# PSLV-C7 / CARTOSAT-2 Mission

10 January, 2007

## THE MISSION

PSLV-C7 carrying on-board the CARTOSAT-2 & Space Capsule Recovery Experiment (SRE-1) Satellites lifted-off from the Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota at 9.23 AM (IST) on January 10, 2007.

Along with these 2 Indian Satellites, PSLV-C7 also launched 2 more International Customer Satellites – Indonesia's LAPAN-TUBSAT and Argentina's PEHUENSAT-1. All the four satellites were injected into a 635 km high Polar Orbit. For the first time, a Dual Launch Adapter (DLA) was used in PSLV to accommodate two primary satellites in tandem.


## PSLV-C7

### THE LAUNCH VEHICLE

The 44 m tall PSLV has a lift-of mass of 295 tonne. It is a four stage launch vehicle with the first and the third stages as well as the six strap-ons surrounding the first stage using HTPB based solid propellant. PSLV's bulbous payload fairing has a diameter of 3.2 m. The vehicle has S-band telemetry and C-band transponder systems for monitoring its health and flight status.

SPECIFICATIONS

| | | |
|---|---|---|
| **Height** | 44 m | |
| **Lift-Off Mass** | 295 t | |
| **No of Stages** | 4 | |
| **Payloads** | • CARTOSAT-2<br>• Space Capsule Recovery Experiment (SRE-1) | **2 International Customer Satellites**<br>• Indonesia (1)<br>• Argentina (1) |
| **Orbit Height** | 635 km | |
| **Inclination (deg)** | $97.92^0$ | |
| **Launch Azimuth** | $140^0$ | |
| **Launch Pad** | First Launch Pad (SDSC, SHAR) | |

# CARTOSAT-2

## THE SATELLITE

Cartosat-2 is an advanced Remote Sensing Satellite with a single Panchromatic Camera capable of providing scene specific spot imageries for cartographic applications. The Panchromatic Camera (PAN) is designed to provide imageries with better than 1 m spatial resolution and a swath of ~9.6 km.

The primary mission objectives of the satellite were:

- Obtaining high resolution scene specific spot imageries from a highly agile platform in step and stare mode.
- Generating maps for Land Use Planning and Urban Survey.

### SPECIFICATIONS

| | |
|---|---|
| **Weight** | 650 kg |
| **Power** | Solar Array: 1200 W<br>Batteries: Ni-Cd 18 Ah |
| **Stabilization** | 3-axis body stabilized using high Torque Reaction Wheels, Magnetic Torquers and Thrusters |
| **Type of Satellite** | Earth Observation |
| **Payloads** | Panchromatic Camera |
| **Mission Life** | 5 Years |

# SPACE CAPSULE RECOVERY EXPERIMENT (SRE-1)

SRE-1 is a 550 kg capsule intended to demonstrate the technology of an orbiting platform for performing experiments in microgravity conditions. After completion of the experiments, the capsule was de-orbited and recovered. SRE-1 mission provided a valuable experience in fields like navigation, guidance and control during the re-entry phase, hypersonic aero thermodynamic, development of reusable Thermal Protection System (TPS), recovery through deceleration and flotation, besides acquisition of basic technology for Reusable Launch Vehicles.

SRE-1 carries two experiments, an Isothermal Heating Furnace (IHF) and a Bio-mimetic experiment. SRE-1 was launched into a 635 km polar SSO for 10 days during which its payloads performed the operations they were intended to. The SRE capsule was de-boosted and recovered successfully back on Earth on 22nd January 2007.

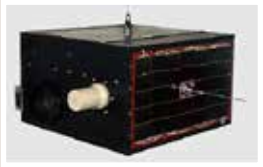
## SPECIFICATIONS

| | |
|---|---|
| **Weight** | 550 kg |
| **Power** | Solar Array: 45 W |
| **Stabilization** | MMU package for computation of navigation parameters<br>Sensors: Gyros, Magnetometer, Sun sensors<br>RCS: Bipropellant 22 N Thruster for re-entry |
| **Type of Satellite** | Science & Exploration |
| **Payloads** | • Isothermal Heating Furnace (IHF)<br>• Bio-mimetic Experiment |
| **Mission Life** | 12 Days |

# THE INTERNATIONAL CUSTOMER SATELLITES

### LAPAN-TUBSAT

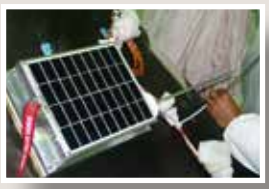
LAPAN-TUBSAT is a Video Surveillance Microsatellite developed as a cooperation project between Lembaga Penerbangan dan Antariksa National of Indonesia and Institute fur-ind Raumfahrt of TU Berlin, Germany. The payload consists of a wide angle camera and a 5 m resolution camera.



*LAPAN-TUBSAT*

### PEHUENSAT-1

NANO PEHUENSAT-1 is a small Microsatellite developed by the Argentina Association for Space Technology, an educational, non-profit organisation based in Buenos Aires, Argentina, jointly with the University of Comahue of Argentina and AMSAT (Amateur Satellite Association of Argentina).



*PEHUENSAT-1*