

BOULDER 3, STATION 2**Sample 72415; 72416; 72417; 72418; 72435**

Boulder 3 at Station 2 was the smallest of three boulders sampled on the lower slopes of the South Massif (see section on Boulder 1, Station 2 for locations). It probably rolled from near the top of the massif. Boulder 3 is an equant, 40 cm subangular block (Fig. 1) with an overall dull blue-gray color. Clasts as large as 10 cm are visible in lunar surface photographs. Three fractures cutting the boulder are recognized, but no well-developed fracture or cleavage sets are visible. The boulder has a poorly-developed fillet.

The boulder contained a prominent 10 cm pale-colored clast; on

several pieces were collected from it. These were later designated as 72415 (two mated pieces), and 72416 to 72418. Astronaut Schmitt recognized the clast as tight pastel green material in an even paler matrix, and suggested that it was "olivine and something." Laboratory study showed it to be a unique shocked dunite sample and it has been intensively studied. The matrix of the boulder was also sampled (72435, Fig. 1).

Many of the studies of Boulder 3 samples were made by a loosely-knit consortium led by the Caltech group (Dymek et al., 1975b, 1976a). The matrix is a clast-

bearing, fine-grained impact melt of low-K Fra Mauro composition similar to others at the Apollo 17 landing site. Geochronological data suggest an age of 3.86 Ga, also similar to that of other Apollo 17 low-K Fra Mauro melts, and the matrix is assumed to represent impact melt created in the Serenitatis impact. Strontium isotopic data for the dunite suggest that it crystallized 4.45 Ga ago, and Pb isotopic data are in agreement with such an old age (4.37 to 4.52 Ga).

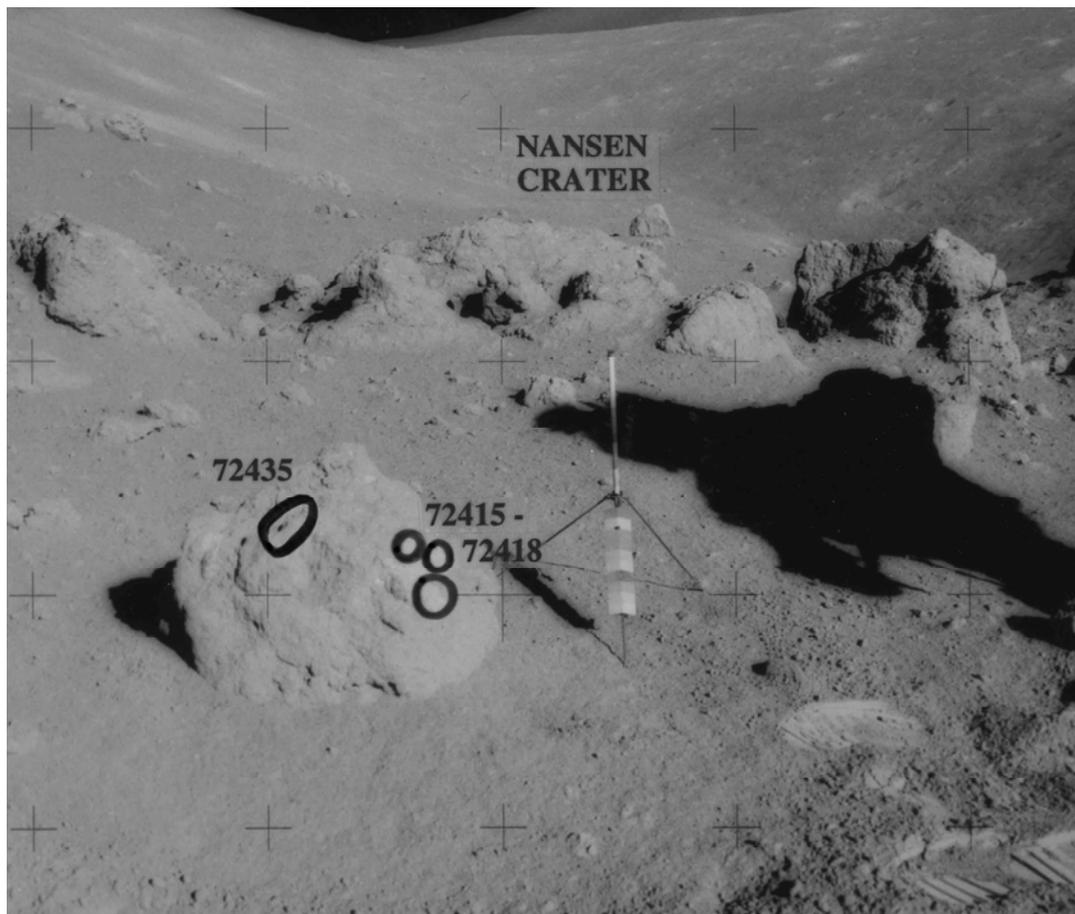


Figure 1: Sampling of Boulder 3, Station 2, with view towards north-west. The photograph was taken prior to sampling, and shows the location of the samples. The total height of the gnomon is 62 cm. AS17-138-21049.