Lunar Sample Compendium
C Meyer 2010

65501 – 618 grams
65510 – 410 grams
Soil and rake residue

Figure 1: Close-up photo of area where soil 65500 and rake sample 65510 were taken. AS16-107-17493

Figures 2 and 3: Maps of location of 65501 and 65510 at station 5 on Cayley Plain.
Introduction

The astronauts stopped at Station 5 on the way back to the LM, where they collected several rake and soil samples at the base of Stone Mountain (figure 2). 65501 and 65510 contained a high proportion of soil clods (altogether there are 150 grams of soil clods in the rake sample 65510). These can be seen in figure 1.

Petrography

The maturity index for 65501 is low (I_s/FeO = 38). Butler et al. (1973) determined the grain size distribution (figure 7) and the modal mineralogy. The abundance of fragments of soil clods makes for an unusual distribution of grain size (figure 8) and a high value for the average grain size (149 microns).

Keil et al. (1972) and Warner et al. (1976) reported on rake samples from 65510. They were mostly soil clods (see figure 1).

Chemistry

Baedecker et al. (1972), Duncan et al. (1973), Nava (1974), Philpotts et al. (1973) and Korotev (1982) all reported analyses of 65501 and 65510 (table 1).

Kerridge et al. (1975a) determined 90 ppm carbon and 60 ppm nitrogen for 65500 (figure 6), while Epstein and Taylor (1973) reported carbon (110 ppm), hydrogen and isotopic ratios for 65513(?). Kothari and Goel (1973) reported 80 ppm nitrogen.

Jovanovic and Reed (1973) determined the halogens, Li, U and Te. Cirlin and Housley (1981) determined the content of Cd (120 ppb) and Zn (22 ppm).
average grain size = 149 microns

**Other Studies**

Wieler et al. (1980) determined the density of fossil nuclear tracks.

Bogard and Nyquist (1973) and Walton et al. (1973) determined the rare gas content and isotopic ratios for 65501 and 65511.

Becker and Clayton (1977) calculated an exposure age of 510 m.y. from the abundance of $^{15}$N and compared this to the 310 m.y. $^{21}$Ne age of Walton et al. (1973).
Table 1. Chemical composition of 65501 and 65511.

<table>
<thead>
<tr>
<th>Reference</th>
<th>65500</th>
<th>65511</th>
<th>ave. st. 5</th>
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<tbody>
<tr>
<td>weight</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>SiO2 %</td>
<td>46.2</td>
<td>(e)</td>
<td>44.86</td>
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<tr>
<td>TiO2</td>
<td>0.62</td>
<td>(e)</td>
<td>0.7</td>
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<tr>
<td>Al2O3</td>
<td>25.6</td>
<td>(a)</td>
<td>25.17</td>
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<tr>
<td>FeO</td>
<td>6.02</td>
<td>(a)</td>
<td>5.85</td>
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<tr>
<td>MnO</td>
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<td>(a)</td>
<td>0.072</td>
</tr>
<tr>
<td>MgO</td>
<td>7</td>
<td>(a)</td>
<td>6.91</td>
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<tr>
<td>CaO</td>
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<td>(a)</td>
<td>14.25</td>
</tr>
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<td>Na2O</td>
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<td>(a)</td>
<td>0.44</td>
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<td>K2O</td>
<td>0.139</td>
<td>(e)</td>
<td>0.138</td>
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<tr>
<td>P2O5</td>
<td>0.137</td>
<td>(e)</td>
<td>0.157</td>
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<tr>
<td>S %</td>
<td></td>
<td></td>
<td>0.082</td>
</tr>
</tbody>
</table>

| Sc ppm    | 10.2  | (a)   | 10.1      | 10.6 | (a) |
| V         | 20    | (a)   | 25        | 24   | (a) |
| Cr        | 830   | (a)   | 821       | (e) 780 | 847 | (a) |
| Co        | 36.4  | (a)   | 31        |       | 26.3 | (a) |
| Ni        | 515   | (a)   | 491       | (b) 290 | 430 | 370 | (a) |
| Cu        |       |       | 5.7       |       |     |     |
| Zn        | 26    | (b)   | 23        |       |     |     |
| Ga        | 5.6   | (b)   |           |       |     |     |
| Ge ppb    | 1250  | (b)   |           |       |     |     |

As, Se, Rb, Sr, Y, Zr, Nb, Mo, Ru, Rh, Pd ppb, Ag ppb, Cd ppb, In ppb, Sn ppb, Sb ppb, Te ppb, Cs ppm, Ba ppm, La ppm, Ce ppm, Pr ppm, Nd ppm, Sm ppm, Eu ppm, Gd ppm, Tb ppm, Dy ppm, Ho ppm, Er ppm, Tm ppm, Yb ppm, Lu ppm, Hf ppm, Ta ppm, W ppb, Re ppb, Os ppb, Ir ppb, Pt ppb, Au ppb, Th ppm, U ppm

Technique: (a) INAA, (b) RNAA, (c) IDMS, (d) XRF, (e) AA

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References for 65501.


Keil K., Dowty E., Prinz M. and Bunch T.E. (1972) Description, classification and inventory of 151 Apollo 16 rake samples from the LM area and station 5. Curator’s Catalog, JSC.


Marvin U.B. (1972) Apollo 16 coarse fines (4-10 mm): Sample classification, description and inventory. JSC Catalog.


