71567

High-Ti Mare Basalt
146.0 g

INTRODUCTION

See "Rake Sample Descriptions" and "Table of Rake Samples", as well as Fig, 1.

PETROGRAPHY AND MINERAL CHEMISTRY

Warner et al. (1975b,c, 1976a,b, 1978) reported the petrography and mineral chemistry of 71567. Warner et al. (1975c) described 71567 as a poikilitic ilmenite basalt, but only described it in general terms within the context of this petrographic group.

During the preparation of this catalog, we examined thin sections 71567,14 and, 15. 71567 is a coarse-grained (0.5-2mm), plagioclase-poikilitic basalt containing pyroxene grains up to 2mm. Olivine forms rounded cores (<0.1mm) in the larger pyroxenes and contains euhdral chromite inclusions (~0.05mm). Ilmenite (up to 1.5mm) usually forms an inter-sertal texture with pyroxene and contains rutile and chromite exsolution lamellae. Native Fe and troilite (up to 0.2mm) form interstitial phases, and troilite occasionally contains rounded grains of native Fe. Intertstitial SiO_2 is present (up to 0.2mm), but armalcolite was not observed.

WHOLE-ROCK CHEMISTRY

Laul et al. (1975) and Warner et al. (1975) reported the same whole-rock analysis of 71567,1 in a study of Apollo 17 rake samples (Table 1). These authors reported a TiO_2 content of 11.4 wt%, with a MG# of 42.6. Rhodes et al. (1976) classified 71567,9 as a Class U Apollo 17 high-Ti basalt and reported a

Figure 1: Hand specimen photograph of 71567,0. Cubic scale = 1 cm.^{3}.

Table 1: Whole-rock chemistry of 71567.

	Sample ,1 Method N Reference 1	Sample ,9 Methods X, N, I Reference 2
SiO_2 (wt %)		38.06
TiO_2	11.4	12.98
Al_2O_3	9.3	8.59
Cr_2O_3	0.380	0.43
FeO	18.0	19.40
MnO	0.230	0.28
MgO	7.5	8.83
CaO	10.3	10.57
Na_2O	0.40	0.38
K_2O	0.065	0.03
P_2O_5		0.02
S	0.16	
K (ppm)		386
Nb		
Zr		
Hf	8.4	7.6
Ta	1.7	
U		
Th		
W		
Y		
Sr		161
Rb		0.39
Li		9.2
Ba		54.4
Cs		
Be		
Zn		
Pb		
Cu		
Ni		
Co	16.7	19.9
V	100	
Sc	73	79
La	6.0	4.15
Ce	24	14.4
Nd		16.3

Table 1: (Concluded).

	Sample ,1 Method N Reference 1	Sample ,9 Methods X, N, I Reference 2
Sm	10.9	6.91
Eu	2.00	1.66
Gd		11.4
Tb	2.6	
Dy	15	12.7
Er		8.28
Yb	9.4	7.35
Lu	1.3	1.08
Ga		
F		
Cl		
C		
N		
H		
He		
Ge (ppb)		
Ir		
Au		
Ru		
Os		

Analysis by: N = INAA; X = XRF; I = Isotope dilution.

References: 1 = Warner et al. (1975) and Laul et al. (1975) (same analysis);
2 = Rhodes et al. (1976).

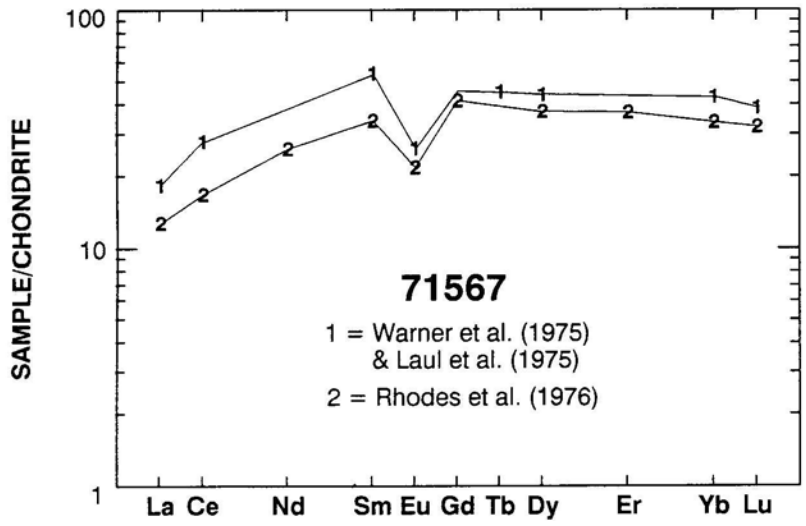

Figure 2: Chondrite -normalized rare-earth element profiles for 71567. The same analysis was reported by Warner et al. (1975) and Laul et al. (1975). A second analysis is from Rhodes et al. (1976).

TiO_2 content of 12.98 wt% for 71567,9, with a MG# of 44.8. REE patterns are LREE depleted with a maximum in the MREE (Fig. 2). The analysis of Rhodes et al. (1976) is more complete and reported lower REE abundances than that of Warner et al. (1975) and Laul et al. (1975) (Table 1; Fig. 2). Both profiles define a negative Eu anomaly (Fig. 2). The profile of Warner et al. (1975) and Laul et al. (1975) exhibits an $(Eu/Eu^*)_N = 0.53$, compared to a value of 0.57 defined by the analysis of Rhodes et al. (1976). Gibson et al. (1976) reported a sulfur content of 1625 ±30 ugS/g for 71567 with an equivalent of 0.142 wt% Fe^o.

RADIOGENIC ISOTOPES

Nyquist et al. (1976) reported the whole-rock Rb-Sr composition of 71567,9 (Table 2). This analysis was undertaken as part of a large study of the Rb-Sr compositions of Apollo 17 high-Ti basalts.

PROCESSING

Of the original 146.Og of 71567,0, a total of 107.268 remains. Several sub-samples exceed lg -,6 (17.7g),,7 (6.83g), ,9 (1.308), ,10 (9.588). Five thin sections have been prepared and are,12-,16.

Table 2: Rb-Sr composition of 71567.
Data from Nyquist et al (1976).

	Sample 71567,9
wt (mg)	50
Rb (ppm)	0.388
Sr (ppm)	161
$^{87}Rb/^{86}Sr$	0.0070 ± 3
$^{87}Sr/^{86}Sr^b$	0.69959 ± 9
T_B	4.87 ± 0.90
T_L	5.54 ± 0.90