

DIGITIZED LUNAR ORBITER IV IMAGES: A PRELIMINARY STEP TO RECORDING THE GLOBAL SET OF LUNAR ORBITER IMAGES IN BOWKER & HUGHES. Jeffrey J. Gillis¹, Paul D. Spudis², Mary Ann Hager², Mary Noel², Debra Rueb², James Cowan²; 1. Dept. of Earth and Planet. Sciences, Washington University, St. Louis MO, 63130. 2. Lunar & Planetary Institute, Houston, TX, Gillis@levee.wustl.edu.

Introduction: The "Lunar Orbiter Photographic Atlas of the Moon" by Bowker and Hughes is the definitive reference guide to Lunar Orbiter global coverage of the Moon. However, the atlas is out of print and almost impossible to find. This resource has a big demand within the lunar science community. The catalog contains 675 images, with low to moderate sun-angle, for study of lunar surface features. Scientists without a copy of the atlas must reside in close proximity to an Regional Planetary Imaging Facility (RPIF) or other planetary data facility with a copy of the atlas. Thus far, we have digitally archived the complete set of Lunar Orbiter IV mission images covering the Moon's near side. Our goal is to digitize the complete set of images contained in Bowker and Hughes by the end of 1999.

Method: We have produced a digital archive of the Lunar Orbiter IV images displayed in Bowker and Hughes. Each Lunar Orbiter 16" x 20" print is digitally recorded as 1 to 1.25 megabyte, grayscale, jpeg formatted image. The image was captured using the Olympus D-600L digital camera. The camera contains a progressive scan CCD with a 1280x1024 pixel array. Image resolution is 300 m/pixel or 60% lower resolution than the original hardcopy print.

Final Product & Discussion: A working prototype of the database, using the Lunar Orbiter IV near side images and search engine will be completed by LPSC XXX. However, the long term goal of this project is to preserve digitally all 675 plates in [1], in two formats: 1) an LPI web site containing all of the images and a search engine to query the data set, and 2) a CD-ROM set with a graphical interface and a text index to locate images of interest. Once placed online, the digital image index will offer immediate access to everyone with internet capabilities. Moreover, the CD-ROM product will allow users access to the data set while at home, on travel, at schools as an educational product, or if the internet transfer

rate is slow. The online version will be release first to provide a period of time for beta-testing and allow user to submit suggestions, comments or errors so that they may be remedied before CDs are pressed.

This method of digitally archiving the Lunar Orbiter frames will provide greater fidelity than the images in Bowker and Hughes. Once in digital format, the inventory of digital images can be used in a multitude of applications (e.g., CD-ROM of ready-to-use images to be easily inserted into journal articles, provide valuable lunar image information to the education community, and artwork produced for graphical art needs). With the images in digital format and a known scale, distance and area measurements are much easier to calculate than from the prints. Customers ordering, hardcopy prints of Lunar Orbiter images from NSSDC, LPI or other RPIFs will be able to find and view the images they need before purchasing them and if desired, be able to designate a subset of the image to be reproduced. The online search engine (queries by feature name, and latitude and longitude) will allow easy location of images that fulfill parameters set by the user. Moreover, we are adding crater names, when possible, for the far side imagery. Feature names on the far side of the Moon are missing in Bowker and Hughes.

Spin-offs from this project may be developed (e.g., Lunar Orbiter high-resolution coverage of all lunar landing sites, or Apollo metric and Hasselblad photographs of lunar interesting targets).

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References: [1] D. E. Bowker & J. K. Hughes, 1971, NASA SP 206, 675 plates.

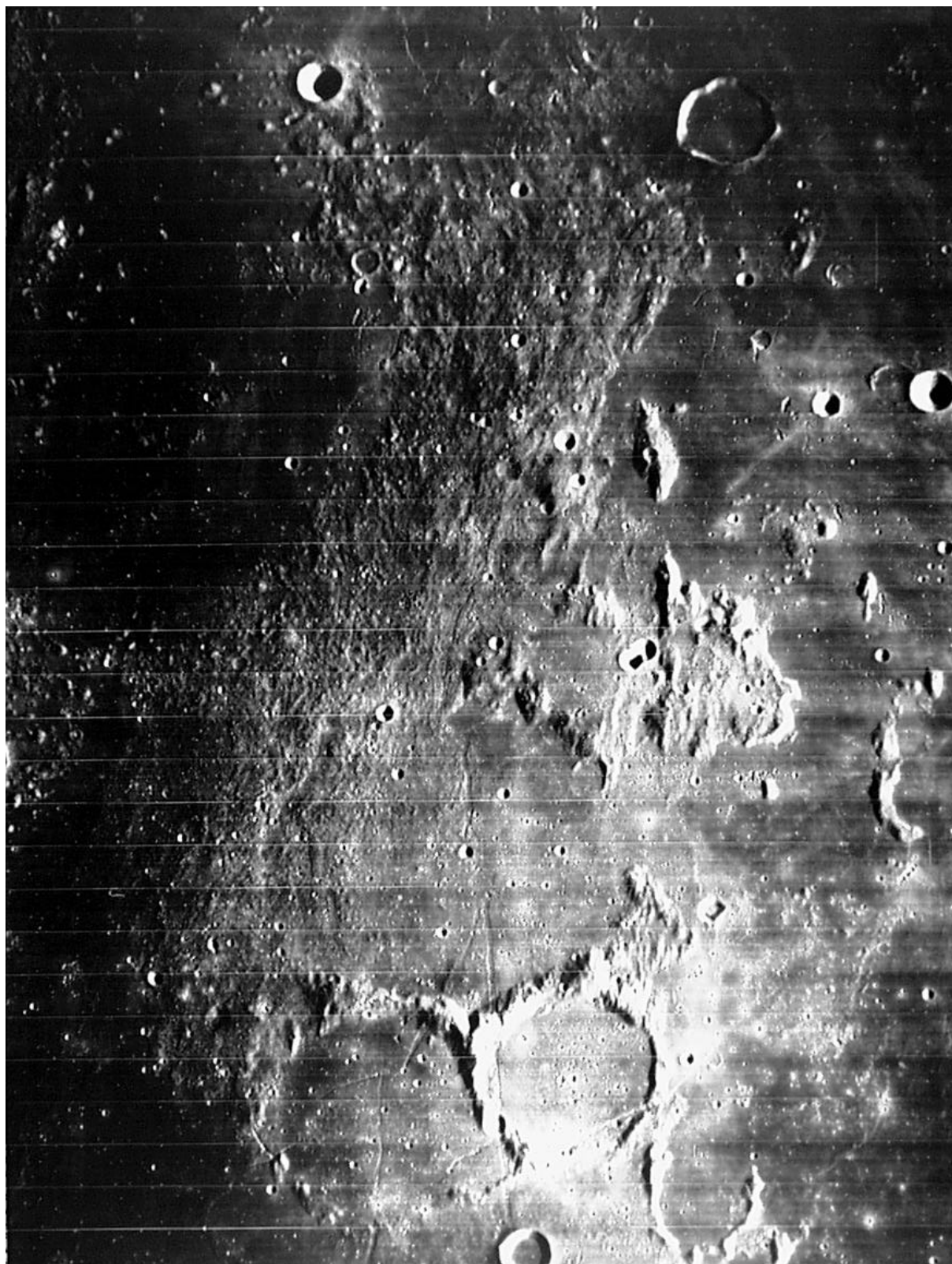


Fig 1. Lunar Orbiter IV image (120-H3) of the Apollo 14 landing site archived with the digital camera. This image, shown here at 50% its recorded size, illustrates the resolution, fidelity, and quality that is digitally recorded.