and Fruchter et al. (1975) determined the K, U, Th by counting the natural radioactivity. Rhodes et al. (1976) reported both major and minor element contents by combined XRF, INAA and IDMS (table 1, figures 4, 5 and 6).

Gibson et al. (1976) reported 1895 ppm S.

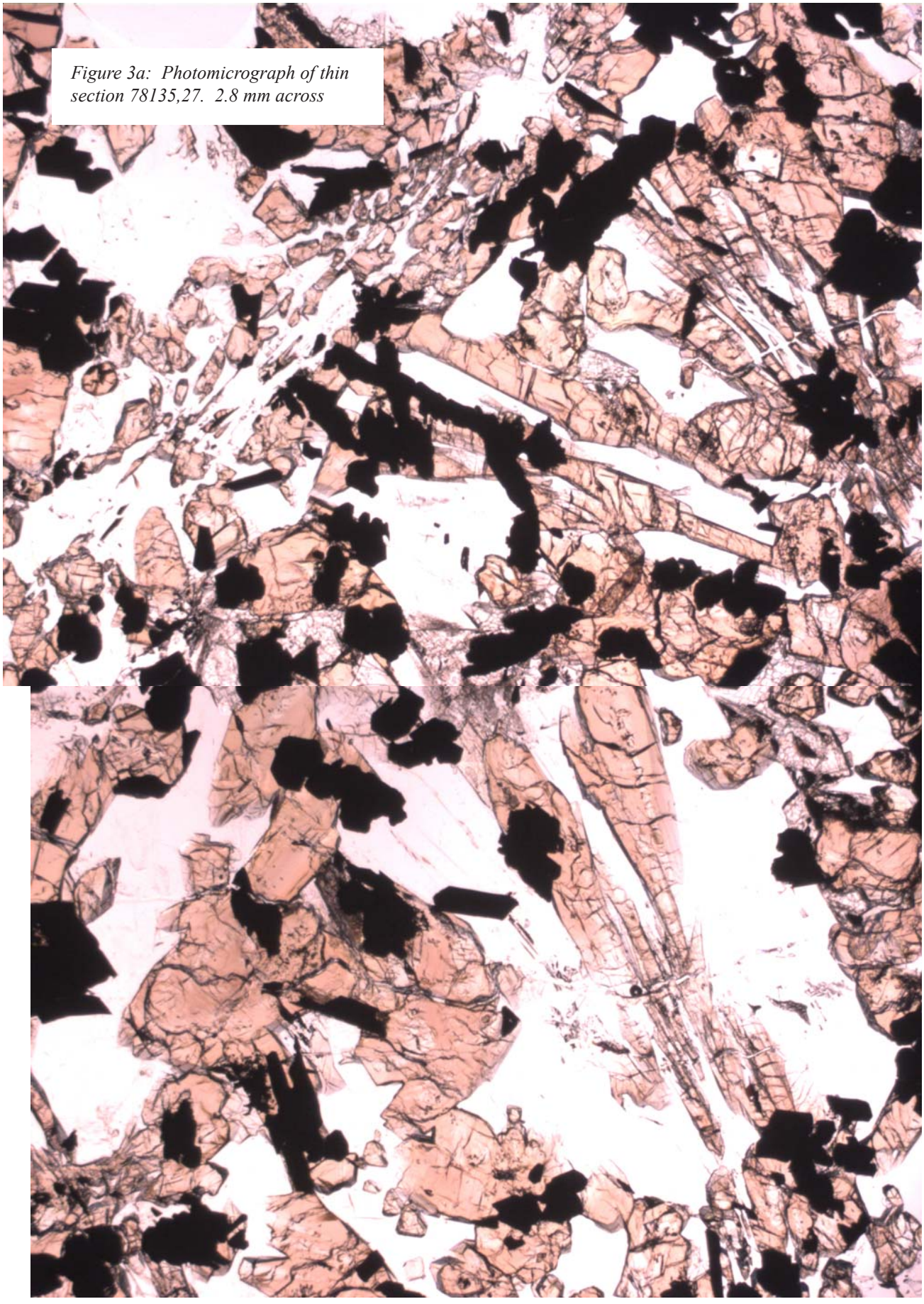


Figure 3a: Photomicrograph of thin section 78135,27. 2.8 mm across

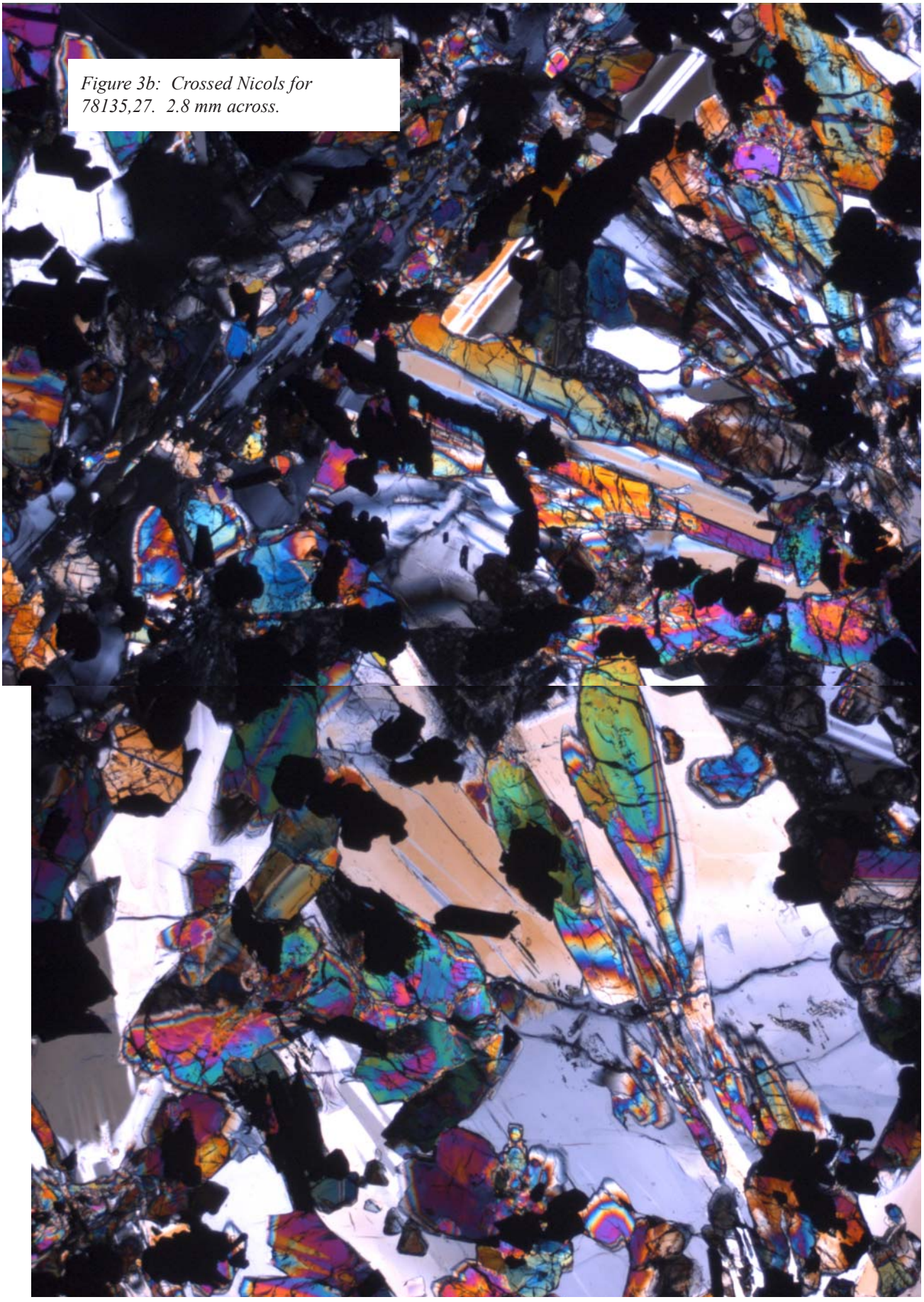


Figure 3b: Crossed Nicols for 78135,27. 2.8 mm across.

Table 1. Chemical composition of 78135.

reference	Rhodes76		Fruchter75	Kieth74	
weight	Nyquist76				
SiO2 %	37.98	(a)			
TiO2	12.89	(a)			
Al2O3	8.38	(a)			
FeO	19.05	(a)			
MnO	0.27	(a)			
MgO	8.69	(a)			
CaO	10.71	(a)			
Na2O	0.36	(a)			
K2O	0.05	(a)	0.048	0.0525	(d)
P2O5	0.04	(a)			
S %	0.18	(a)			
sum					
Sc ppm	84	(b)			
V					
Cr	3079	(a)			
Co	18.4	(b)			
Ni					
Cu					
Zn					
Ga					
Ge ppb					
As					
Se					
Rb	0.58	(c)			
Sr	174	(c)			
Y					
Zr					
Nb					
Mo					
Ru					
Rh					
Pd ppb					
Ag ppb					
Cd ppb					
In ppb					
Sn ppb					
Sb ppb					
Te ppb					
Cs ppm					
Ba	74	(c)			
La	5.8	(c)			
Ce	20.2	(c)			
Pr					
Nd	22.4	(c)			
Sm	9.43	(c)			
Eu	1.93	(c)			
Gd	14.9	(c)			
Tb					
Dy	17	(c)			
Ho					
Er	10.5	(c)			
Tm					
Yb	9.21	(c)			
Lu	1.33	(b)			
Hf	9.3	(b)			
Ta					
W ppb					
Re ppb					
Os ppb					
Ir ppb					
Pt ppb					
Au ppb					
Th ppm			0.35	0.26	(d)
U ppm			0.11	0.107	(d)

technique: (a) XRF, (b) INAA, (c) IDMS, (d) radiation count.

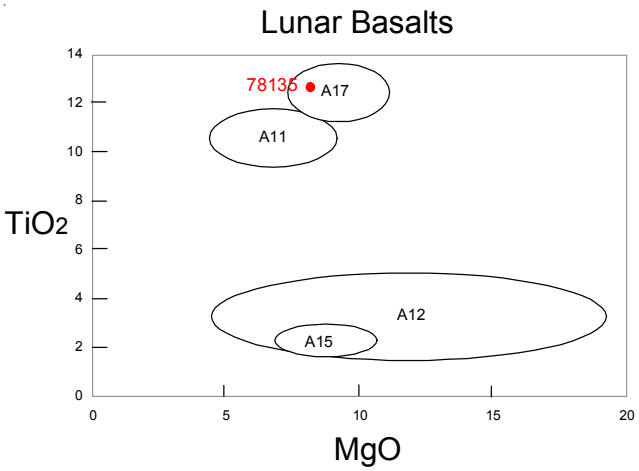


Figure 4: Composition of lunar basalt.

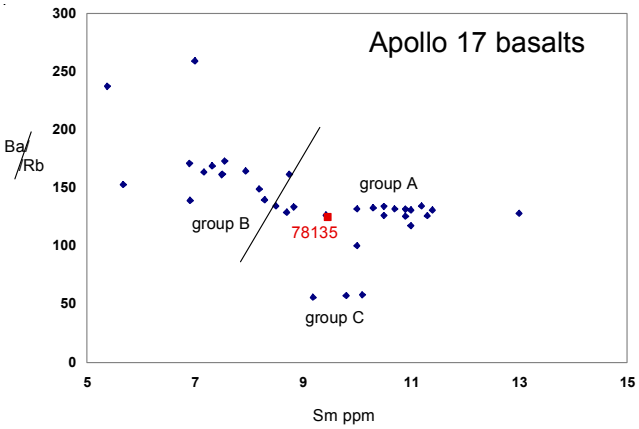


Figure 5: Trace element characteristics of Apollo 17 basalts.

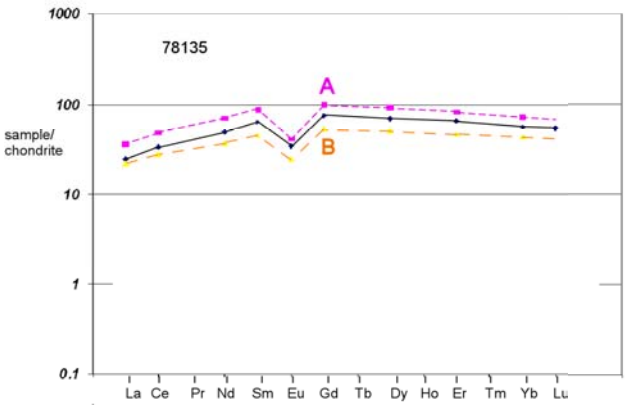


Figure 6: Normalized rare-earth-element diagram for 78135 compared with A and B types of Apollo 17 basalt.

Radiogenic age dating

Nyquist et al. (1975) determined the Rb, Sr and $Sr^{87/86}$ for a "whole-rock" sample.

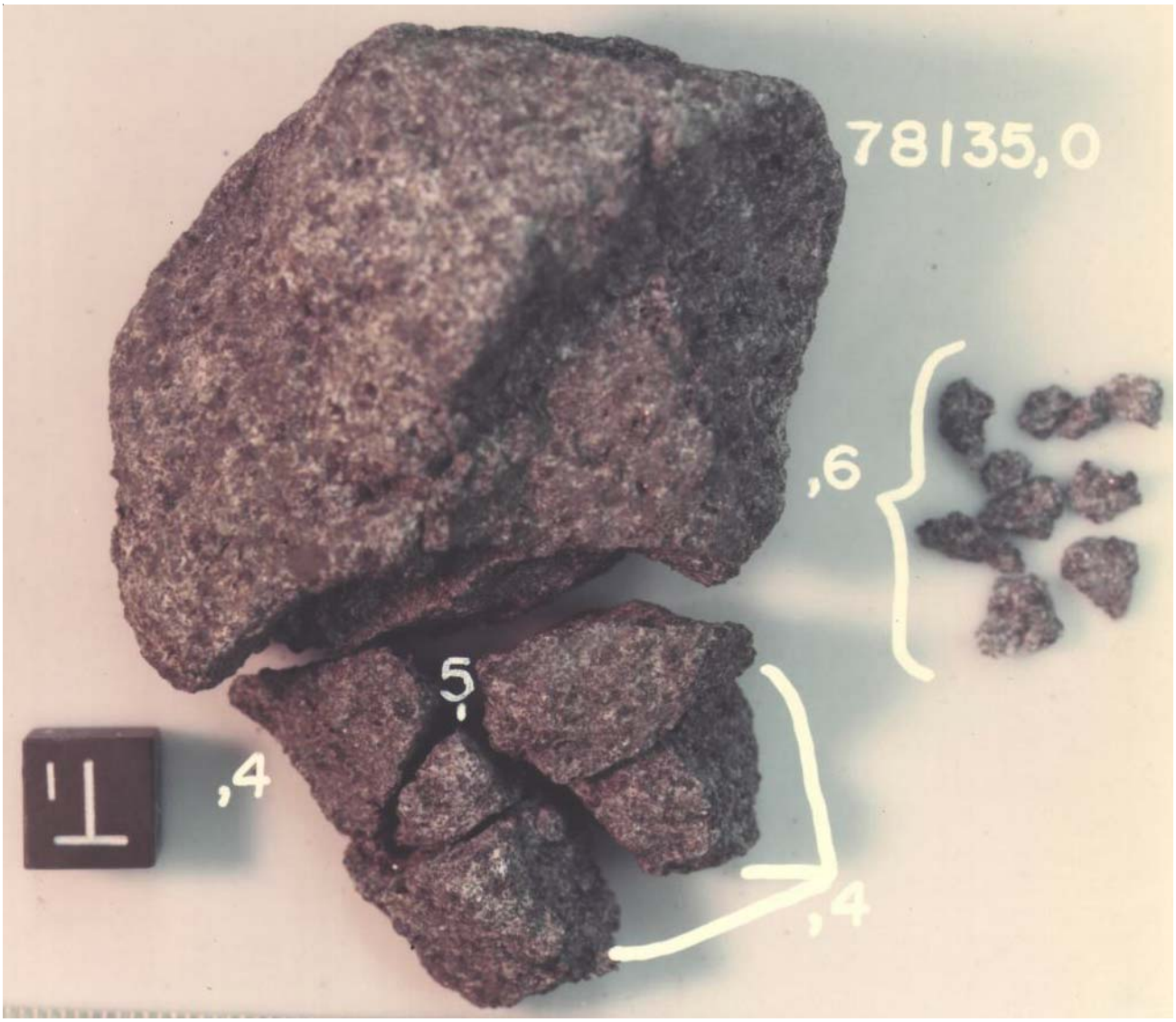
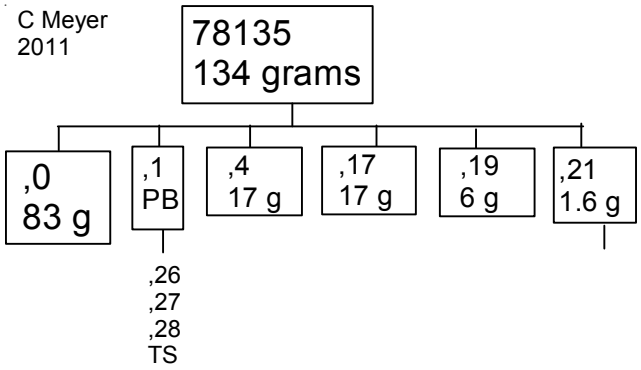


Figure 7: Initial processing of 78135. Cube is 1 cm. S75-28690.

Table 2: Zr-rich mineral
(Brown et al. 1975)

TiO2	17.33
FeO	4.27
MgO	0.13
CaO	2.61
Zr02	65.18
Y2O3	6.82
NbO5	-
HfO2	0.45



Cosmogenic isotopes and exposure ages

Drozd et al. (1977) determined the cosmic ray exposure age to be 126 m.y.

Keith et al. (1974) determined the cosmic-ray-induced activity of ^{22}Na = 74 dpm/kg, ^{26}Al = 42 dpm/kg, ^{46}Sc = 76 dpm/kg, ^{48}V = 18 dpm/kg, ^{54}Mn = 180 dpm/kg and ^{56}Co = 240 dpm/kg.

Processing

Chipped, not sawn. Only three thin sections.

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