THE LUNAR DATA PROJECT - RESTORATION OF APOLLO DATA FOR FUTURE LUNAR EXPLORATION. David R. Williams[1] and Edwin J. Grayzeck, Jr.[2], [1]QSS Group, Inc., NSSDC, Code 690.1, Goddard Space Flight Center, Greenbelt, MD, 20771, dave.williams@gsfc.nasa.gov, [2]NSSDC, Code 690.1, Goddard Space Flight Center, Greenbelt, MD, 20771, grayzeck@mail630.gsfc.nasa.gov

At the close of the 1960's and beginning of the 1970's, NASA's Apollo project landed six astronaut missions on the Moon. Five of these (Apollos 12, 14, 15, 16, and 17) set up long-lived instrument suites, the Apollo Lunar Surface Experiment Packages, or ALSEPs, on the lunar surface. These packages operated autonomously and transmitted data back to Earth until 1977. The data, meant primarily for evaluation of the engineering aspects of lunar bases, represent the only long-term information on the lunar surface environment, and as such are ideal for planning future lunar missions.

Unfortunately, much of these data are stored in cumbersome forms which make them inaccessible to most users. The data were examined in the 1970's but have not been widely used since that time. Much of the data would be amenable to methods of analysis and advances in hardware that have been developed in the intervening years. If the data were more readily available and usable in today's environment, they could provide a wealth of information for scientific studies and planning for future lunar exploration.

The Lunar Data Project (LDP) is an effort to take relevant, scientifically important ALSEP and other Apollo data archived at the National Space Science Data Center (NSSDC), which holds the most complete collection of these data, and put it into a digital form which can be used by researchers and mission planners. Data in analog form, on microfilm, microfiche, photographic film, or hard copy documents, are being digitized. Digital data in older, rarely used formats are being recast into more general formats (typically ASCII tables). All these data will then be put online in a Lunar Exploration Enabling Database (LEED) in CDF (Common Data Format). LEED will provide multiple pathways and search capabilities for the data, as well as display tools. The data will also be submitted to the Planetary Data System (PDS) for validation and archiving. This effort is currently being funded by an internal Goddard Space Flight Center grant.

The data were selected for their relevance to science and exploration by a group of scientists and engineers at Goddard Space Flight Center. This Lunar Data Evaluation Team studied and discussed the data available at NSSDC and determined which were most suitable for restoration based on their relevance to future lunar exploration, scientific value of the data, and difficulty of restoration. The selected data being resurrected by the LDP include data from the ALSEP experiments: the Suprathermal Ion Detector Experiment, the Cold Cathode Ion Gauge, the Charged Particle Lunar Environment Experiment, the Solar Wind Spectrometer, the Soil Mechanics Experiment, and the Dust, Thermal, and Radiation Engineering Measurements Package. There are also data from orbital experiments: the Lunar Particle Shadows and Boundary Layer Experiment, the Alpha Particle Spectrometer, and the Far-Ultraviolet Spectrometer. The staff of the LDP are largely NSSDC personnel, and so have familiarity with the data and experience working with older media and formats.

Metadata, ancillary information to aid in the use and understanding of the data, will also be produced and incorporated in the database. This will include complete descriptions of the data sets, formats, processing history, and relevant references and contacts, as well as descriptions of the instruments used to collect the data, mission history, and any other information deemed necessary to make full use of the data. At the end of this multi-year effort we will have the LEED fully populated with relevant data and associated metadata which will be easily accessible to interested users from the lunar scientific and exploration communities. This poster will discuss the digitization of one dataset (CCIG) and outline progress on the overall project.