

our open-ended mission concept, allowing each mission to proceed as far as it is capable of doing. In Apollo Applications we will implement a third concept—the reusability of hardware. This will be accomplished by resupply and reuse of hardware that is left in orbit from a previous mission. All of these concepts not only will give us the greatest opportunity to progress, but offer a significant advantage in letting us progress at a rate which is not expensive when compared to our previous manned space flight programs.

The early development of long duration flight capability is clearly one of the most important areas to be pressed forward, in that it is a key requirement for most of the possible significant advances in manned flight. Apollo Applications flights of up to one year or more in duration will represent a significant increase in the nation's operational capabilities in space and opportunities for important scientific and technological experimentation.

Apollo Applications experiments with a wide variety of sensing devices will test the feasibility and utility of advanced types of meteorological observation and earth resource survey systems from space. These experiments will provide the data for decisions on future systems—unmanned or manned—to derive additional practical benefits from space observations.

Extended duration flight experience is also necessary to provide a sound basis for those future decisions on manned programs of the greatest interest and potential, such as permanent manned facilities in space or manned flights to the planets. Year long flights can be achieved on the most economical basis by reusing modified Apollo space vehicles with resupply.

Extended lunar exploration

The Apollo Applications program will follow-up the first Apollo landings with additional lunar exploration missions of up to 14 days on the surface and for observation and mapping from lunar orbit. These missions will yield important additional scientific data about the moon and will also provide the information necessary for deciding whether our manned capabilities for exploration of the moon should be further developed and exploited.

APOLLO APPLICATIONS MISSIONS

The Apollo Applications program proposed for initiation in the fiscal year 1968 budget is based on an average annual launch rate of four uprated Saturn I and four Saturn V flights per year following those required for the manned lunar landing. The planned program will avoid any hiatus in the continued development of United States manned flight capability, will continue the availability of the nation's two most powerful rocket vehicles, and will not affect the on-going Apollo effort. Maximum economy will be achieved through the full utilization and extension of Apollo and Saturn developments.

The experimental payloads included in the Apollo Applications program are designed to provide significant data on the capabilities of man and equipment, and on their potential ability, as promptly and as economically as possible. These plans have the flexibility of employing for new missions any spacecraft and launch vehicles currently on order for the Apollo program that, in the event of early successes, are not required to meet Apollo objectives.

The Apollo Applications missions will build upon the base of flight experience, ground facilities, and trained manpower developed in past and current programs. Each mission is designed to take full advantage of the Apollo/Saturn system to make significant contributions to a wide range of objectives. Missions are planned to concurrently gain experience, test theory, perform experiments, and collect data. By establishing multiple objectives for each flight mission, a program limited to a minimum economical launch rate can achieve rapid progress and make great gains at low cost.

Key elements of this planning include the decision to use, modify and expand present Apollo systems capabilities rather than move toward whole new developments; the strategy of reusing basic hardware for many missions by storing it in orbit and returning later with fresh crews and expendables; and the approach of designing experiments that will gather important data while at the same time testing the experimental concepts themselves.

Alternate and follow-on categories

In the Apollo Applications program, the flight activity is classified into two categories, alternate missions and follow-on missions (fig. 65, MC66-5173).