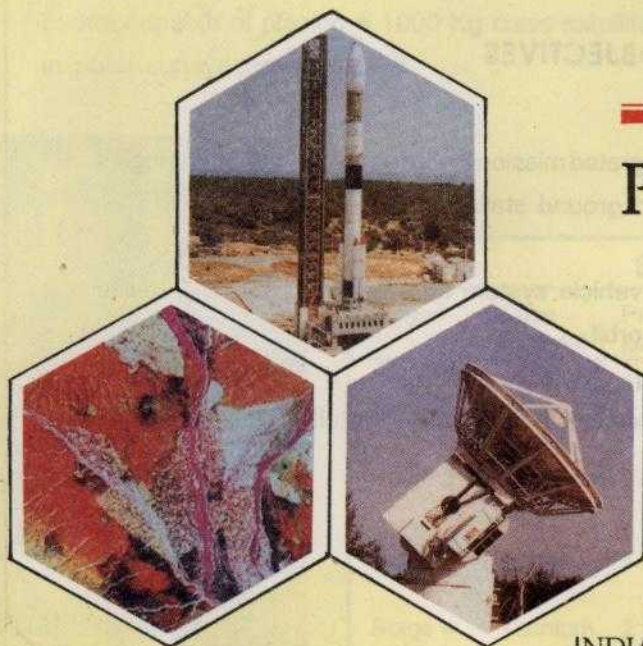


MISSION



PSLV - D1 / IRS - 1E MISSION

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1993

OBJECTIVES

- Realisation of the complex integrated mission involving many new technologies related to vehicle, range and ground stations.
- Flight testing the integrated vehicle system and to inject IRS-1E Satellite into a polar sunsynchronous orbit.
- Evaluation of in orbit performance of IRS-1E carrying multispectral LISS and MEOSM payloads.



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VEHICLE

Polar Satellite Launch Vehicle (PSLV) is a four stage rocket capable of placing a 1000 Kg class satellite in polar sunsynchronous orbit.

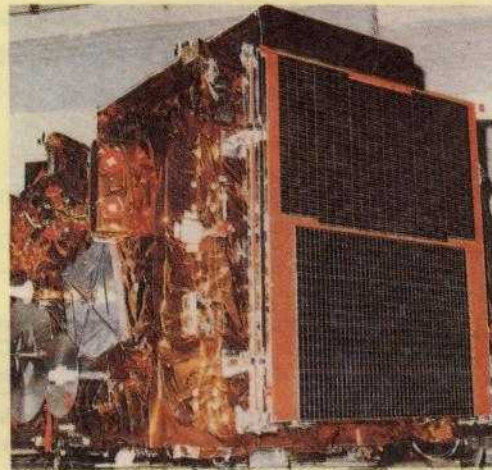
Height	44 m
Diameter	2.8 m
Lift off weight	280 t
Number of stages	4
Payload weight (D1) Satellite	846 Kg IRS - 1E



STAGE DETAILS

Stages	Case material	Propellant loading	Thrust	Propellant	Control system
Stage 1 Booster	Maraging steel	128t	460 t	HTPB-based solid	TVC & Roll control
Stage 2	Aluminium alloy	37.5 t	72 t	N ₂ O ₄ UDMH	Engine Gimbal
Stage 3	Kevlar	7 t	28 t	HTPB-based solid	Flex nozzle
Stage 4	Titanium alloy	2 t	2 X 735 kg	N ₂ O ₄ MMH	Engine Gimbal

Mass	:	846 kg
Shape	:	Parallelepiped
Orbit	:	Polar sunsynchronous
Altitude	:	817 kms
Orbit Period	:	101.35 min
Coverage cycle	:	24 days
Payloads	:	1. Linear Imaging Self Scanning Sensor (LISS) - 1
		2. MEOS (Monocular Electro Optical Stereo Scanner)



The three axes stabilized IRS-1E Spacecraft (the refurbished engineering model of IRS) to be flown on the first developmental flight of PSLV.



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LAUNCH COMPLEX

Launch facilities :

Mobile Service Tower

Umbilical Tower and Launch Pedestal

Integration Facilities :

Solid Motor Preparation Facility

Sub-Systems Preparation Facility

Hardware Storage Facility

Liquid Propellant Storage and Transfer Facilities

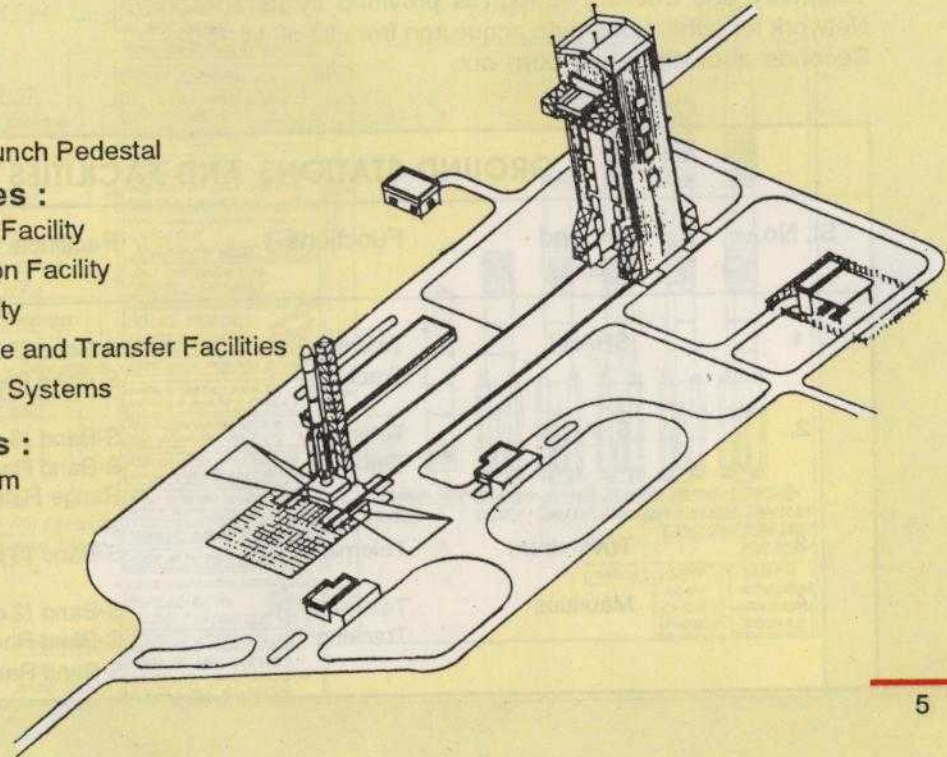
Safety and Fire Fighting Systems

Checkout Facilities :

Checkout Terminal Room

Launch Control Centre

Mission Control Centre



TELEMETRY AND TRACKING NET WORK

Telemetry and tracking support is provided by ISTRAC Network for continuous data acquisition from lift off till 150 Seconds after 4th stage burn out.



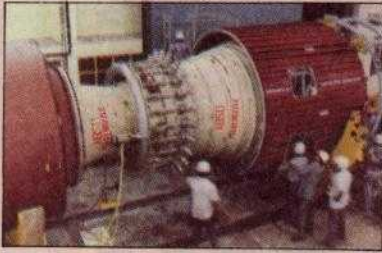
GROUND STATIONS AND FACILITIES

Sl. No.	Ground Station	Functions	Facilities
1	SHAR I	Telemetry Tracking	S-Band (3-carriers) S-Band Range & Range / Rate
2.	SHAR II	Telemetry Tracking	S-Band (3 carriers) S-Band Range and Range Rate, C-Band Radar
3	Trivandrum	Telemetry	S-Band (3 carriers)
4	Mauritius	Telemetry Tracking	S-Band (2 carriers) C-Band Radar S-Band Range & Range Rate



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VEHICLE ASSEMBLY



ISRO

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CHECKOUT

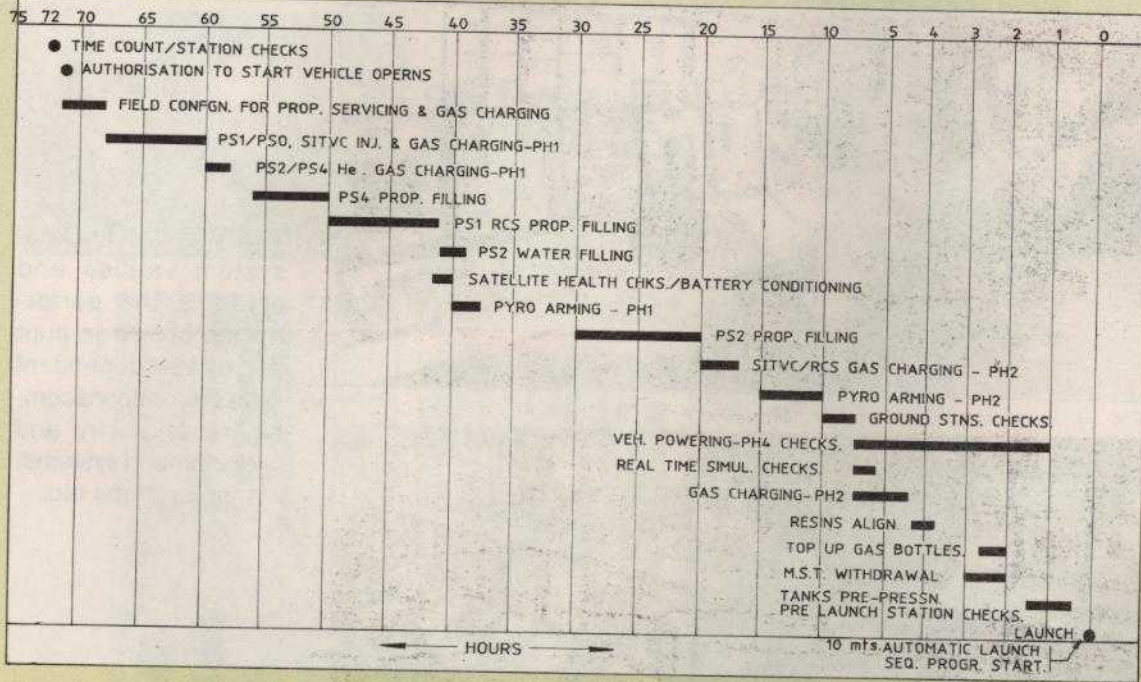


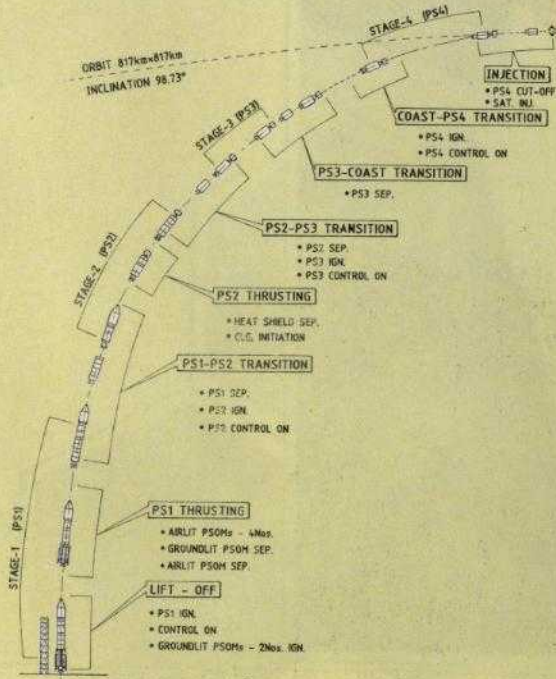
The Vehicle checkout system verifies and confirms the performance of a large number of interdependent systems, onboard computers, telemetry and telecommand systems, control systems etc.



TERMINAL COUNT

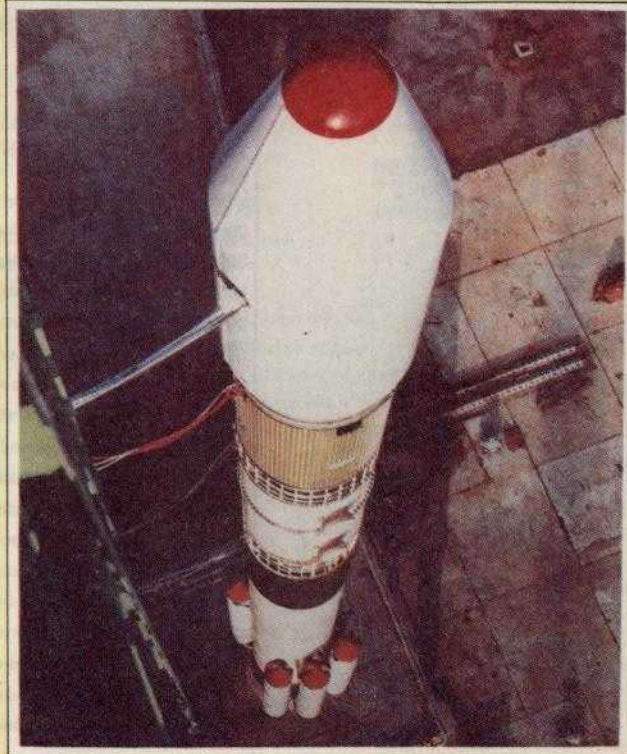
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Time (Sec)	EVENT
0000.0	Ignition of first stage
0002.0	Ignition of two strapon motors
0030.0	Ignition of four strapon motors
0073.0	Separation of two ground lit strapon motors
0090.0	Separation of four air lit strapon motors
0102.0	Ignition of ullage rockets
0105.0	Separation of first stage
0105.0	Ignition of second stage
0152.5	Separation of heatshield
0157.5	Closed loop guidance initiation
0260.7	Separation of second stage
0261.9	Ignition of third stage
0379.9	Separation of third stage
0590.0	Ignition of fourth stage
0990.0	Fourth stage cut-off
1010.0	Separation of satellite
1030.0	Deorbiting of spent stage

FLIGHT PHASES AND EVENTS



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