

SEARCH FOR AMINO ACIDS IN APOLLO 17 LUNAR SOIL SAMPLES. Charles W. Gehrke, Robert Zumwalt, and Ken Kuo Experimental Station Chem. Labs., University of Missouri, Columbia, MO 65201 and Cyril Ponnampereuma, Akira Shimoyama, Martha Gay, Ramsay Pal and Pat Buhl, Lab. of Chem. Evol., Dept. of Chem., Univ. of Maryland, College Park, MD 20742

Returned lunar samples 72501.62 and 70011.37 SECS were the subject of these investigations. Our primary aim was the identification of water extractable organic compounds by gas-liquid chromatography (GLC) and classical ion-exchange chromatography (CIE) with particular emphasis on the amino acids. The aqueous extracts were prepared using the hydrothermal extraction method of Cheng and Ponnampereuma, (ACS MARM meeting Jan. 14-17, 1973). Other methods have been previously reported by Gehrke and Ponnampereuma, (Proceedings of the 4th Lunar Science Conference 1973).

The total procedural blanks for the analyses exhibited no amino acid contamination above the 0.5 ng/g level by GLC and <0.2 ng/g level by CIE. Analyses by both GLC and CIE on the same sample extracts gave independent yet supporting data. The analyses included free amino acids (F) and amino acids observed after hydrolysis (H) of the aqueous extracts with 6 N HCl for 20 h. The amounts of Ala, Thr, Ser, Asp and Glu present in lunar soil, in nearly all cases, were less than 1 ng/g.

In Apollo 17 (72501.62) glycine was found at 1.5 ng/g (F) and 4 ng/g (H) by CIE, and <1 ng/g for (F & H) by GLC. For sample 17 (70011.37 SECS) glycine was present at a level of (19 ng/g F), and (11 ng/g H) by CIE, and 12 ng/g and 5 ng/g respectively by GLC. The latter result appears to be contamination from rocket exhaust.

There are also significant quantities of derivatizable compounds which cannot be attributed to the presence of any known amino acids. These are under further investigation.