DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

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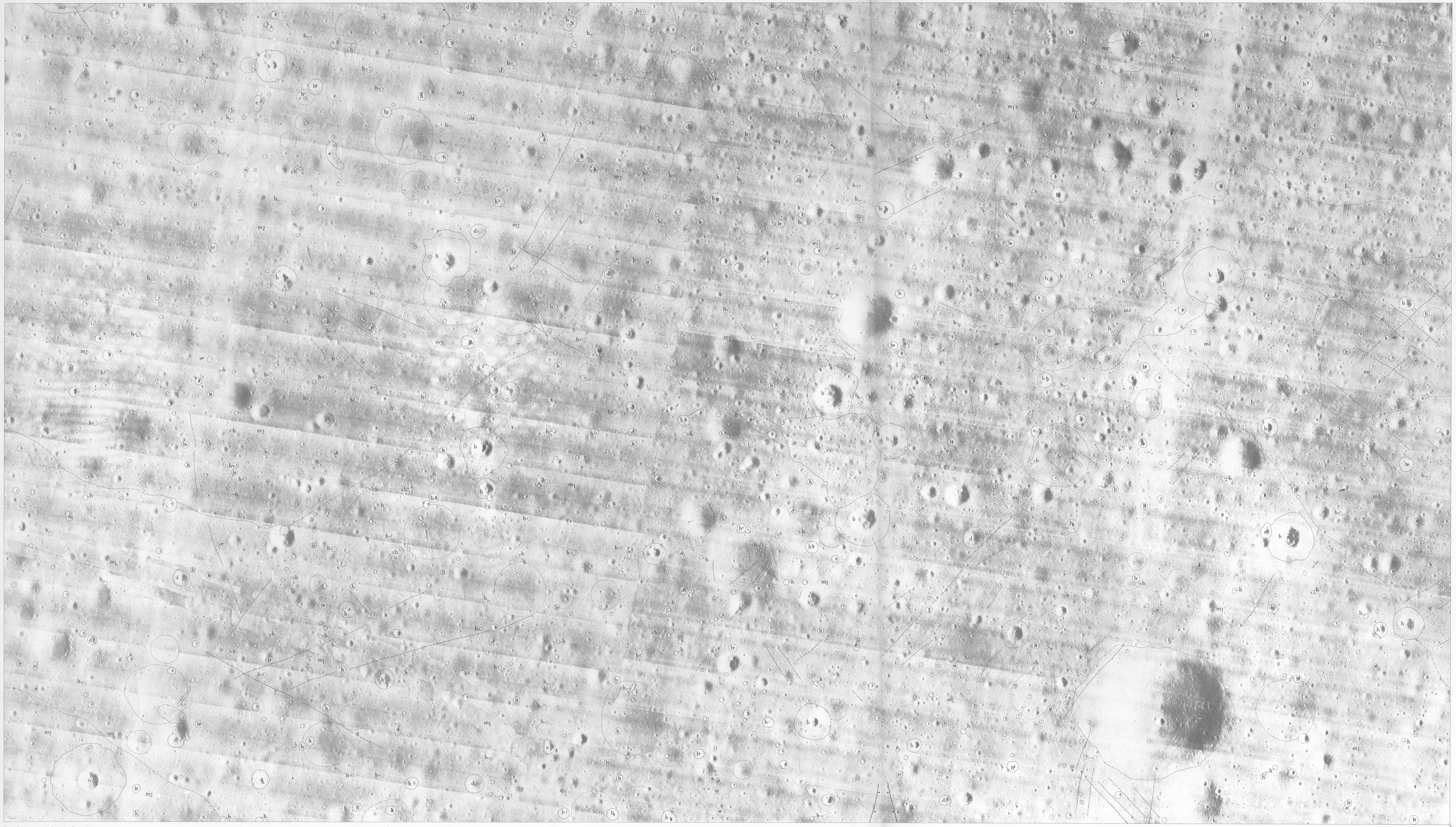
PART OF APOLLO SITE 3
(II P-8) (CENTRAL ONE)



MAP OF SELECTED GEOLOGIC FEATURES IN PART OF APOLLO LANDING SITE 3
(LUNAR ORBITER SITE II P-8)

By
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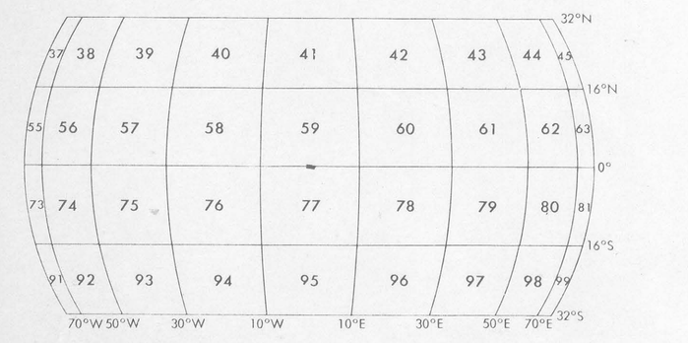
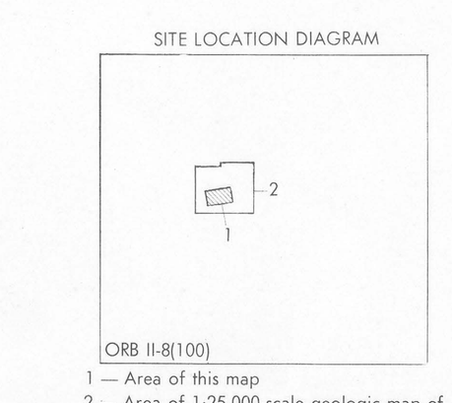
1969

Principal sources of geologic information: Lunar Orbiter high-resolution photographs: II—H121 and H122; V—H109 and H113 (Langley Research Center, NASA, 1966, 1967); the annotations were checked and materially improved by Jon Macy.



SITE LOCATION DIAGRAM



EXPLANATION

Young crater materials (b, h)

Characteristics
Materials of the freshest, sharpest-appearing craters in the map area.
b, craters surrounded by 8 or more resolvable (>2 m in diameter) blocks.
h, crater surrounded by bright halo.
no symbol, crater has sharp rim crest.

Interpretation
Materials of primary impact craters. Bright haloes consist of subresolution blocks or may be sublimates around some craters. Sharp-rimmed craters either have subresolution blocks or are not large enough to have penetrated the mare surface material (see boxes to right). Craters are not all the same age; with some exceptions, larger craters are older.

Scientific interest
Craters surrounded by blocks provide relatively fresh samples of the local bedrock. Samples from craters with varying degrees of freshness would provide materials that have been at the surface for different lengths of time.

NOTE: Unmapped craters are intermediate in freshness between those mapped as "young crater materials" and those mapped as "old craters."

Old craters

Characteristics
Very shallow craters with broad, poorly defined rim crests. Line drawn at rim crest.

Interpretation
Degraded, relatively old craters of uncertain origin. No difference between crater and surrounding mare surface material may be apparent on the ground.

Miscellaneous crater materials (e, ch, cc, d)

Characteristics
e, elongate crater material. Occurs in and around more or less tear-drop shaped craters which are subdued and commonly deeper at one end than the other.
ch, chain crater materials. Occurs in and around a series of circular alined craters that are small and subdued and have similar morphologies.
cc, crater cluster material. Occurs in and around a cluster of craters of the same approximate size and degree of modification. Craters moderately subdued and some are elongate.
d, dimple crater materials. Occurs on the walls of a dimple-shaped depression having no rim or very low rim; walls are convex upward.

Interpretation
e, ch, and cc, most probably material of secondary impact craters; some may be craters of endogenetic origin.
d, material of collapse depressions. Some may be material in and around degraded impact craters that have been modified by extensive slumping of the upper wall.

Scientific interest
Secondary impact craters may have fragments of the projectile which made the crater on the floor or in surrounding ejecta. Craters of endogenetic origin may have volcanic ejecta or sublimates on floors or surroundings. Dimple craters may indicate extent of collapse or drainage in the mare surface material or the mechanisms of crater degradation.

Mare surface material (m_1, m_2, ml, mr)

Characteristics
m_1, covers highly cratered terrain.
m_2, covers terrain with fewer craters larger than 75 meters in diameter than that covered by m_1.
ml, covers terrain with numerous lineaments that also has slightly fewer craters larger than 100 meters in diameter than terrain covered by m_1.
mr, covers mare ridges, weak patterned ground in places.

Interpretation
Fragmental debris developed by bombardment of the lunar surface by micrometeorites. Physical and chemical properties may or may not differ among the four units. Patterned ground developed on ridge by downslope movement of loose material.

Scientific interest
Provide samples of a variety of lunar materials.

Contact
Shows outer limit of crater materials.

Scarp
Line marks base; barb points downslope. Low but well defined. May be a flow front, either lava or debris.

Inferred contact
Separates two interpreted bedrock units below mare surface material. Probably not visible on ground.

Shallow trough in rim of crater
Most are not complete. Scarp left by slumping of upper part of crater wall

Probable fault
Bar and ball on apparent downthrown side. Moderately steep scarp on low-resolution stereo pairs. Covered by mare surface material and probably not visible as a sharp break on ground.

Block field
Abundant resolvable blocks in a semi-continuous field generally within rim crest of large subdued crater.

Block
Individual resolvable block in inter-crater area or on rim of crater not designated as blocky.

Lineament
Shallow groove, subdued scarp or line of very highly subdued craters. May not be visible on ground. Longer lineaments mapped from low-resolution photographs and location is approximate.

Center of landing ellipse

This map is an annotated photomosaic of the central part of early Apollo landing site 3 (also known as Central One), part of Lunar Orbiter site II P-8. Features of scientific interest to astronauts conducting geologic traverses on the lunar surface have been shown by the symbols outlined in the explanation. For a complete description of the Apollo Field Geology Experiment, including priorities for the astronauts and the use and purpose of this map, see the Definitive Experiment Plan of the Apollo Lunar Geology Investigators (April, 1968, unpub.).

On smaller scale maps showing the regional geology of the landing site (Rowan, 1968; Trask, 1968), materials have been assigned to parts of the lunar stratigraphic column outlined by Wilhelms (1966). Ages are not assigned on this 1:5,000-scale map because they have little bearing on exploration objectives, and the increased density of line symbols that would result from assigning ages would obscure other, more useful information. Most of the outlined crater materials belong to the upper part of the Copernican System. Unmapped crater materials belong to both the Copernican and Eratosthenian Systems, and craters shown by a dashed line at the rim crest, belong mostly to the Eratosthenian System. The mare surface materials do not have a discrete age, but have developed by repeated overturn of surficial debris. Unit m_2 may have been derived from Eratosthenian mare material, possibly overlying Imbrian mare material; units m_1 and ml from Imbrian mare material; and unit mr from Imbrian mare ridge material.

References

Rowan, L. C., 1968, Geologic map of Lunar Orbiter site II P-8 [scale 1:100,000]: U.S. Geol. Survey open-file map.
Trask, N. J., 1968, Geologic map of the ellipse Central One area [scale 1:25,000]: U.S. Geol. Survey open-file map.
Wilhelms, D. E., 1966, Summary of telescopic lunar stratigraphy, sec. 4 of Astrogeol. Studies Ann. Prog. Rept., July 1965-July 1966, pt. A: U.S. Geol. Survey open-file report, p. 235-305 [1968].

Moon (Apollo landing site 3). Geol. 1:5,000. 1969.