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## Summary of *Apollo* and Lunar Logistics System Plans

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The basic mission objective of Project *Apollo* is to land men on the Moon and return them to Earth at the earliest practicable date. The *Apollo* crew will consist of three men, two of whom will land on the surface of the Moon, conduct surface operations for up to 24 hr, and then rejoin the third crew member in lunar orbit for return to Earth. Initial *Apollo* spacecraft capabilities will require the early landings to be within  $\pm 10^\circ$  of the lunar equator on the visible side of the Moon, with preference for landing sites in the leading quadrant (between  $270^\circ$  and  $360^\circ$  lunar longitude). As presently planned, the *Apollo* spacecraft will be capable of carrying approximately 200 lb of scientific equipment to the lunar surface and of bringing approximately 80 lb of lunar material back to Earth. A detailed plan for utilization of crew capabilities while on the lunar surface is not expected to be complete for some time. The first *Apollo* lunar mission is now scheduled for the late 60's, with additional launches planned at reasonable intervals.

The following objectives of a Lunar Logistic System (LLS) were established as a basis for the studies of possible LLS configurations:

1. To provide essential support to *Apollo* by acquiring lunar surface data not otherwise obtainable prior to the first *Apollo* flight and by soft-landing equipment and supplies at the intended manned landing site in order to give maximum assurance of *Apollo* mission success and to provide the max-

imum capability for extending the scope and value of the limited *Apollo* crew stay-time on the lunar surface.

2. To provide the capability for delivering equipment, materials, and supplies to the lunar surface in the quantities required to establish and maintain semipermanent and (later) permanent bases for extended exploration and exploitation of the Moon.

The LLS studies were based on the use of *Saturn*-class launch vehicles to provide the capability of delivering payloads in three weight classes (approximately 2000, 7000, and 30,000 lb) to points within 1 mile of intended *Apollo* landing sites. Payload functions now being considered for the LLS include: provisions for extending stay-times of men and landed, manned spacecraft; crew shelter and scientific laboratory facilities; lunar roving capability; surface modification; power; communications; lunar data acquisition; and crew rescue. Pre-*Apollo* LLS flights could begin several months prior to the first manned landing, with flights scheduled at approximately 3-month intervals and extending through the planned period of early *Apollo* flights. Early LLS missions may use a three-stage *Saturn 1B* launch vehicle to carry 2000-lb payloads, while post-*Apollo* LLS missions could use *Saturn V* launch vehicles to deliver either 7000-lb payloads with an unmanned LEM in the basic *Apollo* configuration or 30,000-lb payloads in a fully automatic, cryogenically fueled unmanned spacecraft.