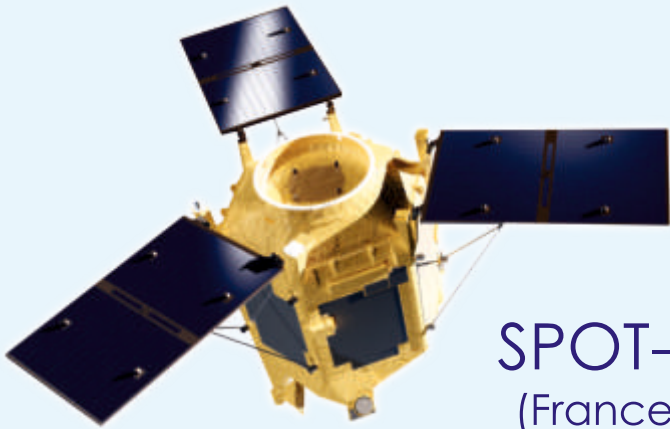
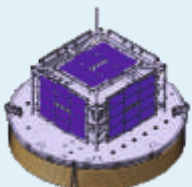


PSLV-C23



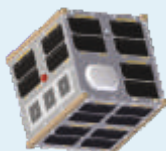
India's Polar Satellite Launch Vehicle

AISAT



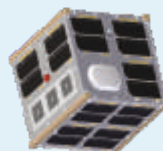
GERMANY

NLS7.1 (Can-X4)



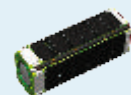
CANADA

NLS7.2 (Can-X5)



CANADA

VELOX-1



SINGAPORE

PSLV-C23



PSLV-C23 at First Launch Pad

India's Polar Satellite Launch Vehicle, in its twenty seventh flight (PSLV-C23), will launch SPOT-7, a French earth observation satellite, into a 655 km Sun Synchronous Orbit (SSO). PSLV-C23 will be launched from Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota, from the First Launch Pad and it will be the tenth flight of PSLV in 'core-alone' configuration (without the use of solid strap-on motors).

Along with SPOT-7, there will be four co-passenger satellites, viz., AISAT from DLR Germany, NLS7.1 and NLS7.2 from UTIAS/SFL Canada and VELOX-1 from NTU Singapore.

PSLV-C23 at a glance (Vehicle lift-off Mass: 230 tonne Height: 44.4 m)

	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	42	7.6	2.5
Max Thrust (kN)	4787	804	242	7.3 x 2
Burn Time (s)	102	148	110	526
Stage Dia (m)	2.8	2.8	2.0	2.8
Stage Length (m)	20	12.8	3.6	3.0

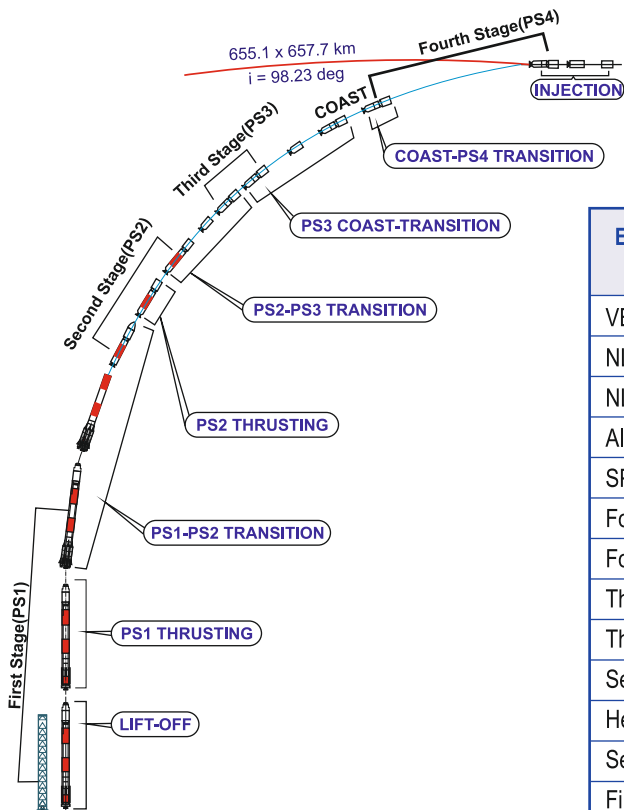
HTPB : Hydroxyl Terminated Poly Butadiene

UH25 : Unsymmetrical Dimethyl Hydrazine + 25% Hydrazine Hydrate

N₂O₄ : Nitrogen Tetroxide

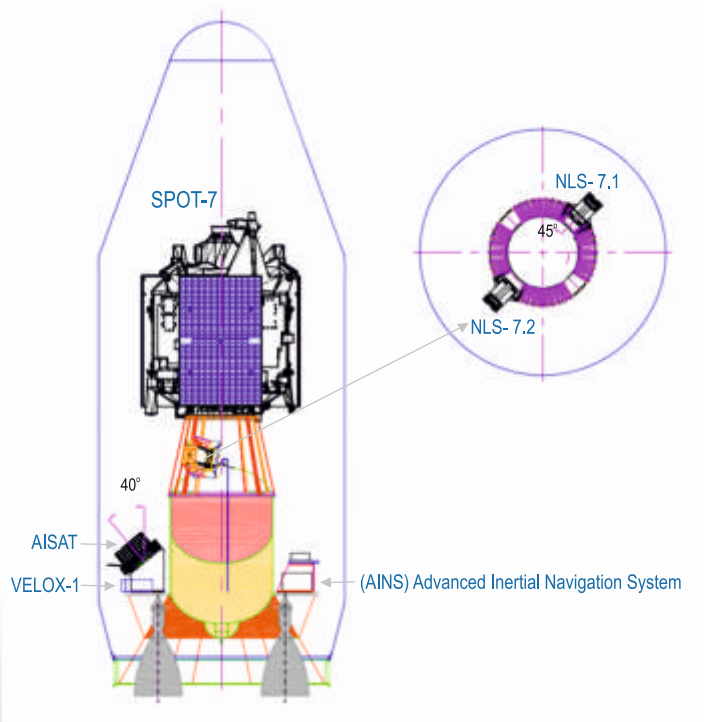
MMH : Mono Methyl Hydrazine, MON-3: Mixed Oxides of Nitrogen

PSLV-C23



Event Name	Time after lift-off (second)	Altitude (kilometre)	Velocity (metres/second)
VELOX-1 Separation	1198.7	662.3	7526.7
NLS7.2 Separation	1173.7	661.8	7526.9
NLS7.1 Separation	1143.7	661.2	7527.1
ALSAT Separation	1113.7	660.6	7527.4
SPOT-7 Separation	1073.7	659.8	7527.7
Fourth Stage Cut-off	1036.7	659.1	7521.0
Fourth Stage Ignition	531.2	545.6	5331.0
Third Stage Separation	521.2	536.8	5344.6
Third Stage Ignition	263.4	220.2	3567.9
Second Stage Separation	262.2	218.7	3572.0
Heat Shield Separation	187.7	131.5	2256.8
Second Stage Ignition	110.8	52.9	1554.3
First Stage Separation	110.6	52.7	1555.4
First Stage Ignition	0.0	0.026	451.9

PSLV-C23 Typical Flight Profile



Satellites Mounting configuration



PSLV-C23 First Stage assembly

International Customer Satellites

Primary Satellite

SPOT-7

AIRBUS DEFENCE & SPACE - FRANCE

SPOT-7 is a French optical Earth Observation Satellite identical to SPOT-6 launched earlier on-board PSLV-C21 during September 2012. SPOT-7, after its injection into Sun Synchronous Orbit, will be phased and placed diametrically opposite to SPOT-6 and will form part of the existing earth observation constellation. SPOT-7 satellite is built by AIRBUS DEFENCE & SPACE, a leading European space technology company.



SPOT-7 in clean room

SPOT-7 Salient features

Satellite mass	714 Kg
Orbit (Sun Synchronous Orbit)	655 km (Nominal)
Inclination	98.23 degree
Local time of descending node	09 hrs 58 min
Imaging Resolution	2.2 m Panchromatic, 8.8 m Multi-Spectral (Blue, Green, Red, NIR)
Swath width	60 km
Power	Battery – 2 Li- Ion; Solar panel – 3, 1450 Watt
Propulsion	Hydrazine Thrusters
Attitude control	Magnetic torquers, Control Momentum Gyros, Propulsion
Mission life	10 years

International Customer Satellites

Co-passenger Satellites

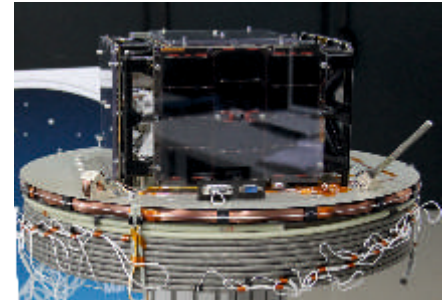
AISAT DLR Germany

Mission objectives

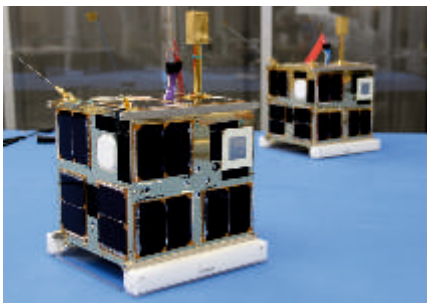
Global sea-traffic monitoring system with special emphasis on high traffic zones using AIS signals. First DLR Satellite in the nano-satellite class.



AISAT :14 kg



NLS7.1 :15kg



NLS7.2 :15kg

NLS7.1 (CAN-X4) & NLS7.2 (CAN-X5)

UTIAS/SFL Canada

Mission objectives

Two-spacecraft Precision Formation Flying using differential GPS with cm-level relative position and sub-metre level accurate position control system.

VELOX-1 NTU Singapore

Mission objectives

Technology demonstrator for in-house design of image sensor, MEMS-based attitude determination and control system, inter-satellite RF link.



VELOX-1 :7kg



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	NLS5	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	NLS6.1 AISSAT-1	CANADA	12-07-2010	6.5	PSLV-C15
25	NLS6.2 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
28	SPOT 6	FRANCE	09-09-2012	712	PSLV-C21
29	PROITERES	JAPAN	09-09-2012	15	PSLV-C21
30	SAPPHIRE	CANADA	25-02-2013	148	PSLV-C20
31	NEOSSAT	CANADA	25-02-2013	74	PSLV-C20
32	NLS8.1	AUSTRIA	25-02-2013	14	PSLV-C20
33	NLS8.2	AUSTRIA	25-02-2013	14	PSLV-C20
34	NLS8.3	DENMARK	25-02-2013	3	PSLV-C20
35	STRAND-1	UK	25-02-2013	6.5	PSLV-C20