

THE VEHICLE

THE SATELLITE



www.ilslaunch.com

PROTON HISTORY

- Lead designer was Vladimir Chelomei, who designed it with the intention of creating both a powerful rocket for military payloads and a high-performance ICBM. The program was changed, and the rocket was developed exclusively for launching spacecraft.
- First named UR-500, but adopted the name "Proton," which also was the name of the first three payloads launched.
- Proton launched Russian interplanetary missions to the Moon, Venus, Mars, and Halley's Comet.
- Proton launched the Salyut space stations, the Mir core segment and both the Zarya (Dawn) and Zvezda (Star) modules for today's International Space Station.
- First commercial Proton launch — 9 April 1996, ASTRA 1F.

PROTON DESCRIPTION

TOTAL HEIGHT
58.2 m (191 ft)

GROSS LIFTOFF WEIGHT
705,000 kg
(1,554,000 lb)

PROPELLANT
UDMH and N_2O_4

INITIAL LAUNCH
16 July 1965
Proton-1 Spacecraft

PAYLOAD FAIRINGS
There are multiple payload fairing designs presently qualified for flight, including standard commercial payload fairings developed specifically to meet the needs of our customers.

BREEZE M UPPER STAGE
The Breeze M is powered by one pump-fed gimbaled main engine that develops thrust of 20 kN (4,500 lbf). It is composed of a central core and an auxiliary propellant tank which is jettisoned in flight following depletion. The Breeze M control system includes an on-board computer, a three-axis gyro stabilized platform, and a navigation system. The quantity of propellant carried is dependent on specific mission requirements and is varied to maximize mission performance.

PROTON BOOSTER
The Proton booster is 4.1 m (13.5 ft) in diameter along its second and third stages, with a first stage diameter of 7.4 m (24.3 ft). Overall height of the three stages of the Proton booster is 42.3 m (138.8 ft).

THIRD STAGE
Powered by one RD-0213 engine, this stage develops thrust of 583 kN (131,000 lbf), and a four-nozzle vernier engine that produces thrust of 31 kN (7,000 lbf). Guidance, navigation, and control of the Proton M during operation of the first three stages is carried out by a triple redundant closed-loop digital avionics system mounted in the Proton's third stage.

SECOND STAGE
Of conventional cylindrical design, this stage is powered by three RD-0210 engines plus one RD-0211 engine and develops a vacuum thrust of 2.4 MN (540,000 lbf).

FIRST STAGE
The first stage consists of a central tank containing the oxidizer surrounded by six out-board fuel tanks. Each fuel tank also carries one of the six RD-276 engines that provide first stage power. Total first stage vacuum-rated level thrust is 11.0 MN (2,500,000 lbf).

The Proton and the Breeze M are built by Khrunichev State Research and Production Space Center.



SATELLITE OPERATOR

Eutelsat Communications
www.eutelsat.com

SATELLITE MANUFACTURER

Thales Alenia Space
www.thalesaleniaspace.com

PLATFORM

Spacebus 4000 C4

SEPARATED MASS

5627 kg

SATELLITE DESIGN LIFE

15 Years

SATELLITE MISSION

W7 will be collocated with the W4 satellite at 36 degrees East longitude to double resources at one of Eutelsat's fastest-growing video neighborhoods. Through a configuration of 70 transponders connected to high-performance fixed and steerable beams, the satellite will provide coverage of Russia and sub-Saharan Africa for digital broadcasting services, including pay-TV, and add flexibility for growing markets in central Asia. W7 will also assume all traffic on Eutelsat's 18-transponder SESAT 1 satellite, which is currently positioned at 36 degrees East, and will subsequently continue in commercial service at an alternative location.



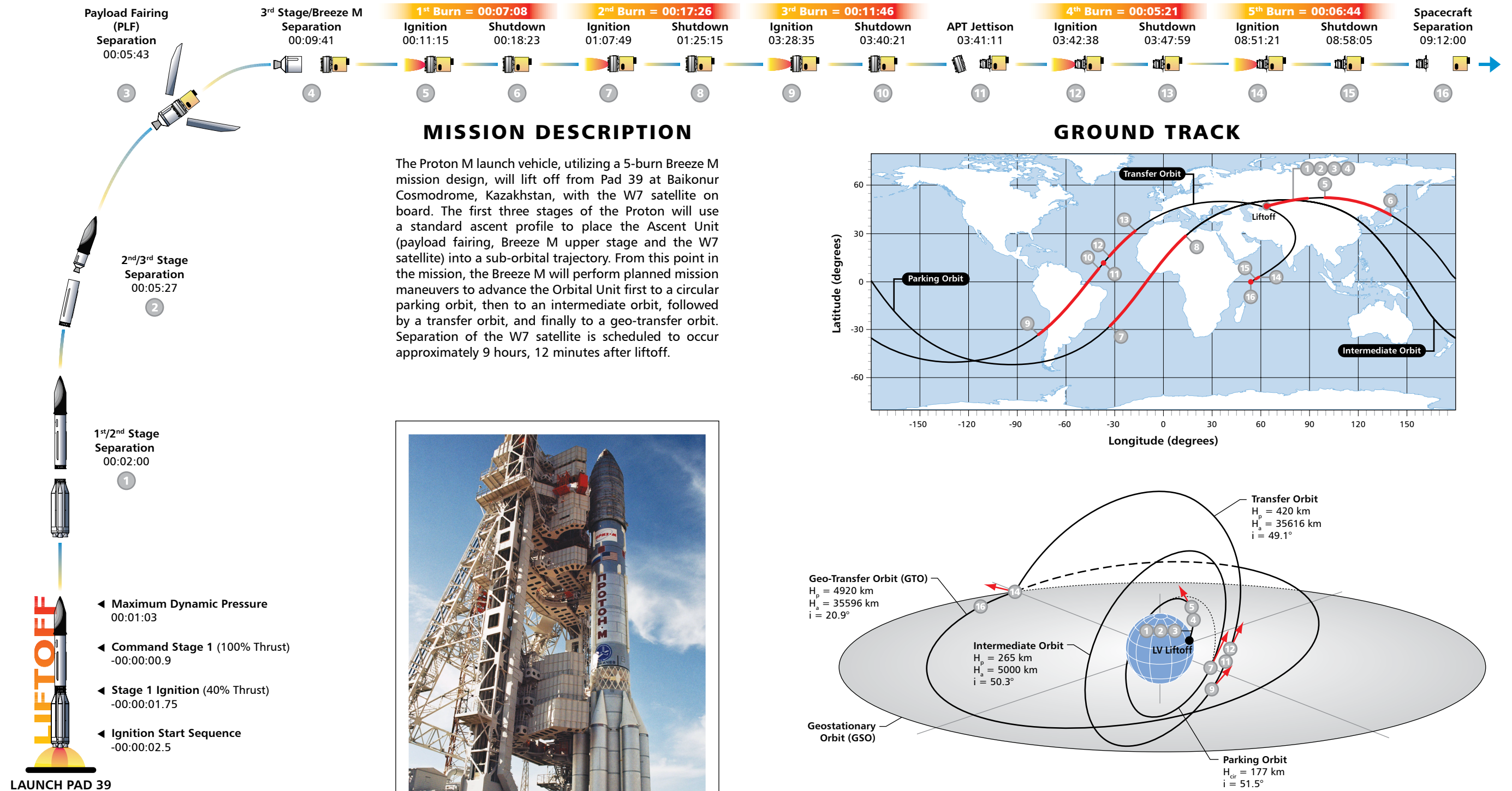
W7

MISSION OVERVIEW

- 6th ILS Proton Launch of 2009
- 55th Proton Launch for ILS
- 5th Eutelsat satellite launched on Proton
- 5th Spacebus 4000 Launched on a Proton
- 7th Thales Alenia Space Satellite Launched on a Proton



THE MISSION



ASCENT PROFILE

PROTON ON PAD 39

ORBIT INSERTION