15677	FINE-GRAINED OLIVINE-NORMATIVE MARE BASALT	ST. 9A	6.40 g

INTRODUCTION: 15677 is a fine-grained, olivine-porphyritic mare basalt. It is slightly vuggy and has an eroded surface (Fig. 1). In chemistry the sample is a primitive member of the Apollo 15 olivine-normative mare basalt suite. Zap pits occur on all faces, except one which appears to be a fresh fracture. Rounding of the rock corresponds with the pitting, and some small glass splashes are present. 15677 was collected as part of the rake sample at Station 9A.

Figure 1. Pre-saw view of 15677. S-71-49851

PETROLOGY: 15677 is a fine-grained, olivine-phyric mare basalt (Fig. 2). The olivine phenocrysts are small (1 mm or less), scattered, and anhedral. Some contain crystallized silicate melt inclusions. The groundmass is generally subophitic to ophitic, with a few radiate patches. The pyroxenes are granular and small, as are groundmass olivines, and the plagioclases range from irregular laths to 1 to 2 mm ophitic grains. Chromite, ulvospinel, ilmenite, cristobalite, fayalite, sulfide, and scarce Fe-metal are present.

Fig. 2a

Fig. 2b

Figure 2. Photomicrographs of 15677,6. Widths about 2 mm.
a) transmitted light; b) crossed polarizers.

CHEMISTRY: A bulk analysis by Ma et al. (1978) (Table 1, Fig. 3) has low rare earths and TiO_2, and high (although imprecisely determined) MgO, indicating that 15677 is a primitive member of the Apollo 15 olivine-normative mare basalt group.

PROCESSING AND SUBDIVISIONS: ,1 was sawn from one end, and made into a potted butt from which thin sections ,6 to ,8 were made. In 1977, further chipping (to avoid sawn face and exterior) produced ,3 (two chips) and ,4 (two chips). ,3 was used for chemical analysis and to make thin section ,10. ,0 is now 4.69 g.

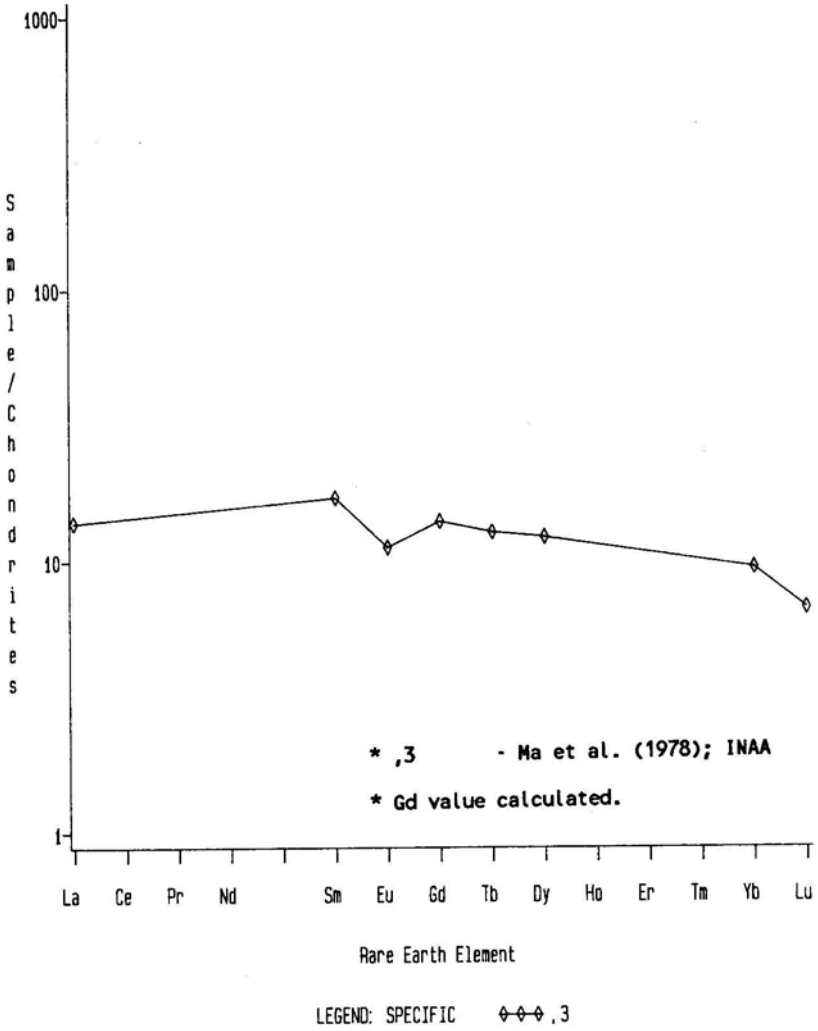

Figure 3. Rare earths in 15677.

TABLE: 15677-1. Bulk rock chemical analysis

		,3
Wt %	SiO2	
	Tio2	2.0
	Al2O3	8.8
	FeO	22.5
	MgO	12
	CaO	8.4
	Na2O	0.251
	K2O	0.040
	P2O5	
(ppm)	Sc	40
	V	211
	Cr	4100
	Mn	2045
	Co	55
	Ni	25(a)
	Rb	
	Sr	
	Y	
	Zr	
	Nb	
	Hf	2.2
	Ba	
	Th	
	U	
	Pb	
	La	4.6
	Ce	
	Pr	
	Nd	
	Sm	3.1
	Eu	0.78
	Gd	
	Tb	0.6
	Dy	3.9
	Ho	
	Er	
	Tm	
	Yb	1.9
	Lu	0.23
	Li	
	Be	
	B	
	C	
	N	
	S	
	F	
	Cl	
	Br	
	Cu	
	Zn	
(ppb)	I	
	At	
	Ga	
	Ge	
	As	
	Se	
	Mo	
	Tc	
	Ru	
	Rh	
	Pd	
	Ag	
	Cd	
	In	
	Sn	
	Sb	
	Te	
	Cs	
	Ta	460
	W	
	Re	
	Os	
	Ir	
	Pt	
	Au	
	Hg	
	Tl	
	Bi	
		(1)

References and methods:

(1) Ma et al. (1978); INAA

Notes:

(a) ± 15 ppm