73001 – 809 grams
73002 – 430 grams
Core, double drive tube, unopened

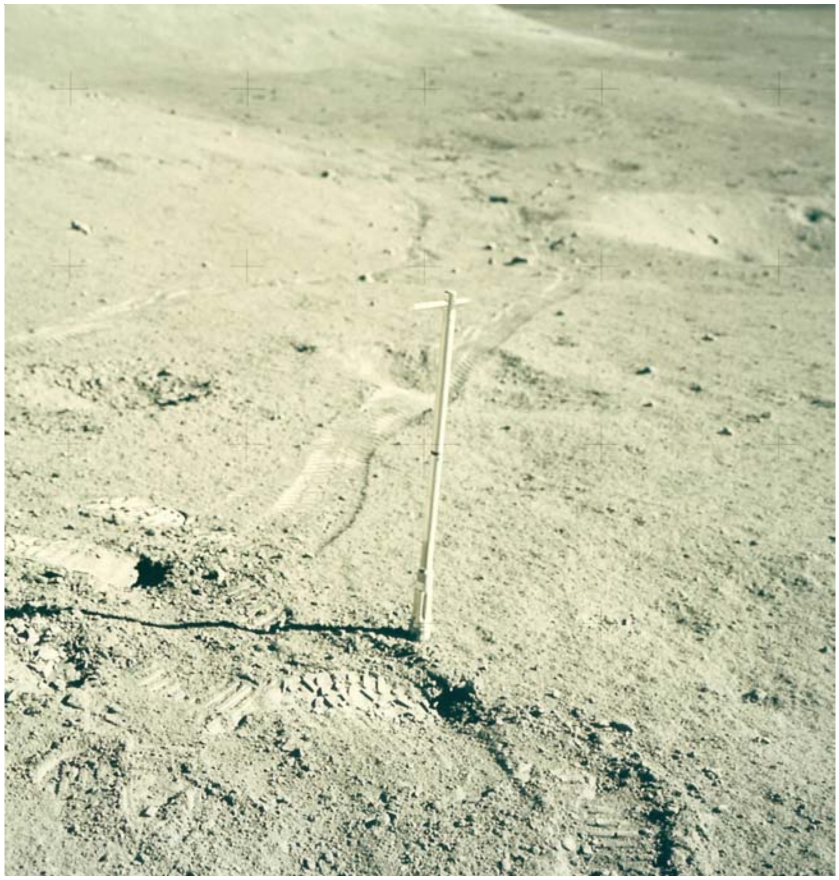


Figure 1: Photo of 73002/1. AS17-137-20981

Introduction

73001 is the bottom segment of a double drive tube, from below 22 cm depth. It was placed in a core sample vacuum container (CSVC), and as of 2011, it has not been opened. Since it was collected from below 22 cm, by simply pounding it in, it may have still been "frozen" at the time it was sealed (regolith below about 20 cm is about 250 ± 2 deg K, (Keihm and Langseth 1973).

The upper segment, 73002, has also never been opened, but X-rays show that it contains several rocks (figure 4). 73220-80 is a nearby trench, and 73210 is a good soil for comparison. Note that in figure 1, the double drive tube appears to have been completely filled. However, it went in easy, and material fell out of the bottom of the top tube before it was capped (see transcript).

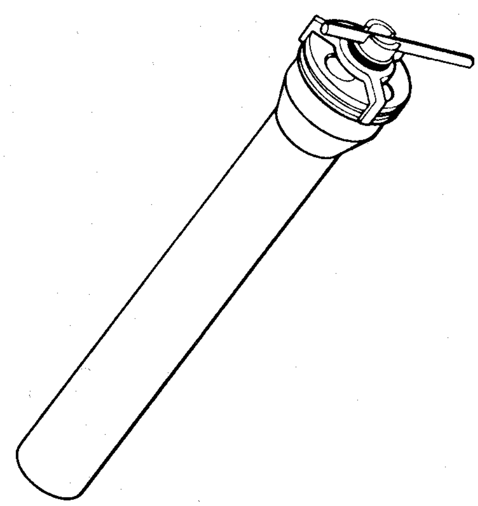


Figure 2: Special vacuum container (CSVC) used to hold short lunar drive tube (core). It has the same type of In seal used with the SESC (Allton 1989).

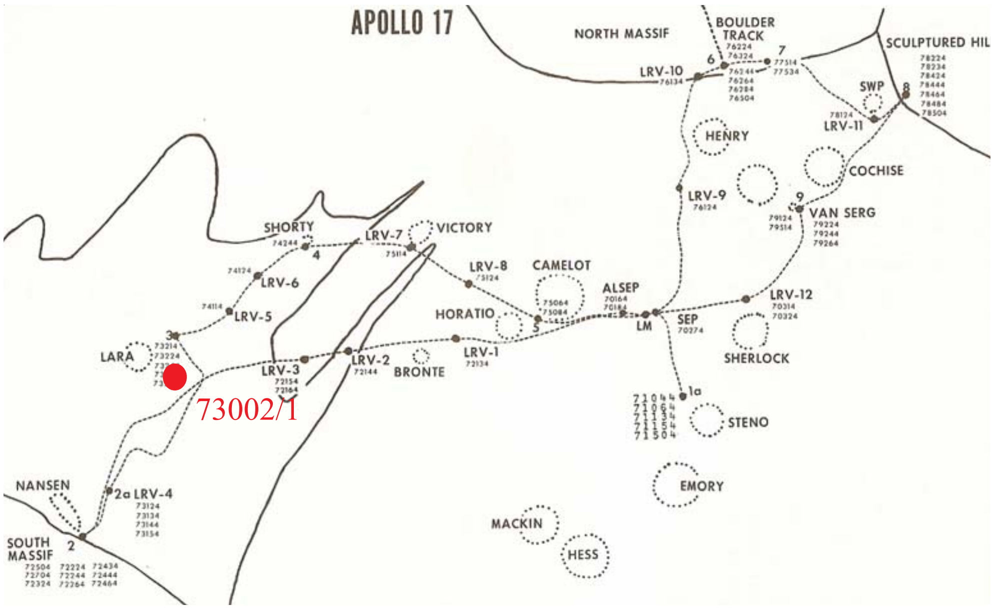


Figure 3: Location of double drive tube at station 3, Apollo 17.

Station 3 is located on the light mantle approximately 50 meters east of the rim of Laura Crater (Wolfe et al. 1981) and contains landslide material off of the South Massif (figure 3).

Petrography

73002 was X-rayed (figure 4). It "is permeated by cracks, possibly caused by the wedging of large fragments into the drive tube or from the spillage of about 4 cm of soil onto the lunar surface. Whether or not these cracks have disrupted the stratigraphy is uncertain, at least two major stratigraphic intervals seem to be present in the X-ray, but there is no indication of the soil profile seen in the nearby trench. The material is coarse grained and massive with distinct rock fragments (probably basalt), reflecting expected surface conditions near local craters and within the Lara Crater ejecta blanket."(LSPET 1973).

Note : The figure for 73001 in the core catalog (Duke and Nagle 1976) is that of 76001.

Chemistry

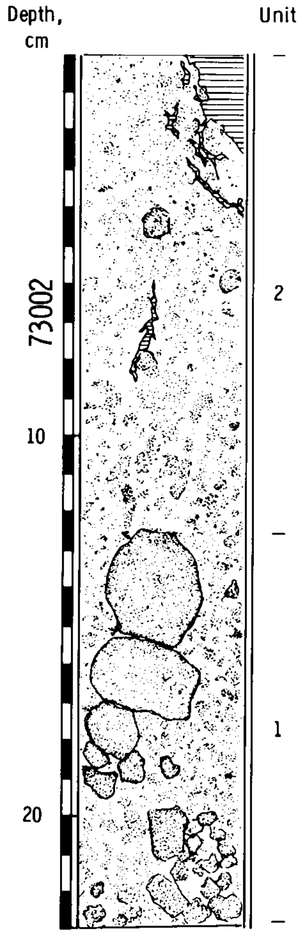
See sections on 73220 and 73120.

Processing

From Butler (1973), page 59 *"Core return - - - is somewhat low because about 4 cm of sample was spilled from the bottom of the upper drive tube (73002) before being capped and the keeper rammed into place. In addition, large fragments like the ones now in the core could have obstructed sampling. The lower drive tube (73001) was sealed in the Core Sample Vacuum Container immediately following separation from the upper drive tube, and has not been removed for x-radiography. From the x-radiographs of 73002, the follower was seated approximately 12 cm below the top, and there appears to be 3 cm of partial void immediately below the follower. Much of the 73002 core is permeated by cracks associated with large rock fragments. Two major stratigraphic units were identified, but no sharp stratigraphic breaks are evident."*

73001 (and 73002) were returned under vacuum in ALSRC#2. When 73001 was received in Houston, it was placed in another vacuum container (Butler 1973). It has not been kept cold, but since it is sealed, an experiment to detect gasses is indicated, should it ever be opened.

73002 was X-rayed, then transferred to Brooks AFB, then White Sands, for remote storage and posterity.



UNIT 2 Depth: 0 to 12.5 cm Thickness: 12.5 cm
Massive unit with scattered rock fragments and abundant mottles.
Matrix: 70 percent; relatively transparent, coarsely granular throughout with 50 to 60 percent semidistinct equant mottles and granules as much as 3 mm in diameter, but most are less than 1 mm in diameter. These mottles may represent rock chips or similar indistinct density concentrations. There are also 2 to 3 percent opaques, mostly pinpoint size, near limit of resolution, ranging from equant to slightly elongate blocky fragments.
Coarse fraction: 30 percent; 5 percent is semiopaque rock fragments with distinct outline, moderately to well sorted, ranging from 0.2 to 0.5 cm in diameter with equant polygonal outlines, relatively straight sides, subangular to subrounded corners; 25 percent is semiopaque crenulate mottles with indistinct outline, generally averaging 0.3 to 0.5 cm in diameter with even size distribution and no extremely large mottles.

UNIT 1 Depth: 12.5 to 23 cm Thickness: 10.5 cm
Massive unit with large rock fragments.
Matrix: 50 percent; relatively transparent, moderately to densely granular with an abundance of coarse granules, similar to unit 2, 2 percent opaques, ranging from pinpoint spherules to 1.5-mm lumpy to blocky fragments.
Framework: 50 percent; 40 percent is semiopaque rock fragments with distinct outline, fragments are poorly sorted, ranging from 0.3 to 4.1 cm in diameter with all sizes in evidence. Fragments tend to be equant, polygonal to blocky sided with relatively straight or smoothly curved margins (not ragged or lumpy), subangular to subrounded corners; 10 percent is semiopaque crenulate mottles with indistinct outline as in unit 2.

Figure 4: Sketch and description of X-ray of 73002 prepared as part of preliminary examination (LSPET 1973).

Transcript

LMP Oh, there's no guarantee that this is a crater rim.

\- - -

CDR Well, the first core has gone down pretty good.

LMP Oh, you won't have any problem in here coring.

CDR Oh, man, I tell you, I wish I was putting a drill hole here. Looks pretty nice.

Note: Mitchell et al. report that it took less than 9 hammer blows.

\- - -

CDR When I broke the cores apart, there's just a bit of dried clods and the bottom core's full; but about an inch and a half of the top core just zero G to 1/6 G'd itself right out (spilled).

\- - -

CDR Forty-six, Bob, is going into the long can. OK, Bob, the long can is sealed. None of the material in this core, in ether the top section or the bottom section, look unlike that stuff just beneath the surface that we smpled at theat special stop back there. It's a bluish-gray, and it tends to clod and break up in your hands. And that's core 31. You've got two-thirds of a core after I packed it down a little bit.

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