ArcGIS DIGITIZATION OF APOLLO SURFACE ACTIVITES: A SPATIAL DATABASE OF TRAVERSES, SAMPLES, AND IMAGES. N. E. Petro[1] and J. E. Votava[1,2], [1]NASA Goddard Space Flight Center, Planetary Geodynamics Laboratory, Greenbelt, MD, 20771, [2]University of Minnesota Duluth. (email: Noah.E.Petro@nasa.gov)

Introduction: The Apollo surface activities are well documented [1-4] and an abundance of information associated with surface activities exists in multiple locations, both on paper and online [5-8]. With high-resolution data from LRO much of the routes taken by the Apollo crews can be digitized [9] along with corresponding sample and photograph locations. A centralized database of surface activities is being created in ArcGIS that places the traverses, sample sites, and other surface activities into a centralized spatial context [10]. The value of such a centralized database is that any feature (e.g., a traverse, a sample, or image) can have corresponding metadata (e.g., distance, time, compositions, web links) associated with it. The ArcGIS projects will be made available to the community and updated/revised as needed.

Thus far all of the J-Missions have been digitized, with Apollo 15 being the most mature of the group. We have digitized the published traverse maps [11], the planned traverse and contingency walking routes [12], traced paths visible in LROC NAC images, added the locations of each station, sample site, and panorama location (Figures 1,2). Accompanying each sample site are metadata containing sample description, mass, age information, compositional data (major elements and REE compositions), and a link to the corresponding descriptive curation document [7].

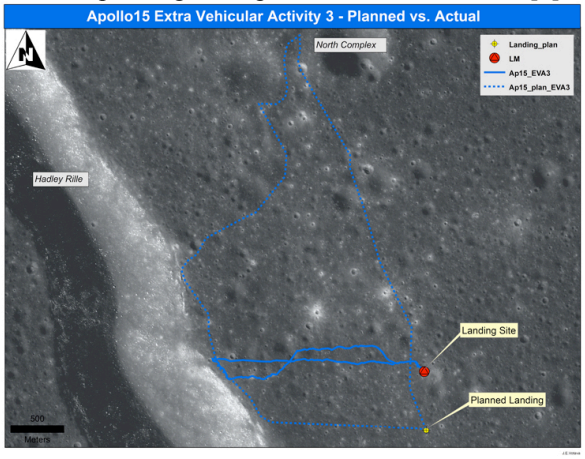

Figure 1. Apollo 15 EVA 3 planned traverse [12] versus actual traverse. Base image is LROC NAC frame M170538271.

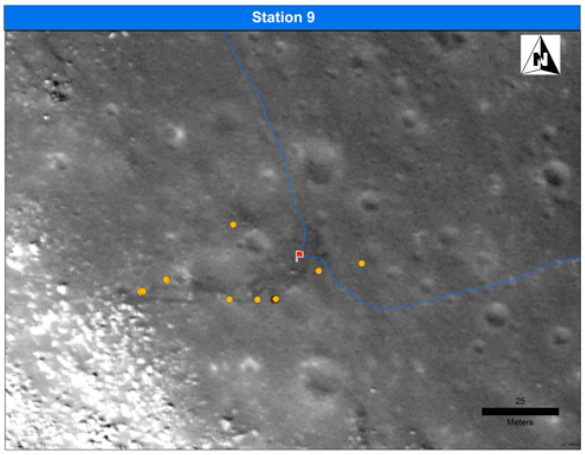

Figure 2. View of Station 9 from Apollo 15 EVA 3, showing sample locations [11]. Base image is LROC NAC frame M170538271.

Strengths of Digital Apollo Traverse Data: There are many benefits of creating a spatial database of Apollo surface activities. Of particular interest is the ability to easily display compositional or age data associated with samples [3, 13, 14], calculate derived values (times, distances, relative speeds) [4], and easily place Apollo samples in their proper sampled context. Additionally, this database can be easily mined for information to assist in planning of future surface activities (differences between planned and actual traverses in a variety of terrains).

We would appreciate suggestions for data and or products to include in the database or ways to make the digital product useable to the broader community.

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