PSLV-C14 / OCEANSAT-2 Mission   23 September, 2009

THE MISSION

PSLV-C14 carrying on-board the OCEANSAT-2 lifted-off from the Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota at 11:51 AM (IST) on September 23, 2009. PSLV-C14 successfully launched the 960 kg Indian Remote Sensing Satellite Oceansat-2 and 6 Nanosatellites for international customers into a polar Sun-synchronous Orbit (SSO).

This mission is unique for PSLV as this is the first time that new AMC/ATS based avionics is being used for a typical SSPO mission. A 'Core-alone' configuration of the vehicle with PS4 L2.5 stage is being employed to put the satellites in orbit.

PSLV-C14
THE LAUNCH VEHICLE

PSLV-C14 is the 5th mission of PSLV in 'Core-alone' configuration. PSLV is a four stage launch vehicle employing both solid and liquid propulsion stages. PSLV is the trusted workhorse Launch Vehicle of ISRO.

Major changes done in PSLV-C14 are:

- PS4 to use L2.5 stage.
- First time use of ECI frame and Quaternion based computation for SSPO mission.
- Introduction of a 45^0 inclined deck to mount Rubin Spacecrafts on EB.
- CUBESATs are separated using a separation system SPL supplied along with S/C by the user.

SPECIFICATIONS

Height	44.4 m	
Lift-Off Mass	228 t	
No of Stages	4	
Payloads	OCEANSAT-2	**6 International Customer Satellites** • CUBESAT-1 / UWE-2 • CUBESAT-2 / BeeSat • CUBESAT-3 / ITU-pSAT1 • CUBESAT-4 / SwissCube • RUBIN-9.1 • RUBIN-9.2
Orbit Height	720 km	
Inclination (deg)	98.28 ± 0.2^0	
Launch Azimuth	140^0	

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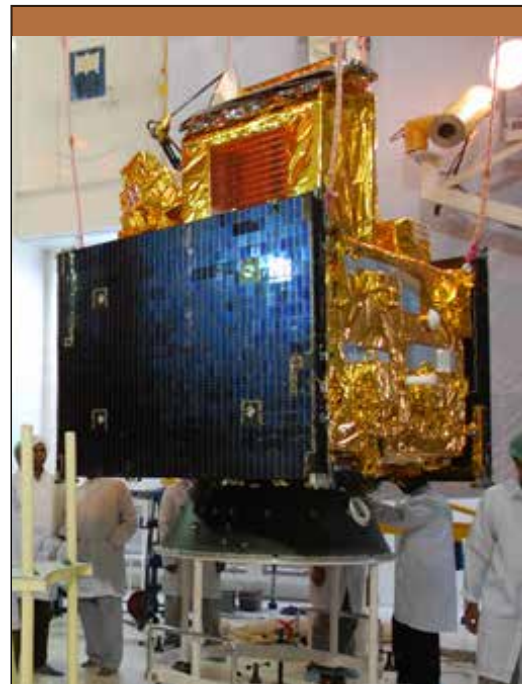
OCEANSAT-2
THE SATELLITE

Oceansat-2, second in the series of Indian Remote Sensing Satellites dedicated to ocean research, was intended to provide continuity of operational services of Oceansat-1 (IRS-P4) with enhanced application potential. The main objectives of Oceansat-2 are to study surface winds and ocean surface strata, observation of chlorophyll concentration, monitoring of phytoplankton blooms, study of atmospheric aerosols and suspended sediments in the water.

It carries three payloads — Ocean Colour Monitor (OCM), Ku-band Pencil Beam Scatterometer (SCAT) and Radio Occultation Sounder for Atmosphere (ROSA). OCM is a solid-state camera providing observations in 8 narrow spectral bands in the VNIR region. It employs push-broom scanning technology with linear CCD detector arrays of 6000 Pixels (3730 active detectors in the center are used to cover the image field while the rest are used to correct for dark current) covering a swath width of 1420 km. OCM Camera module has got an along-track tilt capability of $\pm 20^0$ to avoid sun glint. The Scatterometer is a pencil beam microwave radar operating in Ku-band (13.515GHz) used to monitor ocean surface wind speed and direction. This instrument operates with two (inner in H-pol & outer in V-pol) beams scanning at 20.5 rpm. ROSA, a new GPS occultation receiver provided by ASI (Italian Space Agency) is used to derive atmospheric temperature and humidity profiles from the bending angles of GPS signals. Oceansat-2 spacecraft mainframe systems derive their heritage from previous IRS missions except mission specific hardware like payload data handling and solid state recorder, bus management electronics and SCAT antenna scanning hold down-release mechanism.

SPECIFICATIONS

Weight	960 kg
Power	Solar Array: 1360 Batteries: Ni-Cd 24 Ah
Stabilisation	3-axis body stabilised with Earth Sensors, Sun Sensors, Magnetometer, Reaction Wheels, Magnetic Torquers and Hydrazine Thrusters
Type of Satellite	Earth Observation
Payloads	• OCM • SCAT • ROSA
Mission Life	5 Years

THE INTERNATIONAL CUSTOMER SATELLITES

CUBESAT SATELLITES

The four CUBESAT are educational satellites from European Universities, each weighing around 1 kg and developed to perform technology demonstration in space. The satellites are housed inside individual SPL weighing 1 kg.

1. CUBESAT-1 / UWE-2
2. CUBESAT-2 / BeeSat
3. CUBESAT-3 / ITU-pSAT1
4. CUBESAT-4 / SwissCube

RUBIN-9

RUBIN-9 consists of two S/Cs RUBIN-9.1 & RUBIN-9.2 weighing 8 kg each and both the satellites were used for the Automatic Identification System (AIS) for Maritime Applications.