THE APOLLO SURFACE EXPERIMENT PACKAGES: 50 YEARS OF SCIENCE AND COUNTING.

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Introduction: Nearly 50 years ago, as part of their historic but brief sojourn on the lunar surface, Apollo 11 astronauts Armstrong and Aldrin deployed a small scientific package, the Early Apollo Surface Experiments Package, or EASEP. This was the forerunner of a series of more complex stations, the ALSEPs, which were deployed on Apollo 12, 14, 15, 16, and 17. While the EASEP was only designed for a short (few week) lifetime, the ALSEPs were fashioned for years of service on the Moon. These returned data from their deployment (1969-1972) until they were unceremoniously turned off at the end of fiscal 1977 on September 30. Until turnoff, the 6 ALSEP stations were faithfully monitoring the lunar environment, continuously returning data on fields and particles, seismic activity, heat flow, dust, meteorites, thermal effects, and the tenuous lunar atmosphere. These data were recorded on the ground and sent to investigators involved with the experiments for analysis.

Unfortunately, over the years much of these data were lost. The later telemetry was archived at the National Space Science Data Center (NSSDC). Some investigators archived their individual experiment data with NSSDC as well, but much of the data had minimal documentation, were not in digital form, or were stored in difficult to translate formats. Data from many experiments were never delivered to the NSSDC.

The Lunar Data Project was started to address the problem of both missing and not readily usable data. Our effort has resulted in recovery of some of the ARCSAV tapes, recovery and digitization of a large volume of Apollo scientific and technical documentation, and restoration of many ALSEP and other Apollo data collections. Restoration involves deciphering formats, assembling necessary ancillary data (metadata), and packaging data in digital format to be archived with the Planetary Data System (PDS). Recovery of the data from the ARCSAV tapes involved having the tapes read on special equipment and extracting the individual experiment data out of the integrated data stream. We will report on the history and status of the various recovery efforts.

Draft abstract submitted in anticipation of NASA furlough.