PRELIMINARY DESCRIPTION OF 60014, TOP HALF OF DOUBLE DRIVE TUBE 60014/60013. Carol Schwarz, Lockheed-ESC, 2400 NASA Road 1, Houston, TX 77058

Lunar sample 60014, the top half of double drive tube 60014/13, was opened recently and preliminary information on its contents and structure is now available.

The Apollo 16 double drive tube was taken in April 1972 at Station 10', about 75 m west-southwest of the LM at the Descartes landing site in the Central highlands [1]. Three cores were taken near the LM site, 60010/60009 and 60014/60013, both double drive tubes; and 60007-60001, a deep drill string. These were intended to sample "typical" Cayley Plains material and were taken approximately 50 m apart in a triangular pattern [2].

The core is relatively fine-grained, but the surface material at Station 10' is relatively coarse-grained with 20 to 50 cm blocks moderately abundant [3]. The Station 10' area has few small craters but some large 10 - 20 m craters are present. Most of the rocks collected at Station 10 and 10' were fine-grained crystalline rocks and light- and dark-matrix breccias [4]. The material sampled by the 60014/13 core is believed to be South Ray Crater ejecta [1].

Core 60014 was extruded on October 16, 1990, at JSC. The apparent length of the core before extrusion, from x-radiographs, was 28.6 cm. The length after extrusion was 28.2 cm. Only very minor compaction occurred during extrusion. A weight of 570.3 g was calculated from previously weighed core tube hardware.

A void of 2 to 3 cm in width extended from the top to about 4cm. This void was still present after extrusion. The upper ~5 cm is loosely packed. Below 5 cm, the core is noticeably more compact and coherent. The color of 60014 was approximately 10YR 5/1 on the Munsell Color Scale. No distinct color boundaries were observed in the core.

A close examination of the >1 mm particles showed that about 83% are in the 1-2 mm size range, 15% are 2-4 mm, and <1% are greater than 4 mm. The lithology of the particles as determined by binocular examination consists of four types. 52% are breccias, including soil breccias, breccias with glass splashes, and miscellaneous breccias. About 21% are white and light gray fragments (plagioclase crystals, anorthositic breccias and light gray basalts). About 16% are dark, coherent particles, usually dust-covered, which may be basalts or glassy matrix breccias. 11% of the >1mm particles are glasses, including about 80% agglutinates with the remaining being shards, spheres, and miscellaneous glass fragments. More information will become available as the second and third passes are completed.

[1] Apollo Lunar Geology Investigation Team (1972), in Interagency Report: Astrogeology 51, p. 23.
[2] Fruland, R.M. and Reimold, J.N. (1981), in Introduction to the Core Samples From the Apollo 16 Landing Site, JSC doc. 17659, p. 12-14.
[3] LSPET (1972), in Apollo 16 Preliminary Science Report, p. 7-46 to 7-47.

60014 CORE DESCRIPTION
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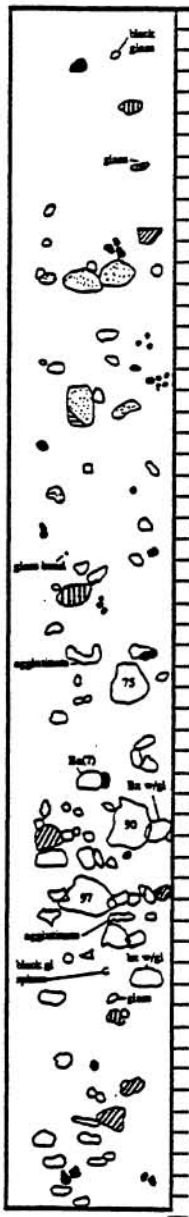
[4] Muelberger, W. R., et.al. (1972), in Apollo 16 Preliminary Science Report, p. 6-1, 6-16 to 6-17.

**DRIVE TUBE 60014 (First Dissection)**



| Depth (cm) | <1 mm Fraction Sample | | >1 mm Fraction Sample | | Special Samples | | |
|---|---|---|---|---|---|---|---|
| | No. | Wt. | No. | Wt. | No. | Wt. | Type |
| 0.5 | 11 | .951 | 12 | .131 | | | |
| 1.0 | 13 | .763 | 14 | .054 | | | |
| 1.5 | 15 | .832 | 16 | .061 | | | |
| 2.0 | 17 | 1.014 | 18 | .102 | | | |
| 2.5 | 19 | 1.384 | 20 | .154 | | | |
| 3.0 | 21 | 1.243 | 22 | .066 | | | |
| 3.5 | 23 | 1.424 | 24 | .026 | | | |
| 4.0 | 25 | 1.601 | 26 | .061 | | | |
| 4.5 | 27 | 1.283 | 28 | .009 | | | |
| 5.0 | 29 | 1.774 | 30 | .044 | | | |
| 5.5 | 31 | 1.936 | 32 | .123 | | | |
| 6.0 | 33 | 1.840 | 34 | .137 | | | |
| 6.5 | 35 | 1.676 | 36 | .355 | | | |
| 7.0 | 37 | 1.664 | 38 | .089 | | | |
| 7.5 | 39 | 1.642 | 40 | .089 | | | |
| 8.0 | 41 | 1.726 | 42 | .061 | | | |
| 8.5 | 43 | 1.962 | 44 | .163 | | | |
| 9.0 | 45 | 1.935 | 46 | .127 | | | |
| 9.5 | 47 | 1.714 | 48 | .266 | | | |
| 10.0 | 49 | 2.008 | 50 | .152 | | | |
| 10.5 | 51 | 1.667 | 52 | .071 | | | |
| 11.0 | 53 | 2.144 | 54 | .053 | | | |
| 11.5 | 55 | 1.928 | 56 | .164 | | | |
| 12.0 | 57 | 1.797 | 58 | .085 | | | |
| 12.5 | 59 | 1.69 | 60 | .067 | | | |
| 13.0 | 61 | 1.714 | 62 | .125 | | | |
| 13.5 | 63 | 1.716 | 64 | .127 | | | |
| 14.0 | 65 | 2.181 | 66 | .152 | | | |
| 14.5 | 67 | 1.761 | 68 | .081 | | | |
| 15.0 | 69 | 1.888 | 70 | .112 | | | |
| 15.5 | 71 | 1.984 | 72 | .141 | | | |
| 16.0 | 73 | 1.842 | 74 | .122 | 75 | .373 | dust covered |
| 16.5 | 76 | 1.771 | 77 | .144 | | | |
| 17.0 | 78 | 1.879 | 79 | .092 | | | |
| 17.5 | 80 | 2.115 | 81 | .167 | | | |
| 18.0 | 82 | 2.137 | 83 | .2 | | | |
| 18.5 | 84 | 1.822 | 85 | .193 | | | |
| 19.0 | 86 | 1.747 | 87 | .168 | 90 | .487 | soil bx/glass |
| 19.5 | 88 | 1.576 | 89 | .364 | | | |
| 20.0 | 91 | 1.986 | 92 | .254 | | | |
| 20.5 | 93 | 1.635 | 94 | .137 | | | |
| 21.0 | 95 | 1.89 | 96 | .286 | 97 | .456 | basalt |
| 21.5 | 98 | 1.945 | 99 | .150 | | | |
| 22.0 | 100 | 1.631 | 101 | .262 | | | |
| 22.5 | 102 | 2.028 | 103 | .099 | | | |
| 23.0 | 104 | 1.927 | 105 | .177 | | | |
| 23.5 | 106 | 2.075 | 107 | .166 | | | |
| 24.0 | 108 | 1.988 | 109 | .151 | | | |
| 24.5 | 110 | 2.094 | 111 | .188 | | | |
| 25.0 | 112 | 2.323 | 113 | .159 | | | |
| 25.5 | 114 | 2.207 | 115 | .180 | | | |
| 26.0 | 116 | 1.929 | 117 | .109 | | | |
| 26.5 | 118 | 1.891 | 119 | .326 | | | |
| 27.0 | 120 | 1.858 | 121 | .086 | | | |
| 27.5 | 122 | 1.675 | 123 | .162 | | | |
| 28.0 | 124 | 1.907 | 125 | .153 | | | |
| 28.2 | 126 | 1.077 | 127 | .070 | | | |
| 29.0 | | | | | | | |
| 29.3 | | | | | | | |

Breccia
Glass
Soil Breccia
White
Basalt (?)