इसरो ISRO

PSLV-C15/CARTOSAT-2B Mission

INDIAN SPACE RESEARCH ORGANISATION

Vehicle

PSLV Core Alone Variant with L2.5 as upper stage

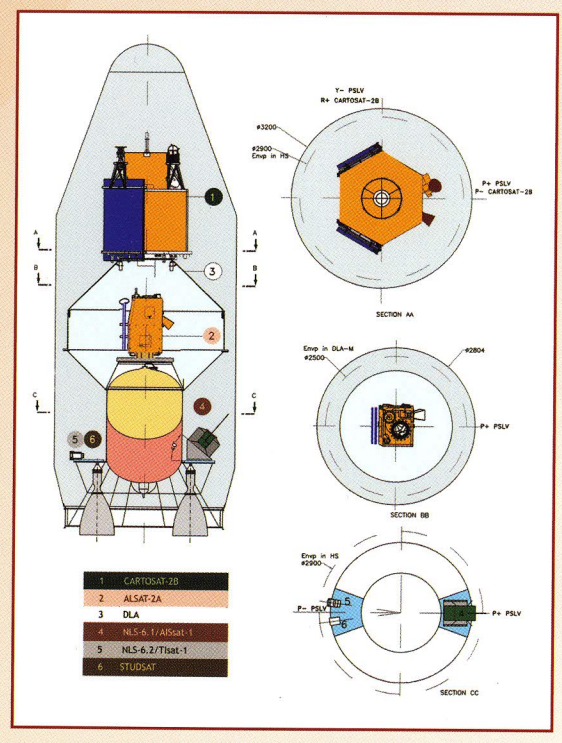
Mission Specification

Orbit (Osculating)	:	637 km circular SSPO
Inclination	:	98.1 deg
Launch Time	:	09:22 hrs IST
Launch Window	:	-0/+15 min
Launch Pad	:	First Launch Pad
Launch Azimuth	:	140 deg

Vehicle Characteristics

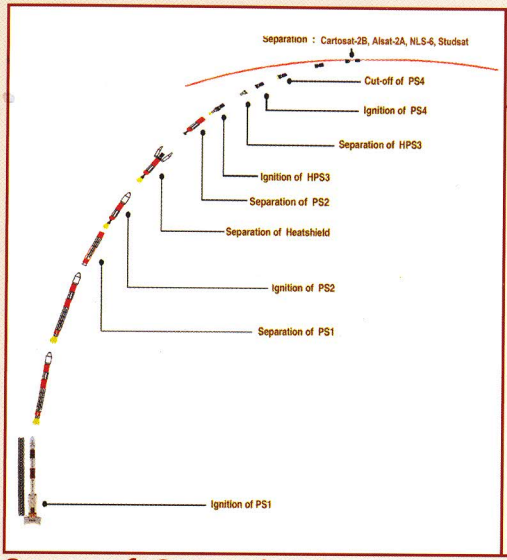
Vehicle Height	:	44.4 m
Lift off mass	:	229 t
Propulsion Stages		
First Stage (PS1)	:	S139
Second Stage (PS2)	:	PL40
Third Stage (PS3)	:	HPS3
Fourth Stage (PS4)	:	L2.5

C15 - Vehicle Configuration



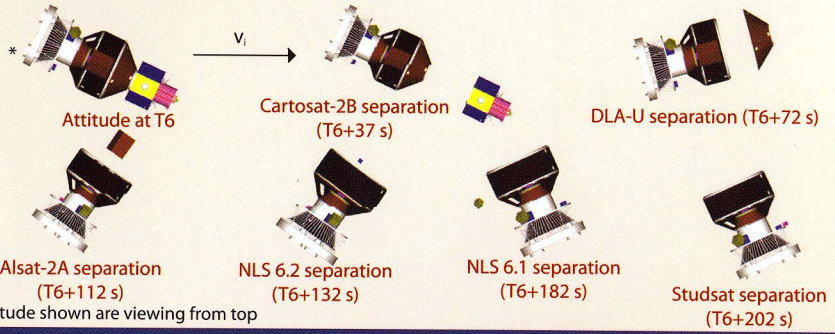
Payload Accommodation

PSLV-C15 Flight Sequence



Events	PSLV - C15 Mission		
	Time(s)	Altitude (km)	Inertial Velocity (m/s)
PS1 Ignition	0.0	0.026	451.9
PS1 Tail-off (RTD-T2)	109.40	45.96	1563.2
PS1 Separation	114.40	50.75	1542.1
PS2 Ignition	114.60	50.94	1541.1
Heat Shield Separation	183.70	115.13	2174.1
C L G Initiation	188.70	120.08	2243.5
PS2 cut-off (RTD-T3)	262.08	204.86	3661.3
PS2 Separation	265.08	208.94	3675.4
PS3 Ignition	266.28	210.56	3671.4
PS3 burn out (RTD-T4)	383.60	362.01	5671.9
PS3 Separation	517.60	512.80	5451.4
PS4 Ignition (RTD-T5)	528.52	521.77	5437.6
PS4 Cut-off (RTD T6)	1036.82	641.43	7531.2
Cartosat-2B Separation	1073.82	642.15	7537.4
DLA-U Separation	1108.82	642.85	7537.1
ALSAT-2A Separation	1148.82	643.69	7536.7
NLS-6.2 TISAT-1 Separation	1168.82	644.12	7536.5
NLS-6.1 AISSAT-1 Separation	1218.82	645.22	7535.9
STUDSAT Separation	1238.82	645.67	7535.7

Spacecraft Separation Sequence



* attitude shown are viewing from top

Payloads

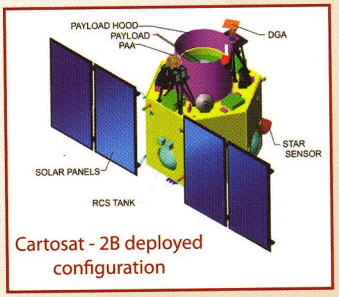
Cartosat-2B	693 kg
Alsat-2A	116 kg
NLS 6.1 (AISSat-1)	14 kg (6.5 kg for satellite)
NLS 6.2 (TISat-1)	3 kg (1 kg for satellite)
Studsat	3.6 kg (1.3 kg for satellite)

Cartosat-2B

Cartosat-2B is the third satellite in Cartosat-2 series.

Mission Objectives

- Obtaining high resolution (~ 1 m) scene specific spot imageries
- Generating cartographic products at cadastral level for urban and rural development



Cartosat - 2B deployed configuration

- Carries Panchromatic Camera with two mirror on axis system
- Relay optics operating in step & stare mode
- Three axes stabilized for sun pointing and imaging mode of operation
- Positioned at 630 km (mean) SSPO with 09.30 hrs ECT for 4 days revisit and one time special orbit at 560 km (recurrent , for daily revisit)
- ±26 deg steering across-track nominally for different modes of imaging

Alsat-2A

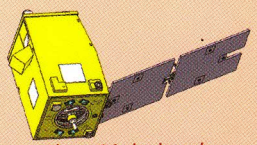
Alsat-2A is the first spacecraft in Alsat-2 series, an Algerian programme consisting of two similar satellites for earth observation in the low earth orbit

Mission Objectives

- Town and country planning
- Natural disaster forecast and monitoring
- Agricultural monitoring

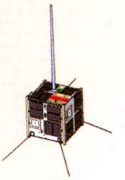
The spacecraft is built by EADS Astrium.
Alsat-2A is capable of imaging with a resolution of

- 2.5 m in panchromatic mode &
- 10 m in multi spectral mode (4 bands)


Alsat - 2A deployed configuration

NLS 6.1 (AISSat-1)

AISSat-1 is a technology demonstration spacecraft built for the Norwegian Defense Research Establishment by the Space Flight Laboratory at the University of Toronto Institute for Aerospace Studies (UTIAS), Canada.



AISSat-1
Deployed Configuration

Mission objective

- To perform a survey of the VHF band centered on 162 MHz maritime AIS band

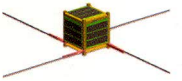
The payload is a maritime AIS (Automatic Identification System) receiver. The XPOD GNB Separation System of UTIAS is used to deploy the spacecraft in orbit.

NLS 6.2 (TISat-1)

The TISat-1 is a 1kg CubeSat of 100x100x100 mm and is built by University of Applied Sciences of Southern Switzerland (SUPSI).

Mission objectives

- To monitor the effect of atomic oxygen on various materials and detect man made 50Hz/60Hz light pollution on earth
- To test firmware for coding and modulation schemes for communication and validate redundant hardware architecture



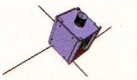
TISat-1
deployed configuration

Studsat

Studsat is developed by a consortium of Engineering Colleges of India.

Mission objectives

- Imaging earth surface using CMOS camera with resolution of 95 m and transmitting data to earth station
- Developing ground support system



Studsat deployed view

PRE LAUNCH OPERATIONS

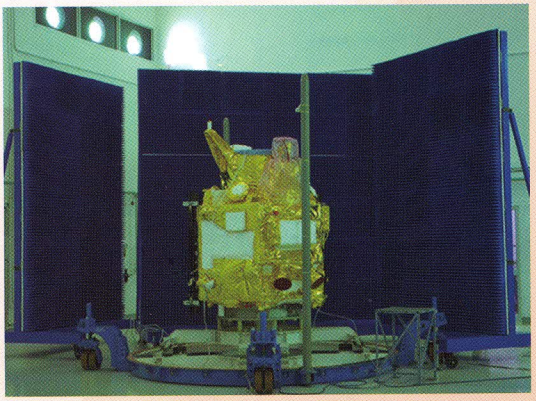
CBS assembly

PS1 stage at MST

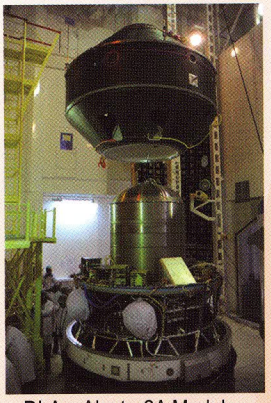
PS2 receipt at MST

PS3-PS4 moduling

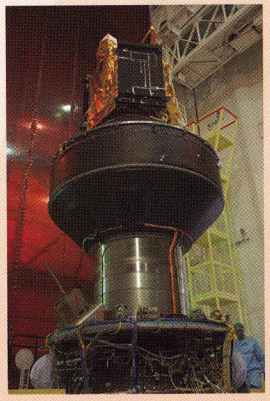
Vehicle ready to receive spacecrafts



Cartosat - 2B Testing



DLA + Alsat - 2A Module assembly to PS4



Satellites integrated to vehicle

HS closure

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