

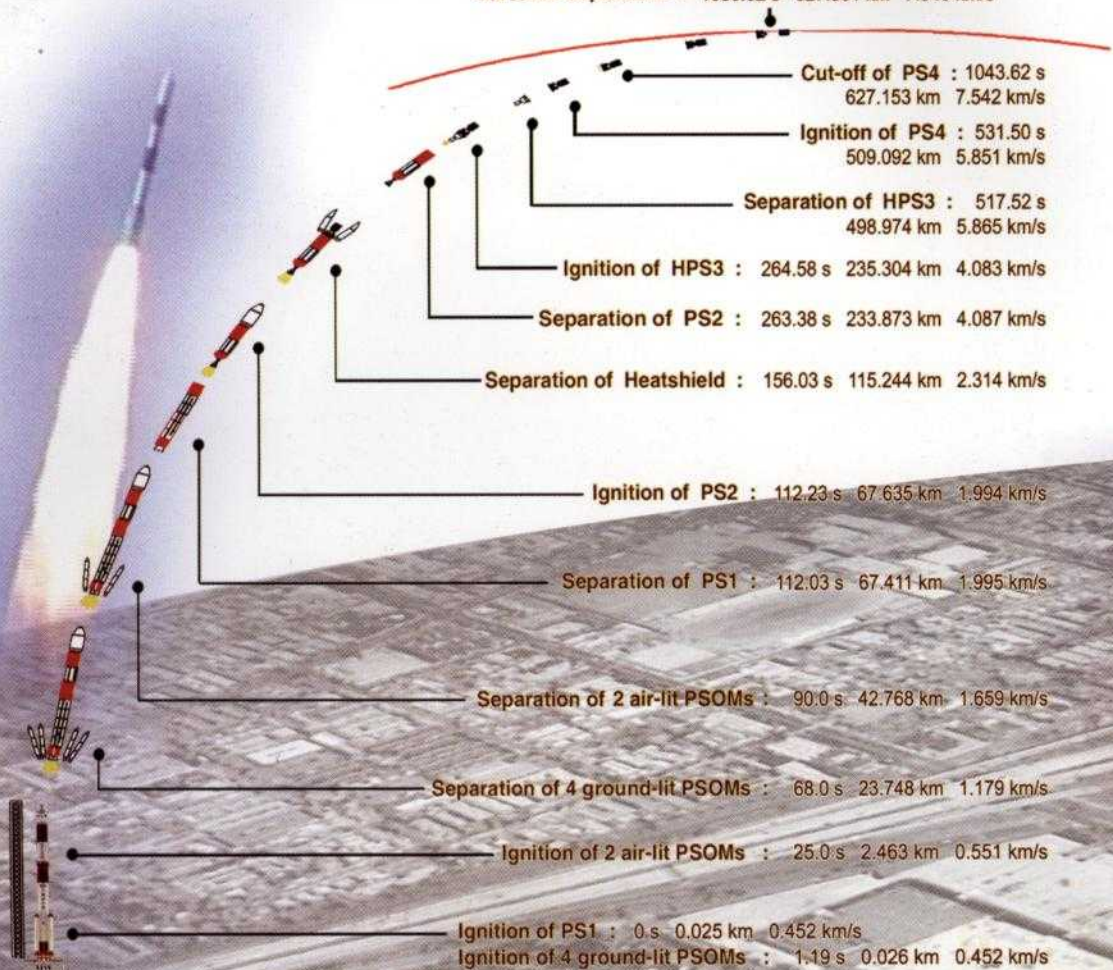
PSLV C6

IRS-P5 * HAMSAT
MISSION

Indian space research organisation

FLIGHT PROFILE

Hamsat Separation : 1120.62 s 628.535 km 7.546 km/s
Cartosat Separation : 1080.62 s 627.801 km 7.546 km/s



PSLV C6 MISSION

PSLV C6, the sixth operational flight of Polar Satellite Launch Vehicle (PSLV) carries ISRO's remote sensing satellite Cartosat - 1 (IRS-P5) and a micro-satellite Hamsat

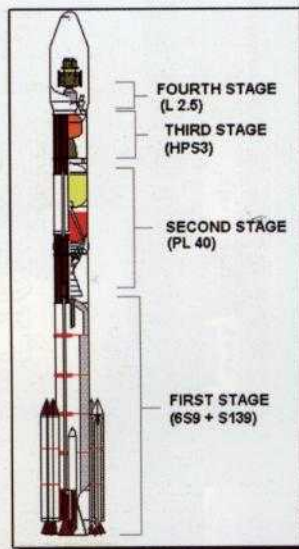
This ninth flight of PSLV is the maiden launch from the new launch pad designated as Second Launch Pad (SLP)

MISSION DEFINITION

Orbit	:	Sun Synchronous Polar
Altitude	:	622 Km circular
Inclination	:	97.89 deg
Orbital Period	:	5829 s
Launch time	:	10:19 Hrs IST



VEHICLE



Overall Height : 44.4 m
Lift-off weight : 295.98 t

The vehicle configuration for PSLV C6 mission essentially remains same as PSLV C5 except for the following major changes related to vehicle elements

- Remote Fill and Drain System (RFDS) for second stage propellant servicing
- Mk-II version base ring for four strap-on motors
- Indigenous hydraulic pump for PS2 Engine Gimbal Control System
- Indigenous torque motor for PS4 Control System
- Monolithic igniter with C-600 initiation for strap-on motors
- Indigenous Columbium divergent for PS4

The changes with respect to mission management are the adoption of the Day of Launch (DOL) wind biasing and commanded cut-off of second stage to avoid N_2O_4 depletion so as to reduce vibration levels at satellite interface.

PAYLOADS

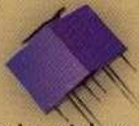
CARTOSAT - 1 (IRS - P5)

India's first cartography (mapping) satellite is intended for cartographic imaging in addition to other remote sensing application

- **Mass : 1560 kg**
- Twin PAN cameras providing stereoscopic image pairs
- 2.5 m spatial resolution

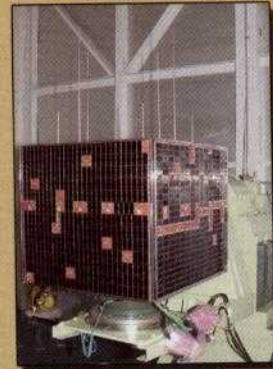


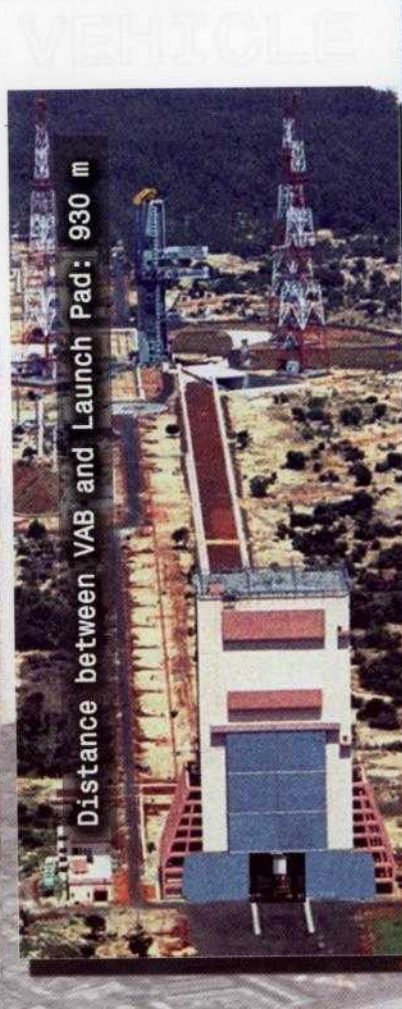
HAMSAT



Radio communication micro-satellite developed by ISRO to boost communication among amateur radio operators (HAMS)

- **Mass : 42.5 kg**
- Two transponders providing for two way communication





Distance between VAB and Launch Pad: 930 m



UMBILICAL TOWER (UT) / LAUNCH PAD (LP)

- Octogonal shaped UT to minimise wind and vehicle exhaust loads
- Optimum stand-off distance between UT and vehicle : 12 m
- Tower Height - 70 m
- Three Swivellable Cum Vertically Re-positionable platforms (SCVRP)
- Tower crane of 10 T capacity



MOBILE LAUNCH PEDESTAL (MLP)

- 600 T MLP realised with heavy thick steel plates
- MLP movement achieved by four hydraulically driven bogies, each fitted with 150 T capacity wheels
- Max. Speed with vehicle : 10 m/ min
- Four numbers of 600 T jacks used for anchoring and de-anchoring of pedestal



VEHICLE ASSEMBLY BUILDING (VAB)

- Tallest building in east coast
Height - 82.5 m Length - 32.5 m Width - 40 m
- Designed to cater PSLV, GSLV, their variants and advanced launch vehicles
- Six sets of Foldable Cum Vertically Re-positionable Platforms (FCVRP)
- Crane capacity : 200t / 30 t
- One lakh class clean room with conditioned environment and 10 t crane

SECOND LAUNCH PAD

SLP is located 1.5 km south of First Launch Pad (FLP). Integrate, Transfer and Launch (ITL) concept is adopted for launch vehicle at SLP whereas in FLP, vehicle is integrated at launch pad and Mobile Service Tower (MST) is withdrawn after vehicle integration and final check prior to launch

SLP VALIDATION TRIALS

Extensive trials were carried out to validate second launch pad and its facilities to enable PSLV launch from SLP.

- ◆ Vehicle integration mockup and movement
- ◆ PS2/L-40/PS4/RCS propellant mockup and gas charging trials
- ◆ Satellite cooling / purging trials
- ◆ Azimuth alignment trials
- ◆ Vehicle electrical / pneumatic umbilical anchoring trials
- ◆ Validation of new checkout system at VAB and launch pad
- ◆ Validation of new propellant servicing system
- ◆ Pneumatic umbilical retraction tests to validate increased stand-off distance



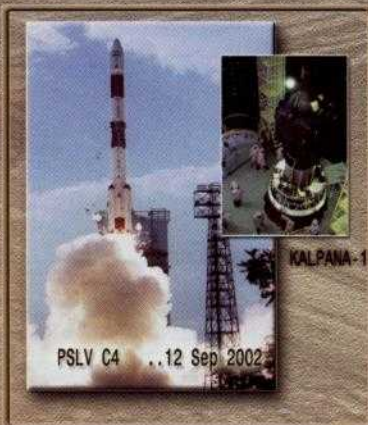
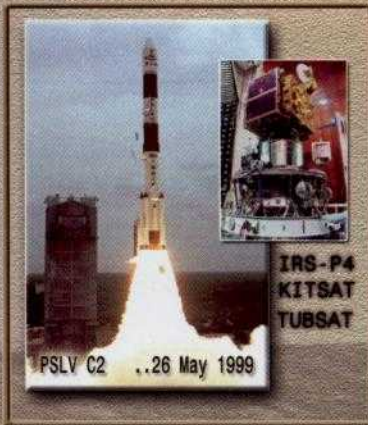
SLP CHECKOUT SYSTEM

At second launch pad, the vehicle is tested using two new checkout systems : one at VAB terminal room (VTR) and one at launch pad terminal room (LTR). Both systems are identical in nature and designed with indigenous VXI systems with high degree of redundancy

- Remote checkout concept
- Independent checkout systems for VTR and LTR
- Network (LAN) extension from Launch Control Centre (LCC) to LTR and VTR
- Redundancy in circuit level as well as system level
- Redundancy in power both in AC level as well as DC level
- Design caters to PSLV, GSLV and future vehicles like gsLV Mk-III
- Easy to reconfigure
- Hardlines for critical vehicle safing commands



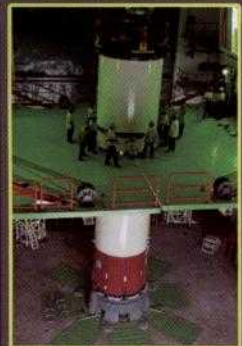
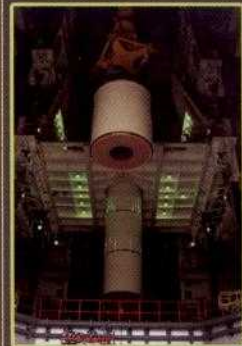
OPERATIONAL FLIGHTS



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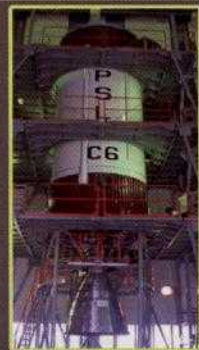
SLP CHECKOUT SYSTEMS FOR C6 LAUNCH

- PSLV C6 flight preparation



Core Base Shroud + Nozzle end segment stacking at VAB

PS1 segment stacking at VAB



PS2 Stage

HPS3 Motor

PS4 Stage

Vehicle upto EB during limited

CAMPAIGN

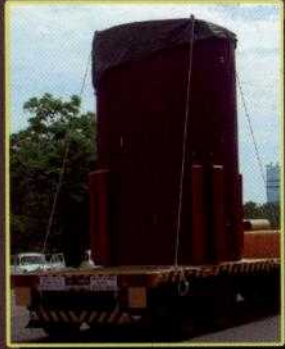
commenced on 5th Jan 2005 ●



Strap-on stacking at VAB



Core + Strap-ons



Inter Stage 1/2 L



Checks



Hamsat



IRS - P5



Payloads integrated to Vehicle



Heat Shield

Indian space research organisation



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