

The inclusion of manned reconnaissance missions in planetary exploration activities could provide an opportunity to integrate the unique capabilities of both the manned and unmanned systems approaches to obtain data on the universe.

In previous presentations, I have outlined the primary objectives of planetary exploration. These have not changed. Our goal remains to improve man's knowledge of the origin and evolution of the solar system and the origin and evolution of life.

Manned Mars/Venus reconnaissance missions

The objectives of a possible manned Mars/Venus reconnaissance are shown here (fig. 114, MT66-10,201). Paramount is the capability to obtain and return to earth a sample of Martian surface and near-surface atmosphere. This Martian sample is obtained through deployment of an unmanned Mars Surface Sample Return probe. The manned Mars/Venus reconnaissance system allows significant increases in data acquisition capability, as well as major improvements in the quality of data obtained. The probability of successfully carrying out the experiments is enhanced by the presence of man and his ability to perform checkout, maintenance and repair, and to cope with the unanticipated.

Mission opportunities

The Mars and Venus free return reconnaissance mission possibilities that are of practical interest in the 1975 to 1980 time period are summarized in this chart (fig. 115, MT66-10,222). Opportunities for lowest energy Mars reconnaissance missions in this operational period occur approximately every 25 months. High energy missions are not considered to be within the capability of available chemical propulsion; the low energy reconnaissance missions are considered to have the most promise for use of systems based on Apollo/Saturn hardware.

These low energy missions are characterized by relatively short outbound trips of 130 to 145 days and longer inbound mission times for total mission durations of 660 to 690 days. The planet will be under observation, and scientific measurements will be taken for many weeks prior to and after actual encounter.

OBJECTIVES OF MANNED MARS/VENUS RECONNAISSANCE

- RETURN OF MARTIAN SURFACE SAMPLE
- RECONNAISSANCE AND MAPPING OF MARS AND VENUS
- ASTRONOMICAL OBSERVATIONS OF THE PLANETS, SUN AND OTHER BODIES
- MANNED PLANETARY SYSTEMS DEVELOPMENT AND PROOF TESTING
- MANNED PLANETARY OPERATIONAL EXPERIENCE
- UTILIZATION OF PRESENTLY EVOLVING TECHNOLOGY TO EMBARK ON MANNED PLANETARY EXPLORATION
- ACQUIRE ENGINEERING DESIGN INPUT DATA FOR APPLICATION TO FUTURE SYSTEMS
- ENHANCEMENT OF NATIONAL PRESTIGE