
Science & Technology

India launches the INSAT-IB satellite

by Ramtanu Maitra

"You can't just buy a new nation from somewhere," Indian Space Research Organisation (ISRO) Director Dr. Satish Dhawan told foreign journalists once when asked why India insisted on developing its own satellites and rockets. India's nation-building effort got another boost as the multipurpose satellite, INSAT-IB, launched from the U.S. space shuttle Challenger Aug. 31, prepared to occupy its geostationary orbit 36,000 kilometers above the equator.

INSAT-IB was scheduled to be in orbit on Sept. 9 but its deployment was delayed when the five-panel solar array, the main source of power of the satellite, refused to open, despite a week-long attempt to open it by the Master Control Facility engineers at Hassan, near Bangalore. Suddenly, on Sept. 10 the panels opened up, one hour after the satellite was turned to face the sun.

The INSAT system is an advance over earlier Indian satellites. Whereas a whole generation of satellites such as Bhaskara, Rohini, and Apple were experimental types, INSAT has been designed to carry out operational functions for national requirements. The INSAT program was initiated under the directive of Prime Minister Indira Gandhi in 1975.

Besides being the first commercial payload taken aboard the Challenger, INSAT-IB is unique because of its threefold capabilities and functions: telecommunications, television broadcasting, and meteorological surveillance. Although there are military satellites of this type, INSAT-IB is the first such civilian satellite.

The INSAT system's space segment requires two identical satellites parked in geostationary orbits looking down on the Indian Ocean region. INSAT-IB (replacing the failed INSAT-IA) will be the main satellite, backed up by INSAT-IC. Work has already been authorized for INSAT-IC and it is expected to be launched by the U.S. space shuttle in the second half of 1986.

INSAT-IB is fitted with 12 C-Bank transponders to inter-

link telecommunication among 31 Earth stations—28 fixed and 3 transportable. The Oil and Natural Gas Commission has set up three Earth stations—two portable—for monitoring oil well performance and safety data. The INSAT system is also outfitted with two high-power national coverage transponders for television networking. Each transponder is capable of handling direct broadcast television, which will be beamed to some 100,000 TV sets, mainly in the rural areas. INSAT will also provide over 8,000 two-way long-distance telephone circuits potentially accessible from any part of the country.

The system is also fitted with a Very High Resolution Radiometer (VHRR) for meteorological applications, one of its most important functions. This characteristic of INSAT-IB is of great significance since no existing global satellite has the capability to provide meteorological coverage of the Indian Ocean region.

With the help of INSAT the quality of weather forecasting, so essential for India's agricultural sector, will improve significantly. Presently the country receives four pictures a day via the orbiting American and Soviet weather satellites.

With the INSAT system firmly established by India, it will be possible for other developing nations to learn the technology from India and make use of it, if not build their own satellite systems. During talks with newsmen recently Dr. Dhawan pointed to such prospects. But he was careful to stress that it was first necessary to prove the satellite system's capability to the domestic audience before taking up any space "consultancy."

Certain Arab nations have already shown interest in obtaining Indian advice on their space programs, he said, and India is now discussing the possibility of sharing benefits of the INSAT system with neighbors like the members of ASEAN, the association of South East Asian Nations. Dr. Dhawan said that future systems might actually incorporate the specific needs of neighboring nations.

The successful operation of INSAT-IB will silence those who had launched a malicious campaign against the Indian Space Research Organisation, particularly since the INSAT-IA, put into orbit last year, failed to function properly. The campaign was directed as much against India's commitment to conquer advanced technologies as at ISRO itself. The space agency was charged with "literally throwing away money into space" by manufacturing "hodgepodge satellites," to quote a typical smear.

"A certain official" at Ford Aerospace, where the satellite was manufactured according to Indian design specifications, was quoted saying that the problem with INSAT-IA was caused by Indian engineers' attempt to "shove three spacecraft into one." Subsequent discussion with Ford officials revealed the story to be a hoax, and an analysis of the fault sequence has clearly shown that the basic design philosophy is sound and had nothing to do with INSAT-IA's failed mission.