

APPLE

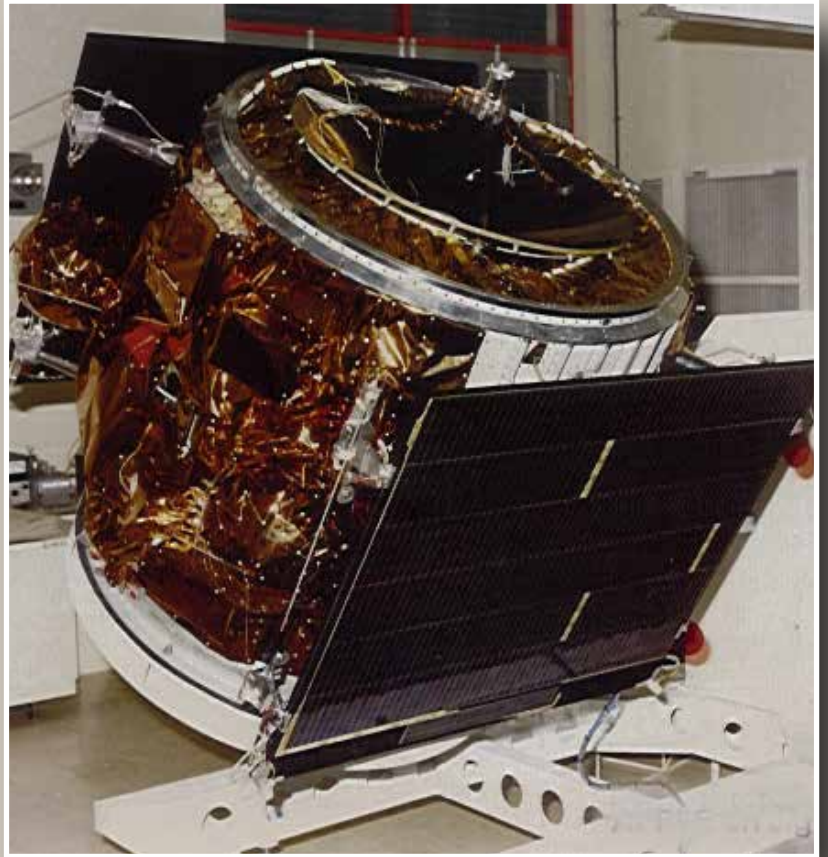
ARIANE PASSENGER PAYLOAD EXPERIMENT

19 June, 1981

THE MISSION

ISRO's first indigenous Experimental Communication Satellite, the Ariane Passenger Payload Experiment (APPLE) on-board the Ariane-1 (V-3) lifted-off from Kourou, French Guiana on June 19, 1981. It was designed and built in just two years with limited infrastructure in industrial sheds. It gave ISRO valuable hands on experience in designing and developing three-axis stabilized geostationary communication satellites as well as in orbit raising manoeuvres, in orbit deployment of appendages, station keeping, etc.

APPLE was used for nearly two years to carry out extensive experiments on time, frequency and code division multiple access systems, radio networking computer interconnect, random access and packets switching experiments.



Ariane-1

APPLE

THE SATELLITE

The APPLE satellite bus was cylindrical with a diameter of 1.2 m and a height of 1.2 m. The communications payload consisted of two 6/4 GHz transponders connected to a 0.9 m diameter parabolic antenna. APPLE successfully served as a testbed for the entire Indian Telecommunications Space Relay Infrastructure despite the failure in deployment of one Solar Panel. Solid Fuel Apogee Kick Motor was used for orbit raising. Initial phase of the operation used spin mode and later part was three-axis stabilized. SHAR ground station was used for all the mission activities.

APPLE was used in several communication experiments including relay of TV Programmes, and Radio Networking. It also provided an opportunity to introduce state-of-the-art technologies of the day, such as momentum biased three-axis stabilization techniques, motor driven deployed solar array, Earth sensing for attitude control, C-band transponder design, inclusive of composite reflector, orbit raising, station acquisition, station-keeping and a host of mission management and flight dynamic techniques.

SPECIFICATIONS

Weight	670 kg
Power	210 W
Stabilization	3-axis stabilized with Momentum Wheels, Torquers & Hydrazine based Reaction control system
Type of Satellite	Experimental
Payloads	2 C-band Transponders
Mission Life	2 Years

