

Apollo Lunar Surface Science Stations (ALSEPs) Then (1970s) and Now (2008)

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Then: As the Apollo Lunar Program developed in the early 1960s, NASA decided to include lunar surface science stations (Apollo Lunar Surface Experiments Packages-ALSEPs) at each of the Apollo lunar landings sites. The science experiments were selected by NASA Headquarters, ALSEP management and development responsibility assigned to NASA JSC, and an industrial systems development contractor, Bendix Aerospace, Ann Arbor MI, was competitively selected. This paper briefly describes the ALSEP system developed to fly combinations of 14 experiments 5 to 8 at a time on the Apollo lunar surface missions. Experiment objectives and complements for the six landed missions are presented. Each completely independent system consisted of a central station providing the telemetry, data handling, and power distribution functions and the science experiment packages. Power was provided by radioisotope thermal generators (RTGs) which were externally fueled by the astronauts. Some of the unique instrument/astronaut interfaces, spacesuit limitations, lunar surface environment, dust, RTG power system and their complications and subtleties, are discussed. The eight year successful operation of the ALSEP Systems and experiments is described along with the system of archiving data. In 1977 NASA decided to cease collecting ALSEP data even though some of the instruments were still providing useable information.. On September 30, 1977 the experiments still operating were turned off or to standby, transmitters left on and data collection ceased. Within a few months nearly all ALSEP funding ceased.

Now: Today, with plans to return to the moon in the next decade, there is renewed interest in the original ALSEP data much of which is available from the National Space Science Data Center (NSSDC) at GSFC. However, due to the rapid way ALSEP was terminated, it is believed a significant amount of ALSEP data may not have been archived. Currently a preliminary evaluation is being made to determine how much possibly useable data is not archived and the feasibility of recovering some of this ALSEP data.