



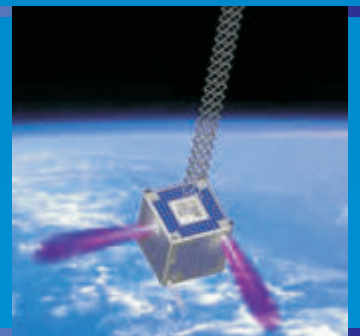
PSLV-C21

100th Indian Space Mission



SPOT 6
(France)

PROITERES
(Japan)



PSLV-C21 SPOT 6 PROITERES PSLV-C21 SPOT 6 PROITERES PSLV-C21 SPOT 6 PROITERES



PSLV-C21 at the First Launch Pad

India's Polar Satellite Launch Vehicle, in its twenty second flight (PSLV-C21), will launch the French earth observation satellite SPOT 6 along with a micro-satellite from Japan into a 655 km polar orbit inclined at an angle of 98.23 deg to the equator. PSLV-C21 will be launched from the First Launch Pad of Satish Dhawan Space Centre (SDSC SHAR), Sriharikota.

With a lift-off mass of 712 kg, SPOT 6 is the heaviest satellite to be launched by PSLV for an international customer. The Japanese micro-satellite PROITERES, carried as an auxiliary payload, has a lift-off mass of 15 kg. PSLV-C21 is the eighth flight of PSLV in 'core-alone' configuration (without solid strap-on motors).



Nozzle End Segment of PSLV-C21 first stage being placed on launch pedestal

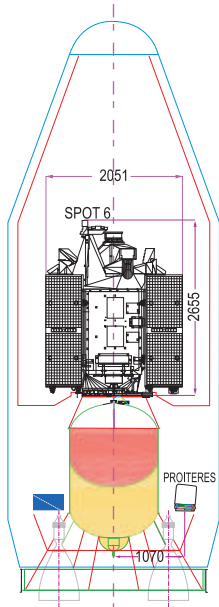


Hoisting of PSLV-C21 second stage

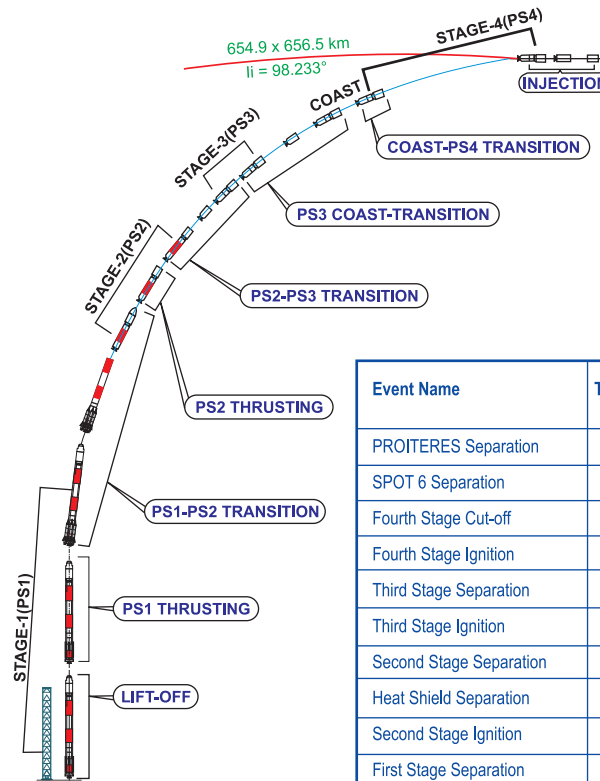
PSLV-C21 Stages at a Glance

	STAGE-1	STAGE-2	STAGE-3	STAGE-4
Nomenclature	PS1	PS2	PS3	PS4
Propellant	Solid (HTPB Based)	Liquid (UH25 + N ₂ O ₄)	Solid (HTPB Based)	Liquid (MMH+MON-3)
Mass (Tonne)	138.0	41.0	7.6	2.5
Max Thrust (kN)	4787	804	242	7.3x2
Burn Time (Sec)	102	148	110	526
Stage Dia (m)	2.8	2.8	2.0	2.8
Stage Length (m)	20	12.8	3.6	2.6
Control	SITVC for Pitch & Yaw, Reaction Control Thrusters for Roll Control	Engine Gimbal for Pitch & Yaw, Hot Gas Reaction Control Motor for Roll Control	Flex Nozzle for Pitch & Yaw, PS4 Reaction Control System (RCS) for Roll Control	Engine Gimbal for Pitch, Yaw & Roll, on-off RCS for Coast Phase Control

HTPB: Hydroxyl Terminated Poly Butadiene, UH25: Unsymmetrical Dimethyl Hydrazine + 25% Hydrazine Hydrate, MMH: Mono Methyl Hydrazine, MON-3: Mixed Oxides of Nitrogen, SITVC: Secondary Injection Thrust Vector Control



SPOT 6 and PROITERES
in PSLV-C21 Envelope



Event Name	Time after lift-off (second)	Altitude (kilometre)	Velocity (metres per second)
PROITERES Separation	1128.8	660.2	7527.4
SPOT 6 Separation	1078.8	659.3	7527.8
Fourth Stage Cut-off	1041.8	658.6	7520.8
Fourth Stage Ignition	533.5	575.2	5206.7
Third Stage Separation	521.9	565.1	5222.7
Third Stage Ignition	268.3	244.1	3444.0
Second Stage Separation	267.1	242.3	3448.8
Heat Shield Separation	195.7	149.8	2138.1
Second Stage Ignition	115.7	58.1	1439.5
First Stage Separation	115.5	57.9	1440.7
First Stage Ignition	0.0	0.02	452

PSLV-C21 Typical Flight Profile

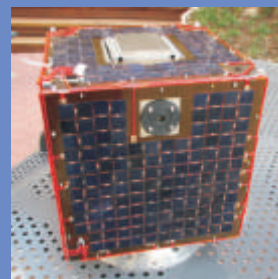
Payloads of PSLV-C21

SPOT 6 is a French Earth Observation Satellite capable of imaging the earth with a resolution of 1.5 metres. This latest generation optical remote sensing satellite is built by Astrium SAS, a leading European space technology company.

Besides SPOT 6, PSLV-C21 carries PROITERES, a 15 kg Japanese micro-satellite as an auxiliary payload. PROITERES is intended to study powered flight of a small satellite by an electric thruster and observe Kansai district in Japan with a high-resolution camera.



SPOT 6 in clean room (712 kg)



PROITERES (15 kg)

SATELLITES OF OTHER COUNTRIES LAUNCHED BY PSLV

SL. NO.	NAME	COUNTRY	DATE OF LAUNCH	MASS (KG)	LAUNCH VEHICLE
1.	DLR-TUBSAT	GERMANY	26.05.1999	45	PSLV-C2
2.	KITSAT-3	REPUBLIC OF KOREA	26.05.1999	110	PSLV-C2
3.	BIRD	GERMANY	22.10.2001	92	PSLV-C3
4.	PROBA	BELGIUM	22.10.2001	94	PSLV-C3
5.	LAPAN-TUBSAT	INDONESIA	10.01.2007	56	PSLV-C7
6.	PEHUENSAT-1	ARGENTINA	10.01.2007	6	PSLV-C7
7.	AGILE	ITALY	23.04.2007	350	PSLV-C8
8.	TECSAR	ISRAEL	21.01.2008	300	PSLV-C10
9.	CAN-X2	CANADA	28.04.2008	7	PSLV-C9
10.	CUTE-1.7	JAPAN	28.04.2008	5	PSLV-C9
11.	DELFI-C3	THE NETHERLANDS	28.04.2008	6.5	PSLV-C9
12.	AAUSAT-II	DENMARK	28.04.2008	3	PSLV-C9
13.	COMPASS-I	GERMANY	28.04.2008	3	PSLV-C9
14.	SEEDS	JAPAN	28.04.2008	3	PSLV-C9
15.	NLS-5	CANADA	28.04.2008	16	PSLV-C9
16.	RUBIN-8	GERMANY	28.04.2008	8	PSLV-C9
17.	CUBESAT-1	GERMANY	23.09.2009	1	PSLV-C14
18.	CUBESAT-2	GERMANY	23.09.2009	1	PSLV-C14
19.	CUBESAT-3	TURKEY	23.09.2009	1	PSLV-C14
20.	CUBESAT-4	SWITZERLAND	23.09.2009	1	PSLV-C14
21.	RUBIN-9.1	GERMANY	23.09.2009	1	PSLV-C14
22.	RUBIN-9.2	GERMANY	23.09.2009	1	PSLV-C14
23.	ALSAT-2A	ALGERIA	12.07.2010	116	PSLV-C15
24.	NLS-6.1 AISSAT-1	CANADA	12.07.2010	6.5	PSLV-C15
25.	NLS-6.2 TISAT-1	SWITZERLAND	12.07.2010	1	PSLV-C15
26.	X-SAT	SINGAPORE	20.04.2011	106	PSLV-C16
27.	VesselSat-1	LUXEMBOURG	12.10.2011	28.7	PSLV-C18

PSLV-C2
SPOT 6
PROITERE

PSLV-C2
SPOT 6
PROITERE

Sept 2012

Indian Space Research Organisation

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