

1968 NASA AUTHORIZATION
EVOLUTION OF LUNAR EXPLORATION

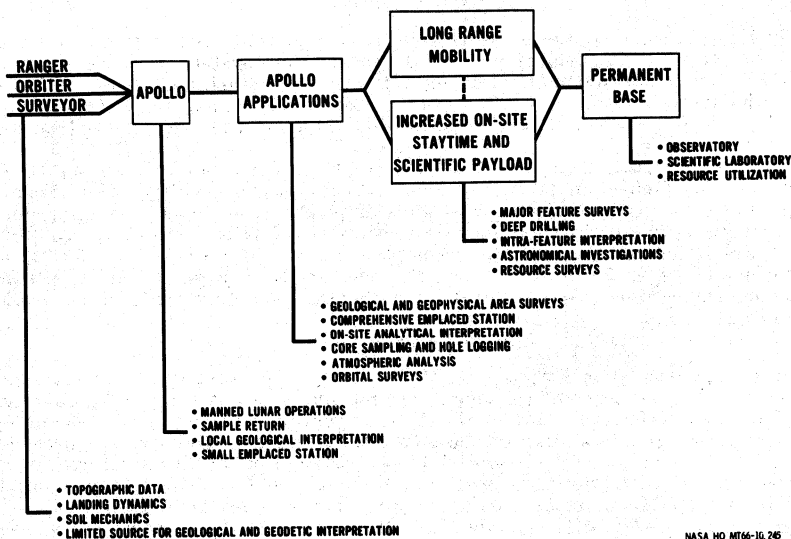


FIGURE 120

measurements. These measurements could have unique objectives as well as helping to support the interpretation of the orbital data.

Among the primary objectives which have been identified for surface missions are selective collection of surface and subsurface samples; geological mapping; geophysical surveys; logging of drill holes; and geodetic measurements. Other primary objectives are geochemical and petrological analysis to aid in selection of samples in situ analyses to measure unique properties that may be destroyed in transit; and physical properties measurements of lunar soils and surface materials.

Example payloads have been conceived for the surface missions in order to test operational concepts, payload and subsystem capabilities and to frame scientifically significant missions. This chart (fig. 121, MC66-10,246) lists a potential payload for a two-man 14 day mission.

Major pieces of equipment and long-lead-time experiment support systems are now under study. Among these are a moderate depth drill, a lunar surveying system, logging tools, and a large emplaced scientific station (fig. 122, MT66-8685). These pieces of equipment and the lunar scientific survey module (LSSM) are the major building blocks of the surface missions around which the scientific experiments and operational activities would be structured (fig. 123, MT66-9608).

Mobile lunar exploration

It has been recommended by NASA's scientific consultants that a mobile exploration phase utilizing vehicles with long range capabilities be initiated.

The three objectives of the mobile exploration phase would be to (1) broaden our knowledge of the moon in regional studies, (2) complete the evaluation of the moon as a site for observatories and laboratories, and (3) select candidate sites for future bases (fig. 124, MT66-10,247).

If at the end of the above phase, the feasibility of permanent bases was proven, the final stages of exploration could begin. Although the objectives for such a phase are necessarily incompletely understood, it is felt that such a base might be utilized primarily as an observatory and as a laboratory with the possibility that the processing of lunar materials to support the base would be carried out.