

**67031**  
bag residue  
96 grams



Figure 1: Location of 67030 - 67035 inside rim of North Ray Crater. AS16-116-18610.

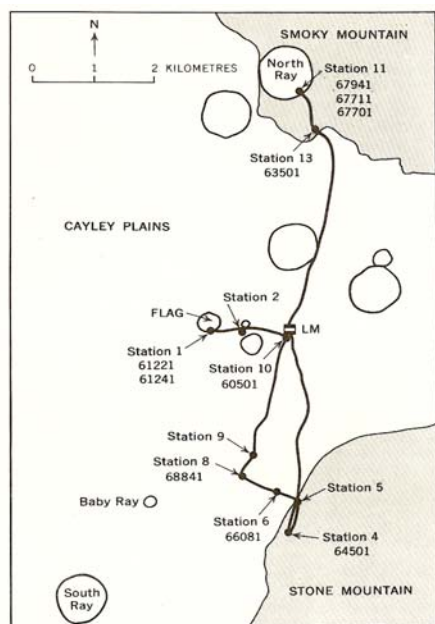


Figure 2: Map of Apollo 16 site showing North Ray Crater (station 11).

### **Introduction**

Station 11 was located at North Ray Crater (figure 2). Lunar sample 67030 was collected with breccia sample 67035 from the inside of the crater rim (figure 1) and returned in the same bag. Since 67035 was very friable and found to be broken when the bag was opened, there can be no doubt that this sample was a mix of some soil with breccia fragments.

### **Petrography**

Ryder and Norman (1980) described 66035 as a porous fragmental breccia with pristine clasts. The soil sample has not been studied.

### **Chemistry**

Laul and Schmitt (1973) and Clark and Keith (1973) reported bulk analyses of 67031 (table 1), showing that it is enriched in anorthositic material.

**Table 1. Chemical composition of 67031.**

reference weight	Clark73	Laul73	
SiO <sub>2</sub> %			
TiO <sub>2</sub>		0.34	(b)
Al <sub>2</sub> O <sub>3</sub>		30.4	(b)
FeO		3.8	(b)
MnO		0.049	(b)
MgO		4	(b)
CaO		17.3	(b)
Na <sub>2</sub> O		0.512	(b)
K <sub>2</sub> O	0.05	(a) 0.05	(b)
P <sub>2</sub> O <sub>5</sub>			
S %			
sum			
Sc ppm		7	(b)
V		15	(b)
Cr		417	(b)
Co		9.1	(b)
Ni		60	(b)
Cu			
Zn			
Ga			
Ge ppb			
As			
Se			
Rb			
Sr			
Y			
Zr		30	(b)
Nb			
Mo			
Ru			
Rh			
Pd ppb			
Ag ppb			
Cd ppb			
In ppb			
Sn ppb			
Sb ppb			
Te ppb			
Cs ppm			
Ba		40	(b)
La		2.9	(b)
Ce		8	(b)
Pr			
Nd		5	(b)
Sm		1.4	(b)
Eu		1.14	(b)
Gd			
Tb		0.3	(b)
Dy		1.7	(b)
Ho			
Er			
Tm			
Yb		1.1	(b)
Lu		0.17	(b)
Hf		0.9	(b)
Ta		0.14	(b)
W ppb			
Re ppb			
Os ppb			
Ir ppb			
Pt ppb			
Au ppb			
Th ppm	0.51	(a) 0.53	(b)
U ppm	0.146	(a) 0.3	(b)

technique: (a) radiation count. (b) INAA

**References for 67031**

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2010

