

**70315**  
Ilmenite Basalt  
148.6 grams

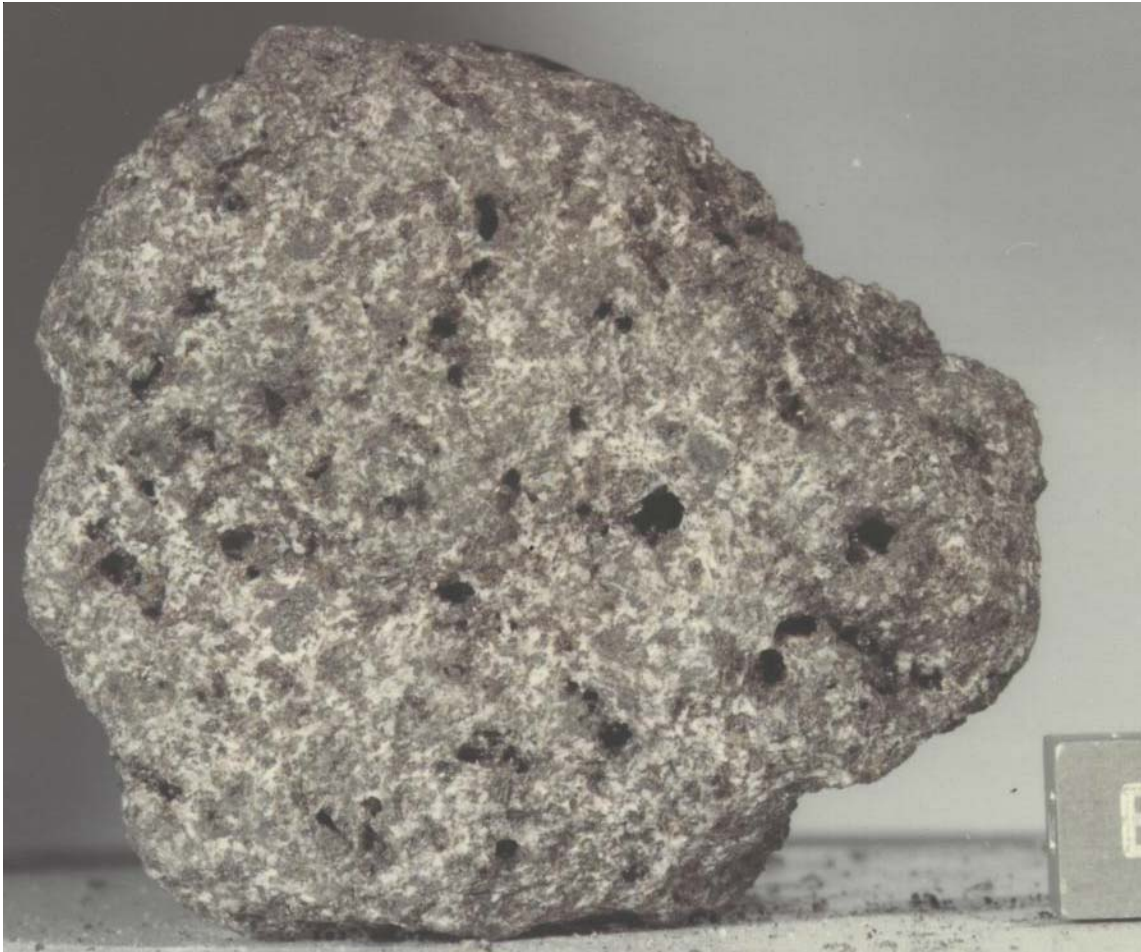


Figure 1: Photo of 70315. NASA S73-15453. Cube is 1 cm.

**Introduction**

70315 is a coarse-grained, vesicular basalt that has been rounded on all sides by micrometeorite bombardment (figure 1). It has not been well studied and no age is available.

**Petrography**

Neal and Taylor (1993) give the only description of 70315, although a mineral mode is found in Brown et al. (1975). Large pyroxene grains poikilitically enclose plagioclase and ilmenite (figure 2).

**Chemistry**

Warner et al. (1979) classified 70315 as type U (for unclassified!). Neal (2001) found that 70315 had low Rb content, but had a REE pattern similar to other

**Mineralogical Mode of 70315**

	Brown et al. 1975
Olivine	0.7
Pyroxene	50.6
Plagioclase	22
Opaques	25.5
Silica	0.6
Meostasis	0.6

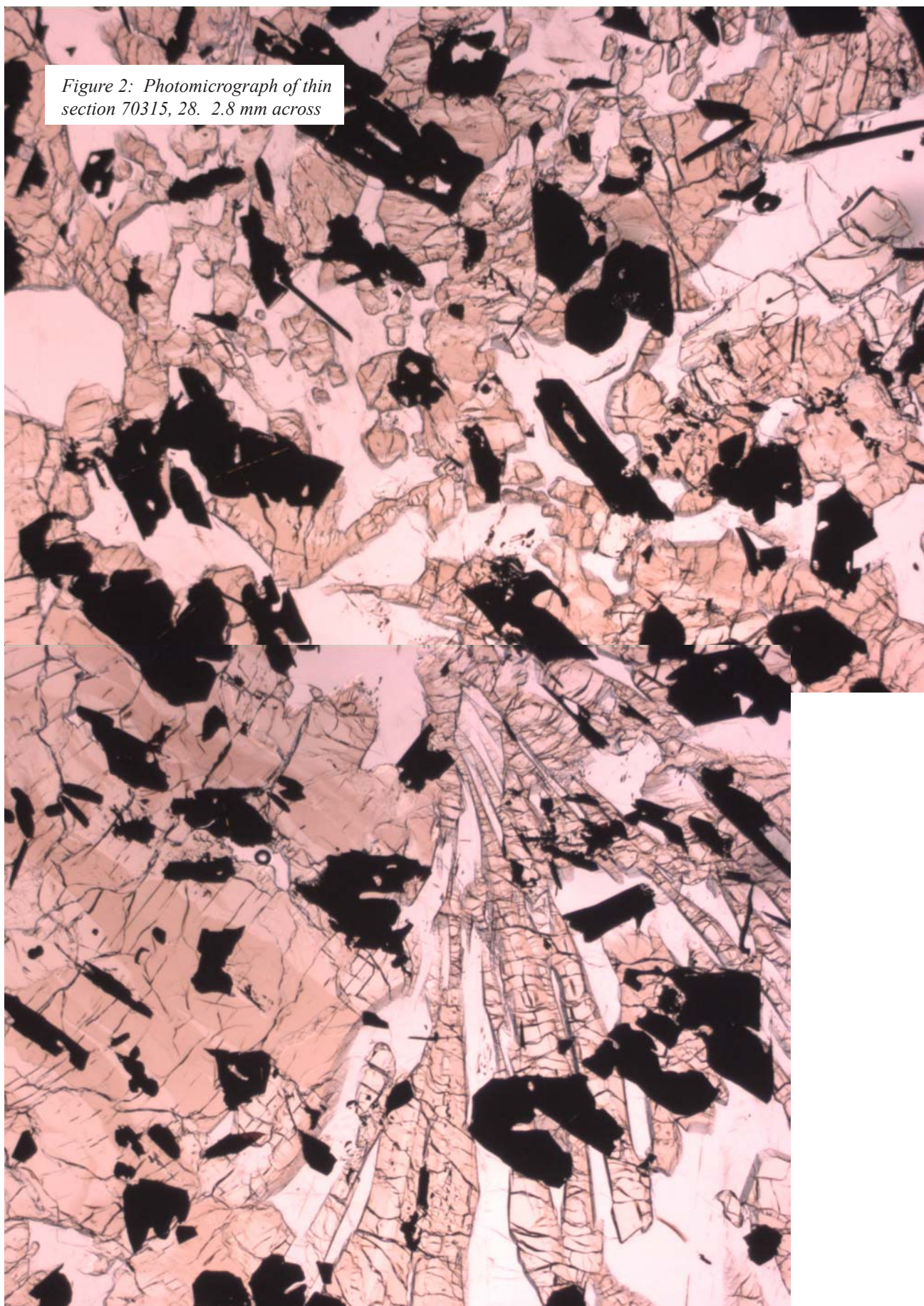
Apollo 17 basalts (figure 5). Thus it remains “unclassified”.

**Radiogenic age dating**

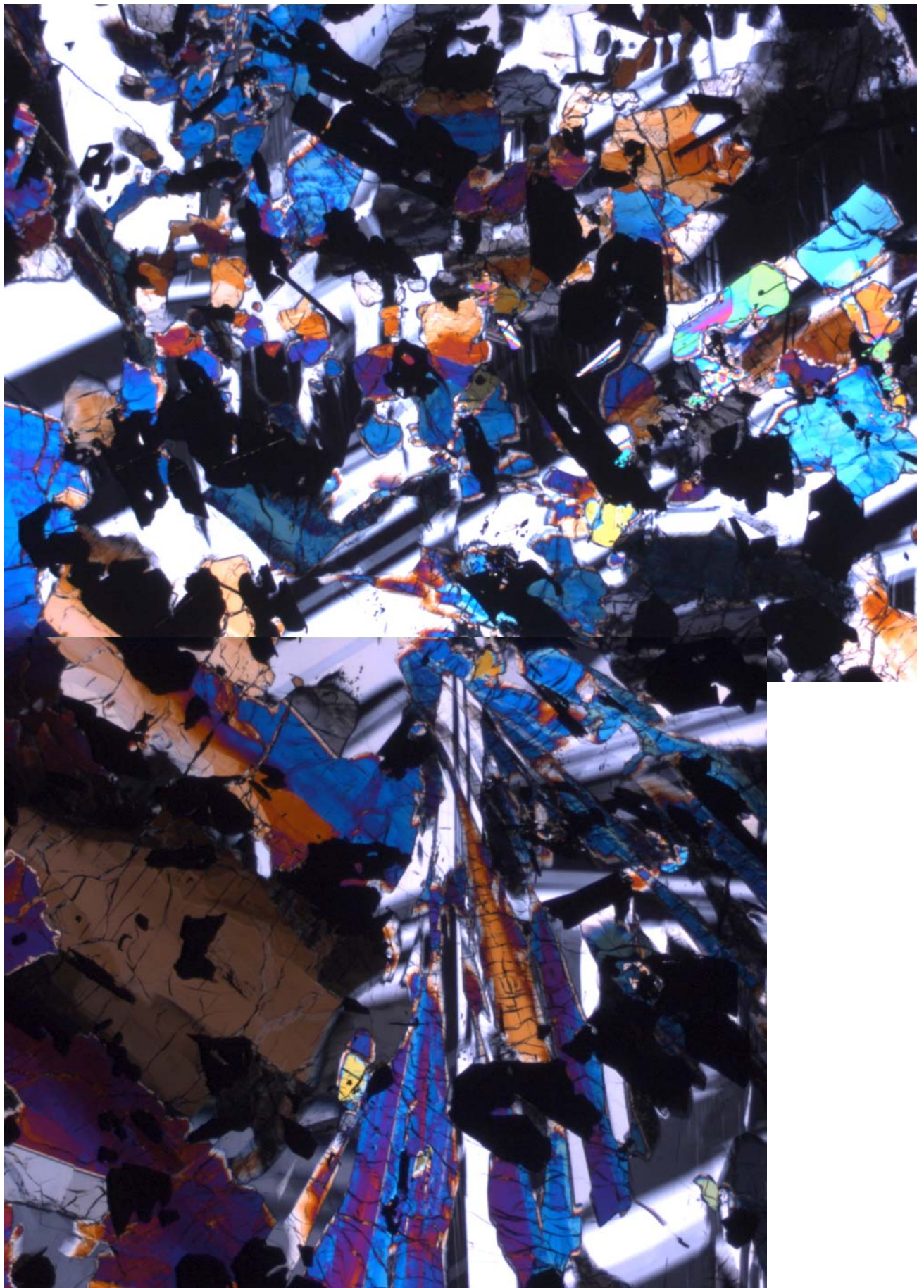
Note: Apollo 17 mare basalts are generally considered  $3.72 \pm 0.04$  b.y. old (see Paces et al. 1991).



*Figure 2: Photomicrograph of thin section 70315, 28. 2.8 mm across*







**Table 1. Chemical composition of 70315.**

reference weight	Eldridge75	Warner79	Neal2001	Garg76
SiO <sub>2</sub> %				
TiO <sub>2</sub>		13.1 (b)		
Al <sub>2</sub> O <sub>3</sub>		9.3 (b)		
FeO		17.9 (b)		
MnO		0.24 (b)		
MgO		10 (b)		
CaO		10.2 (b)		
Na <sub>2</sub> O		0.387 (b)		
K <sub>2</sub> O	0.048 (a)	0.039 (b)		
P <sub>2</sub> O <sub>5</sub>				
S %				
sum				
Sc ppm		81 (b)	79 (c)	
V		148 (b)	146 (c)	
Cr		3742 (b)	2790 (c)	
Co		20 (b)	24 (c)	
Ni			2.22 (c)	
Cu			49.5 (c)	
Zn			119 (c)	
Ga			3.75 (c)	
Ge ppb				
As				
Se				
Rb			0.24 (c)	
Sr			163 (c)	
Y			66 (c)	
Zr			197 (c)	204 (b)
Nb			21 (c)	
Mo				
Ru				
Rh				
Pd ppb				
Ag ppb				
Cd ppb				
In ppb				
Sn ppb				
Sb ppb				
Te ppb				
Cs ppm				
Ba			54 (c)	
La	3.2	(b) 3.78 (c)		
Ce	13	(b) 16.2 (c)		
Pr		2.74 (c)		
Nd	14	(b) 17.7 (c)		
Sm	5.8	(b) 7.48 (c)		
Eu	1.4	(b) 1.6 (c)		
Gd		9.73 (c)		
Tb	1.4	(b) 1.99 (c)		
Dy	10	(b) 13.8 (c)		
Ho		2.68 (c)		
Er		7.76 (c)		
Tm		1.05 (c)		
Yb	5.6	(b) 7.88 (c)		
Lu	0.81	(b) 1.06 (c)		
Hf	5.7	(b) 6.39 (c)	8.1 (b)	
Ta	1.3	(b) 1.44 (c)		
W ppb				
Re ppb				
Os ppb				
Ir ppb				
Pt ppb				
Au ppb				
Th ppm	0.27 (a)		0.23 (c)	
U ppm	0.1 (a)		0.07 (c)	

technique: (a) radiation counting, (b) INAA, (c) ICP-MS

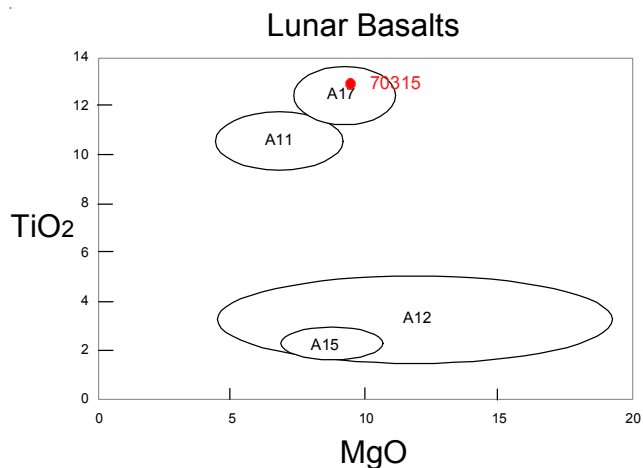


Figure 3: Composition of 70315 compared with other Apollo basalts.

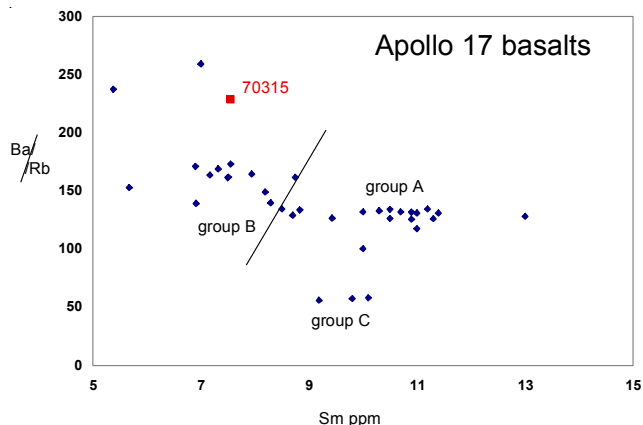


Figure 4: Trace element diagram used to classify Apollo 17 basalts.

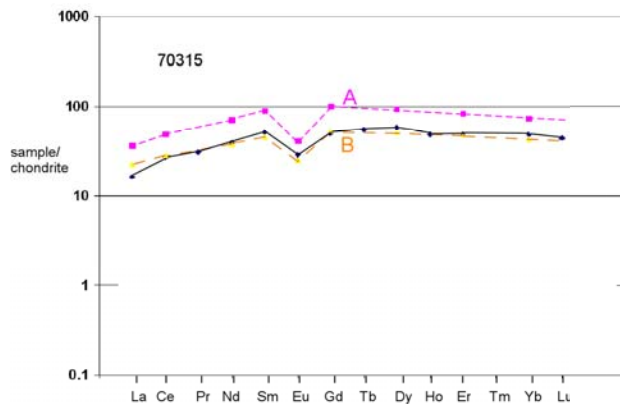
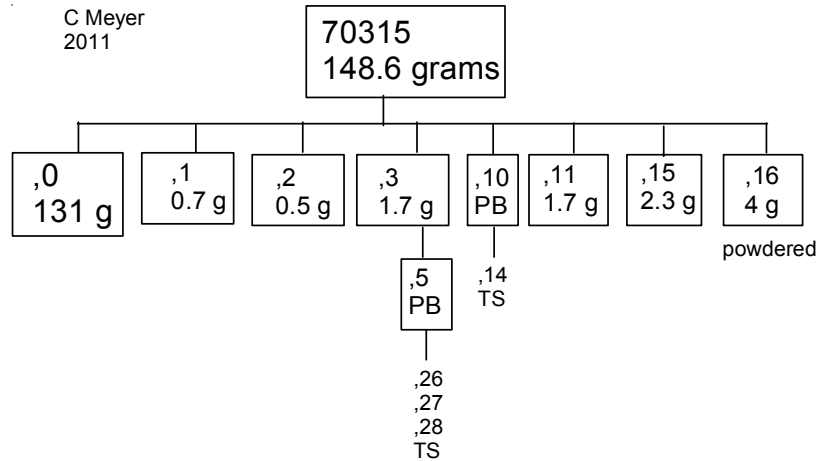


Figure 5: Normalized rare-earth-element diagram for 70315 and type A and B basalts.

## Processing

There are 4 thin sections.



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