

SPACE MEDICINE BRANCH REPORT

Send information for publication on this page to:

Sam Lee Pool, M.D.
18711 Prince William
Houston, TX 77058

The crew of the Space Transportation System Shuttle 51-I was very pleased with the "salvage in space" mission results. "It was one of the most fantastic things I've ever been involved with," said Mission Commander Joe Engle. "Five months ago we had no idea we were going to do this, and 4 months ago we were not sure it would happen. The Syncom salvage wouldn't have been possible without the unbelievable effort of the NASA and the Hughes team."

"The jump start of the Leasat 3 has been a complete success," a Hughes statement said. "Leasat 3 is under full control by Hughes' ground command, and telemetry data continues to confirm the good health of the satellite. The liquid propulsion systems are intact and the solid propellant perigee kick motor temperatures appear to be rising gradually toward acceptable levels."

Handling the massive 15,000-pound satellite was simulated on the ground, and both James "Ox" Van Hoften and William Fisher said the task in space turned out about like they expected. Bill Fisher, a medical doctor, said he was surprised that even holding the satellite motionless "was a more dynamic task than I thought." The bottom line, he said, "was to keep the rate slow, because each rate you put in you knew you would have to take out sooner or later." In addition to the salvage mission, the crew successfully deployed three satellites: Aussat 1 for the Australian government, ASC 1 for American Satellite Corporation, and Syncom (Leasat) F4, for Hughes Communications (1).

The following remarks were excerpted from a speech presented by the NASA Administrator James M. Beggs at the National Air and Space Museum in Washington, DC. Mr. Beggs' address was titled "The Quest for Mars" (2).

"Apollo opened the floodgates of human imagination to the exciting possibilities of people exploring the Universe. Science fiction became fact because we demonstrated conclusively that humans could indeed leave Earth, land on another world and return safely to their mother planet.

"Now that we have opened those gates, humankind will never be the same. We will take many more steps on many more worlds before we're through. And one of those worlds, most likely the first we will go to, will be Mars.

"Why Mars? Mars will have priority in any manned solar system exploration program because it offers the least severe environment for humans. Due to its atmosphere, its accessible surface, its probable availability of water, and its relatively moderate temperatures—they range from -120°C to $+20^{\circ}\text{C}$ —it is the most habitable of all the planets other than Earth.

"Moreover, Mars resources include materials that could be adapted to support human life, including air, fuels, fertilizers, building materials and an environment that could grow food.

"There is a truism, but one that bears repeating, that the Universe doesn't care who explores it. It is we who care. And because we do, this epochal step in human exploration to a planet which could become a self-sufficient home for human beings, should be a cooperative international effort.

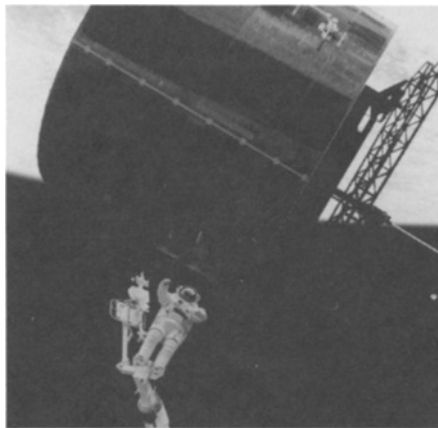
"But whether a manned Mars mission should turn out to be a unilateral or a multilateral undertaking, one thing is clear. To make any sense, such a program must be viewed as a long-term commitment. It cannot focus merely on landing humans on the planet and returning them safely to Earth. The Mars landing must also include planning for subsequent sustaining operations.

"Why not go to Mars to stimulate progress in our own space capabilities, to develop new cutting edge technologies—propulsion, life support, habitation, non-terrestrial resource use? These will not only get us to Mars, but also leave their benefits on Earth.

"And, finally, why not go to Mars to build on the framework for international cooperation using the Space Station we will have begun and, perhaps, a manned lunar base we will have continued" (2)?

NASA has recently prepared two documents relevant to the flight of payload specialists on the Space Shuttle. The documents cover payload specialist training and integration of associated mid-deck hardware.

The payload specialist training plan describes the minimum formal training NASA provides to prepare the payload specialist candidate for a flight on the Shuttle. This training includes classes and hands-on experience to familiarize the candidate with the Shuttle and its crew-related systems. Customers requiring training beyond that covered by this document must identify such



FLIGHT 51-I EVA—The extravehicular activity of Astronauts James D. van Hoften and William F. Fisher helped to capture, repair, and release the previously errant Syncom IV-3 communications satellite. Here, Dr. van Hoften has just given a shove to the Syncom.

requirements in their Payload Integration Plan (PIP) for Payload Specialist Payloads, a new approach to the documentation for Shuttle mid-deck experiments associated with payload specialists. This document is a draft agreement between NASA and the customer on the management and technical activities necessary to integrate the payload specialist equipment in the mid-deck. For most payload specialist experiments, this PIP will be the only integration document required.

The United States and Japan have signed an agreement calling for cooperation in the preliminary design of a part of NASA's planned \$8 billion Space Station. Under the agreement, Japan will design a laboratory module with an exposed work deck that would be attached to the modular Space Station expected to be assembled in orbit in 1993. A Japanese government advisory panel recommended last month that Japan build a semi-independent space experiment module for material, life sciences, and space communications testing that could be attached to the U.S. Space Station. The panel estimated that the total cost of Japanese participation and planning, research and development would be between \$800 million and \$1.2 billion. NASA plans to spend \$8 billion to build the Space Station, which will be able to house approximately 6 people for months at a time. The plan is to keep the Station in orbit indefinitely.

The Space Biomedical Research Institute (Mail Code: SB, Space and Life Sciences Directorate, Lyndon B. Johnson Space Center, Houston, Texas) along with the Baylor College of Medicine Office of Continuing Education, the Universities Space Research Association Division of Space Biomedicine, and the International Academy of Astronautics, have announced plans for a Space Adaptation Symposium Feb. 10–13, 1986. The symposium, entitled "Physiologic Adaptation of Man In Space," is the 7th IAA Man In Space Symposium. The primary emphasis will be on neurophysiologic adaptation and space motion sickness, on the problems of accommodation of the cardiovascular system to the space environment, and on the physiological parameters associated with extravehicular activity. Over 80 papers will be presented, along with two poster sessions, four panel discussions, and informal luncheon meetings. If you would like more information on this symposium, contact the Office of Continuing Education, Baylor College of Medicine, Texas Medical Center, Houston, TX 77030.

REFERENCES

1. Salvage in space. NASA Lyndon B. Johnson Space Center, Space News Roundup, Vol. 24, No. 16, p. 1. Sept. 13, 1985.
2. Beggs JM. The quest for Mars. NASA Activities, Vol. 16, No. 8, p. 3–4. Aug. 1985.