

#### 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

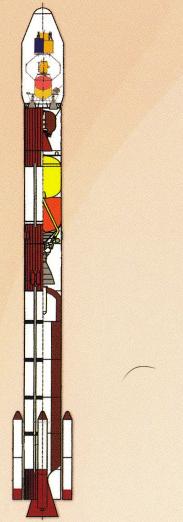
**Propulsion Stages** 

First Stage (PS1) : S139

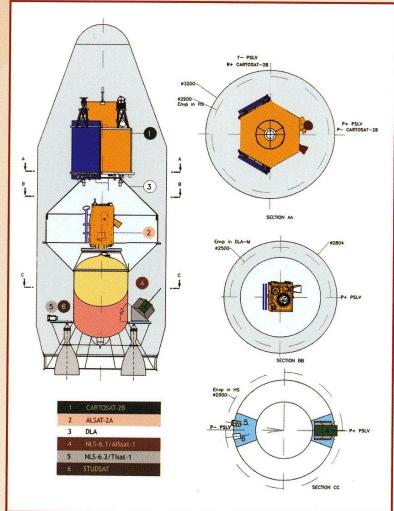
Second Stage (PS2) : PL40

Third Stage (PS3) : HPS3

Fourth Stage (PS4) : L2.5

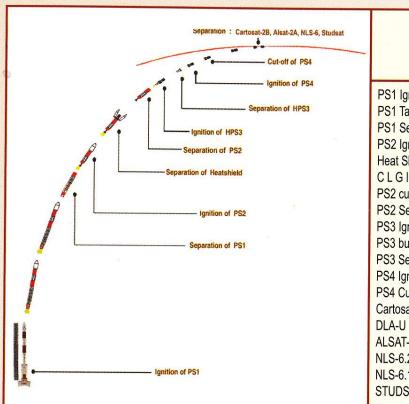






**Payload Accommodation** 

# **PSLV-C15 Flight Sequence**



	1	PSLV - C15 Mission		
-	Events	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**



Cartosat-2B separation (T6+37s)





DLA-U separation (T6+72 s)



Alsat-2A separation (T6+112s)

NLS 6.2 separation (T6+132 s)\* attitude shown are viewing from top



NLS 6.1 separation (T6+182 s)



Studsat separation (T6+202 s)

# **Payloads**

Cartosat-2B

693 kg Alsat-2A 116 kg

NLS 6.1 (AISSat-1) NLS 6.2 (TISat-1)

14 kg (6.5 kg for satellite) 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
- 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)

  Cartosat 2B deployed configuration
- ±26 deg steering across-track nominally for different modes of imaging



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)



RCS TANK

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.

### **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



#### **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



# **PRE LAUNCH OPERATIONS**



**CBS** assembly



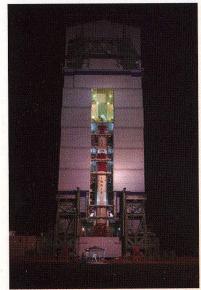
PS1 stage at MST



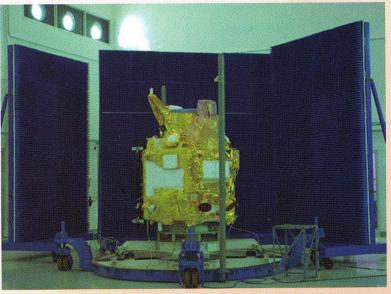
PS2 receipt at MST



PS3-PS4 moduling



Vehicle ready to receive spacecrafts



Cartosat - 2B Testing



DLA + Alsat - 2A Module assembly to PS4



Satellites integrated to vehicle



**HS** closure