

APOLLO APPLICATIONS MISSIONS IN THE 1970's

In the early 1970's, Apollo Applications missions can be expected to fall into three broad and, to some extent, overlapping groups:

(1) In some cases, they will be a continuation and extension of those activities that previous experience has shown to be valuable.

(2) A second class will still be aimed at the questions—"What can man do and what is worth doing in space?"

(3) A third group may be more specifically oriented to the development and flight testing of components, subsystems, techniques, and operations leading to an expanded capability in manned space flight.

Taken altogether, these missions will tell us when we are ready to take the next major step in space, and whether it should be aimed at the planets, the moon, the earth, or some combination of these. When such a step has been decided, Apollo Applications missions may play a further role as a test bed for such subsystems as power, life support, communications, guidance and navigation, or even for whole spacecraft modules.

OBJECTIVES

EXTENDED FLIGHT CAPABILITY

In the area of extended space flight capability, we will be looking for pragmatic data to answer such questions as:

(1) What must be provided beyond subsistence to make space livable for prolonged periods?

(2) How can space flight be made simpler and less expensive?

(3) How can we repair and maintain spacecraft in flight for extended periods?

(4) How can we best insure astronaut safety?

(5) How can we streamline our operating procedures?

(6) How can return to earth be simplified?

(7) How can we get greater mobility in extravehicular operations to permit safe and easy construction of large assemblies in space?

(8) What crew size should be planned for planetary missions of one to two year duration?

(9) What living and recreation facilities are needed?

(10) Is artificial gravity worth the price, or is it an absolute need?

(11) How big should a space station be, and what facilities should it provide?

(12) What is the best way to use man in support of the mission objectives?

LUNAR EXPLORATION

In the area of lunar exploration, we will be accumulating data to help answer questions such as:

(1) What is the surface structure of the moon?

(2) Is there a core?

(3) Are there active volcanoes?

(4) How was the moon formed?

(5) What does it tell us about the earth?

(6) What does it tell us about the solar system?

(7) Are there traces of living organisms?

(8) What does it take to support a man on the moon and allow him to do effective exploration?

(9) What kind of lunar vehicle is needed?

(10) Can he make use of materials found on the moon?

(11) Is there anything worth exploiting on the moon?

(12) What exploration is best done by men? By robot?

(13) Is the moon a good base for an astronomical observatory?

(14) What can we learn from photography and other remote sensing from lunar orbit?

(15) Are the polar areas essentially the same as the equatorial?