

INTRODUCTION: 15025 is a coherent regolith breccia (Fig. 1) whose composition is a little more FeO and rare-earth enriched, and correspondingly Al<sub>2</sub>O<sub>3</sub>-poorer, than the local regolith. Clasts of mare basalt and KREEP basalt are conspicuous, along with typical regolith components such as glass. The sample is dark gray and subrounded. There are many zap pits on one side. 15025 was collected in the contingency sample approximately 12 m west of the LM + Z footpad, and is of about average size for the larger fragments in the local area. Photographs are inadequate to assess orientation.

PETROLOGY: 15025 is a regolith breccia (Fig. 2). It is subporous (porosity 2.73 g/cm<sup>3</sup>; Wentworth and McKay, 1984), and submature, with an I<sub>s</sub>/FeO of 42 (McKay et al., 1984), reported also as 30 (Korotev, 1984 unpublished). The thin sections consist of a matrix of brown glass and fine debris (mainly plagioclase, pyroxene, and glass) enclosing coarser mineral, glass, and lithic fragments. Most glasses are colorless spheres and shards, with some red spheres. Yellow glass appears to be rare to absent. Best and Minkin (1972) noted that "peridotite" glass (=Apollo 15 green glass) appears to be absent from this sample. They listed an analysis of a pale brown/gold glass with 57.4% SiO<sub>2</sub> and 1.04% K<sub>2</sub>O from 15025,6 as a representative of their "KREEP" glass group from the entire landing site.

Lithic clasts include mare basalts, KREEP basalts, and some highlands materials. The thin sections display a 3 mm fragment of medium-grained basalt (70% zoned pyroxenes, 30% plagioclase, 1% opaques) (Fig. 2b). They also show a 2-mm subophitic intersertal KREEP basalt (Fig. 2c) with a prominent clear yellow glass mesostasis. One 1½-mm lithic clast is a single grain of low-Ca pyroxene enclosing plagioclase (feldspathic granulite).



Figure 1. Pre-split view of 15025. S-71-45104

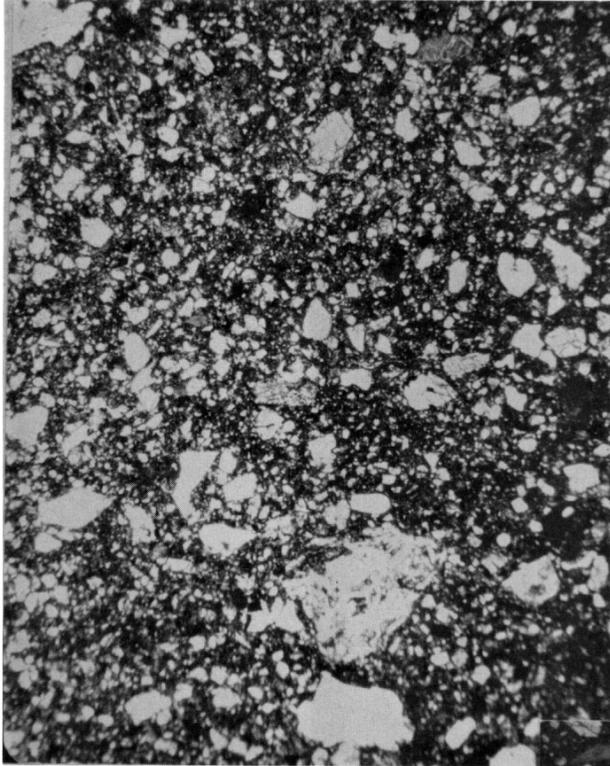


Fig. 2a

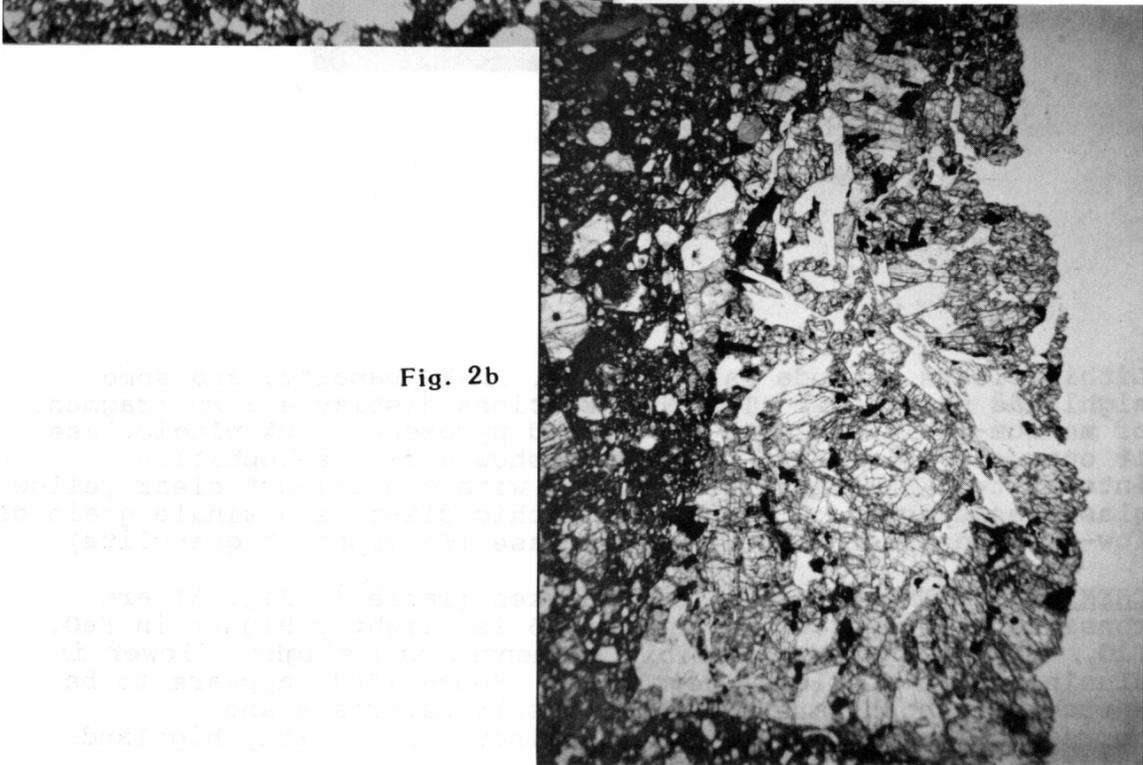


Fig. 2b

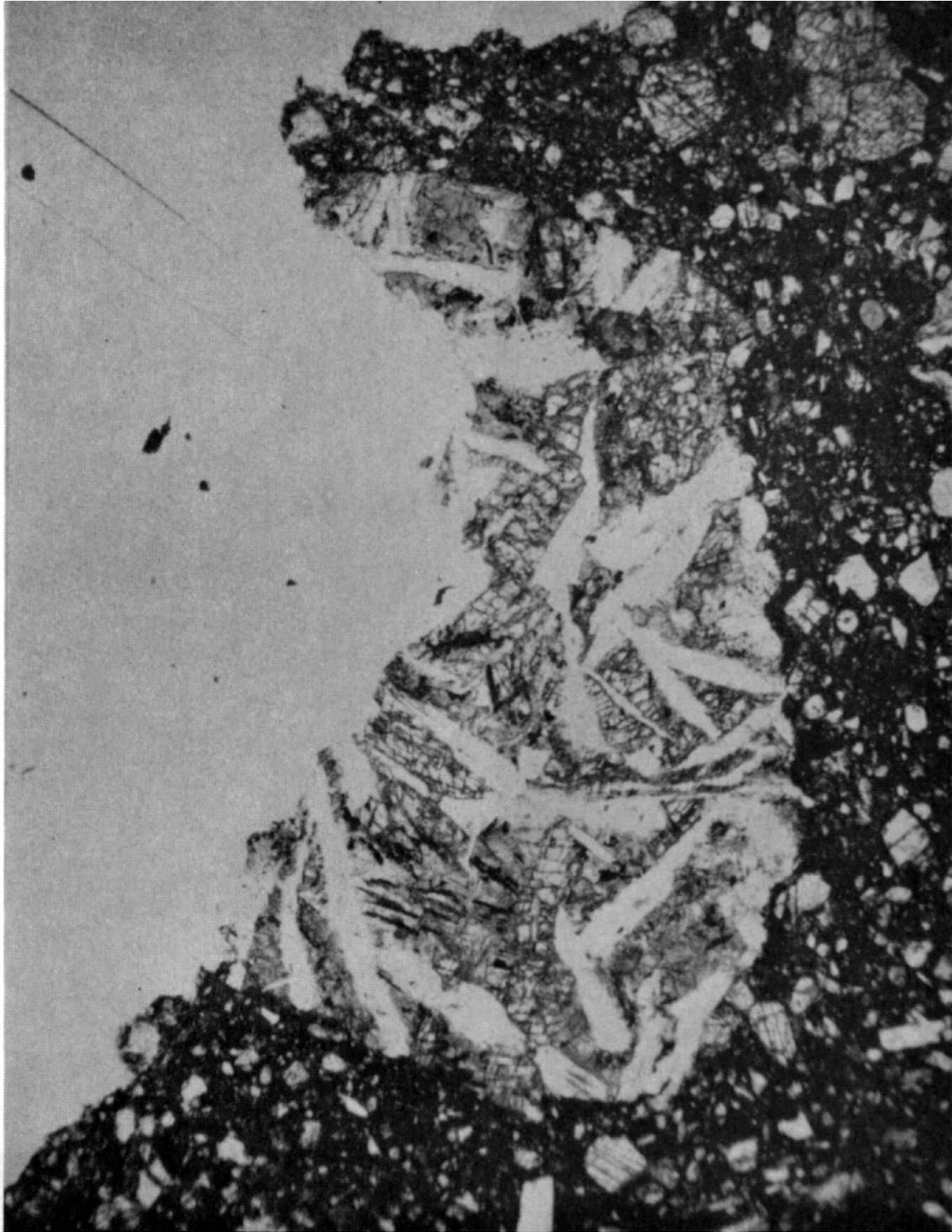


Fig. 2c

Figure 2. Photomicrographs of 15025,4. Widths about 2 mm. Transmitted light.  
a) general matrix; b) mare basalt clast; c) KREEP basalt clast.

**CHEMISTRY:** The two chemical analyses (Table 1, Fig. 3) are consistent in suggesting that 15025 is slightly higher in FeO, TiO<sub>2</sub>, Sc, Cr, and incompatible elements, and slightly lower in alumina, than the local regoliths. Hence 15025 appears to be enriched in both mare and KREEP basalt materials and correspondingly lower in some aluminous, presumably highlands, material than the local regolith.

**PROCESSING AND SUBDIVISIONS:** 15025 was chipped in 1971 to obtain chip ,1 (for thin sections ,3 to ,6); ,2 (0.20 g) also came off at that time. Chipping of the "T" face in 1976 produced ,7 for chemical analysis; further chipping in 1980 produced ,9 (0.94 g); and more chipping in 1983 and 1984 produced further splits for petrological and chemical analysis. ,0 is now 69.82 g.

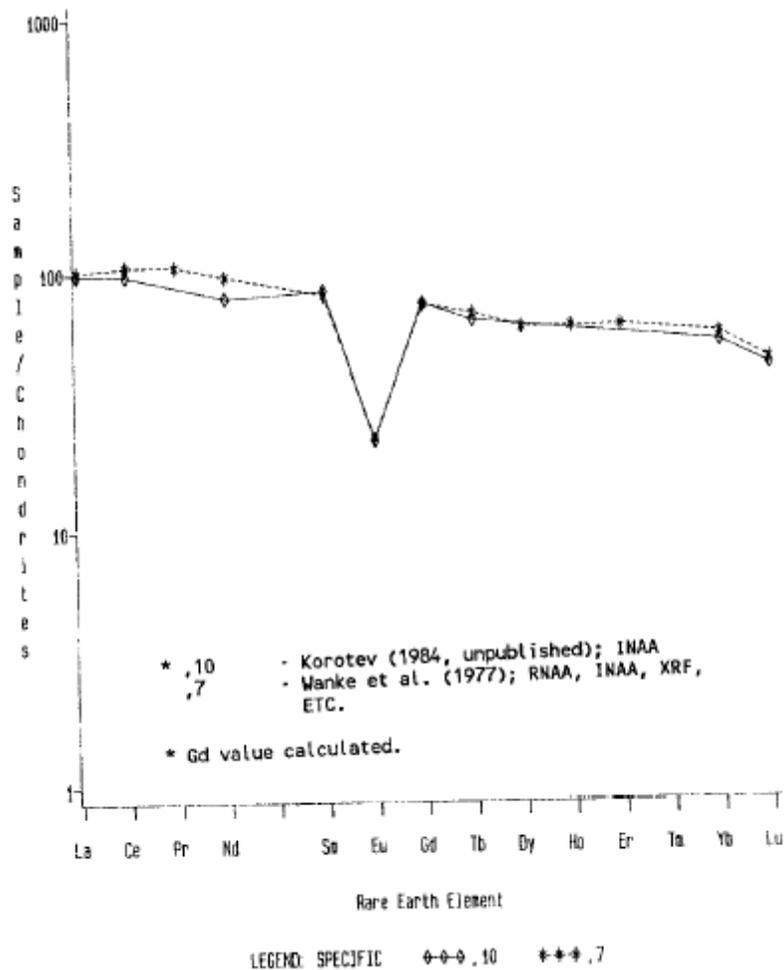


Figure 3. Rare earths in 15025 matrix.

TABLE 15025-1. Chemical analyses

		,7	,10
Wt %	SiO <sub>2</sub>	48.15	
	TiO <sub>2</sub>	1.84	1.88
	Al <sub>2</sub> O <sub>3</sub>	13.11	12.4
	FeO	15.22	15.9
	MgO	9.86	9.8
	CaO	10.42	10.3
	Na <sub>2</sub> O	0.497	0.50
	K <sub>2</sub> O	0.274	
	P <sub>2</sub> O <sub>5</sub>	0.275	
	(ppm)	Sc	31.6
V		108	104
Cr		2950	2940
Mn		1550	1555
Co		41.5	50.4
Ni		210	200
Rb		6.27	
Sr		139/135	138
Y		115	
Zr		472	460
Nb		35	
Hf		11.8	12.3
Ba		375	357
Th		4.9	5.1
U		1.43	1.41
Pb			
La		33.6	32.6
Ce		93.6	86
Pr		11.9	
Nd		58	48
Sm		14.9	15.5
Eu		1.58	1.56
Gd		18.7	
Tb		3.28	3.06
Dy		19.3	
Ho		4.3	
Er		12.4	
Tm			
Yb		11.5	10.7
Lu		1.54	1.47
Li		16.6	
Be		5.26	
(ppb)	B		
	C		
	N		
	S	580	
	F	94	
	Cl	28.3	
	Br	0.073	
	Cu	19.8	
	Zn	10.0	
	I		
	At		
	Ge	3920	
	Se	360	
	As	39	
	Mo	230	
	Tc		
	Ru		
	Rh		
	Pd		
	Ag		
	Cd		
	In		
Sn			
Sb			
Te			
Cs	300	320	
Ta	150	1480	
W	680		
Re	0.7		
Os			
Ir	5	6.1	
Pt			
Au	2.1	2.7	
Hg			
Tl			
Bi			

References and methods:

(1) Wanke *et al.* (1977); INAA, INAA, XRF, etc.

(2) Korotev (1964 unpublished); INAA

(1) (2)