

V/Apollo flight may not impact Saturn I/Apollo hardware used by AAP for early missions. As a matter of fact, the AAP planning and scheduling is consistent with and would not be changed by moderate difficulties or moderate success in the basic Apollo program.

In the event that Apollo hardware is not available for AAP usage, the AAP payloads for the early missions will be stored for later usage on follow-on missions. The alternative schedules for AAP will be determined after analysis of the situation at that time. The storage and maintenance of the AAP hardware will involve increased cost. However, the AAP payloads will be available for modifications and improvements while in storage, thus permitting the experiments in the payload package to be kept abreast of the state of the art. Thus the experiments will be maintained in a configuration to obtain the quality and quantity of data consistent with the latest scientific and engineering techniques.

Definition is underway for a large module which could be placed in orbit by a Saturn V vehicle and provide the capability of one year's manned operations in earth orbit. Early concepts of this one year module include an Advanced Orbital Workshop or prototype Manned Space Station. Sufficient experiments and equipment would be provided for a one-year duration, with periodic resupply missions (both crew and expendables) being provided by additional flights of the uprated Saturn I with Command and Service Modules. The configuration of systems involved with this one year module represents an initial validation of the types to be used in manned planetary missions.

Another Saturn V Apollo Applications mission is a mission in lunar orbit to perform mapping and survey operations which will provide accurate mapping and high resolution stereo photography in the polar areas of the moon, which will not have been covered previously. Subsequent Saturn V flights are planned for extended lunar surface exploration. Our planning for these lunar surface missions requires 2 Saturn V flights per year beginning in 1970. Present planning also includes additional lunar mapping and survey operations from lunar orbit at a rate of 1 per year.

One of the results expected from this extended lunar exploration will be information relating to the origin and evolution of the moon with possible significance to the understanding of the origin and evolution of the earth.

Operations utilizing the Saturn V launch vehicle in the 1970's also include extended manned operations and stellar astronomy from synchronous earth orbit. A manned earth orbital telescope in synchronous orbit offers large potential returns in terms of determining the dimension and origins of the universe. Such an instrument, utilizing up to 120-inch optics, should increase our capability for resolving celestial objects by a factor of 20, extend range by four magnitudes of brightness, and allow observations into the infrared and ultraviolet ranges. Such a telescope should be able to detect planets the size of Jupiter in orbit about the closest star, Alpha Centauri. Such a discovery would be an initial indication of solar systems similar to ours and, therefore, the possible presence of life forms existing beyond our solar system.

APPLICATIONS EXPERIMENTS

The experiments planned for Apollo Applications missions in the 1970's are now being defined. A funding increment is included in the FY 1968 budget to support this definition activity. The categories of experiments are: (1) Communication and Navigation experiments; (2) Meteorological experiments; and (3) Natural Resources experiments.

COMMUNICATION AND NAVIGATION EXPERIMENTS

The objectives of the Communication and Navigation experiments will include:

- (1) Control and coordination of all air traffic while flying over the ocean.
- (2) The development of position fixing data to provide for all weather global navigation by sea and by air.
- (3) The development of improved air-sea emergency, search and rescue aids.
- (4) The development of techniques to broadcast voice and television directly to home receivers, on a global basis.
- (5) The development of improvements in spacecraft to ground communications and space vehicle tracking aids.