

SEARCH FOR ^{244}Pu ON THE MOON. G. A. Cowan, D. C. Hoffman, and F. O. Lawrence, Los Alamos Scientific Laboratory, P. O. Box 1663, Los Alamos, N.M. 87544; T. L. Collins, J. L. Mewherter, and F. M. Rourke, Knolls Atomic Power Laboratory, P. O. Box 1072, Schenectady, N.Y. 12301.

Analysis for ^{244}Pu in fines from an 18-gram sample of 14259 has been completed. The results from two equal fractions are $< 6 \times 10^{-17}$ and $< 9 \times 10^{-17}$ grams of ^{244}Pu per gram of sample. We have hypothesized that continuing accretion of interstellar dust by the moon's surface might lead to concentrations of the order of 10^5 atoms of ^{244}Pu per gram or 4×10^{-17} grams per gram of a properly selected surface sample. However, the estimate includes a dilution factor of less than a factor of ten by gardening. Results reported at the last Lunar Science Conference by Fields et al set limits for 15271,51 of $< 3 \times 10^{-17}$ and for 15021,79 of $< 6 \times 10^{-17}$ grams of ^{244}Pu per gram of sample. Considerable evidence has accumulated that the moon's surface has been gardened much deeper than a few inches within times comparable to the half-life of ^{244}Pu . Thus, further efforts to identify ^{244}Pu in surface moon fines will probably await availability of samples of several hundred grams.