

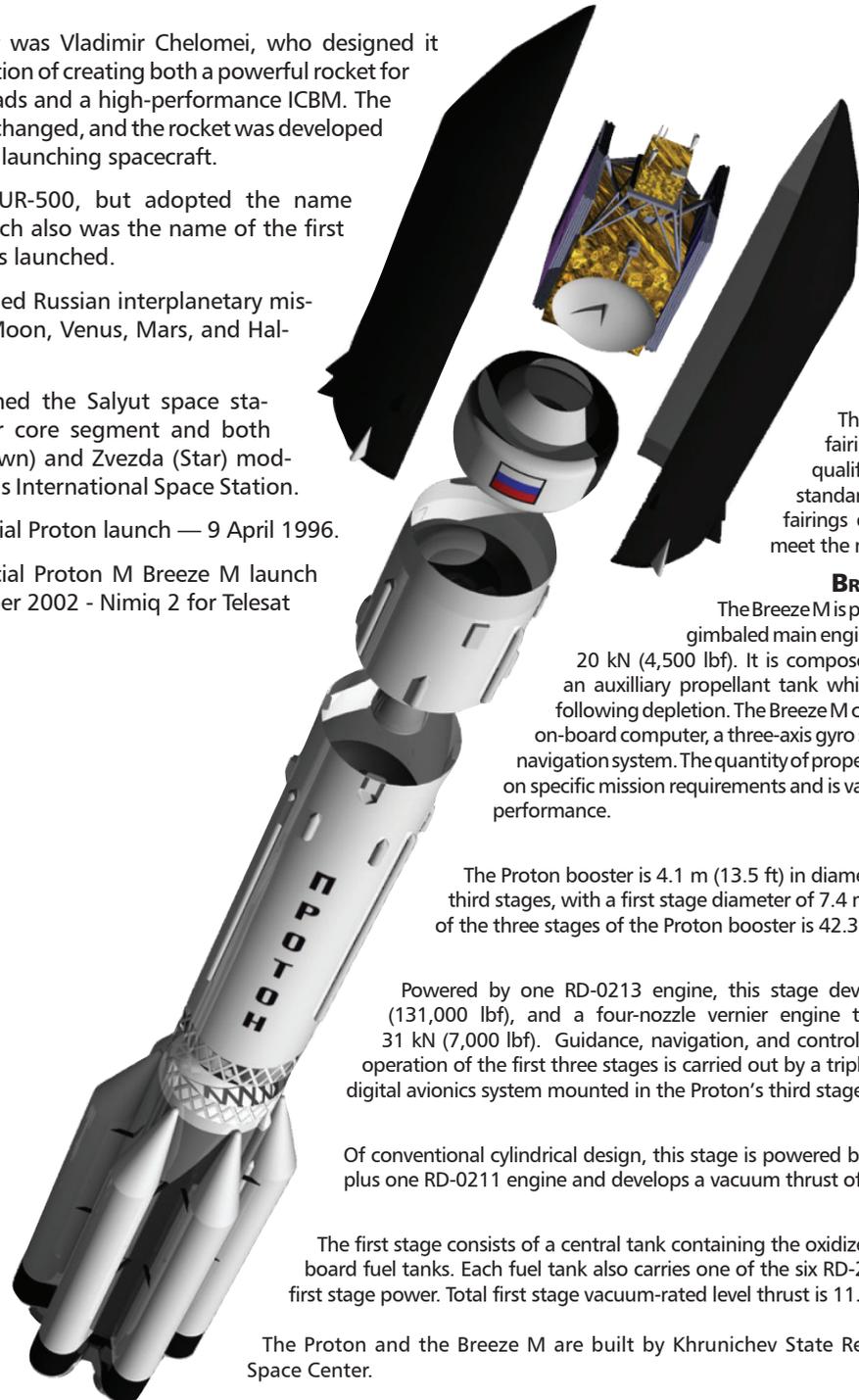
THE VEHICLE

THE SATELLITE

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.
- First commercial Proton M Breeze M launch — 30 December 2002 - Nimiq 2 for Telesat

PROTON DESCRIPTION



TOTAL HEIGHT
56.2 m (184 ft)

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

PROPELLANT
UDMH and NTO

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 Khronichev State Research and Production Space Center.



SATELLITE OPERATOR
Telesat
www.telesat.com

SATELLITE MANUFACTURER
Space Systems/Loral
www.ssloral.com

PLATFORM
SS/L 1300

SEPARATED MASS
~4500 kg

SATELLITE MISSION LIFETIME
15 Years

SATELLITE MISSION
Nimiq 6 is a commercial communications satellite built by Space Systems/Loral. The satellite has a 32 transponder Ku-Band payload providing coverage of Canada. The satellite will be located at 91.1° West longitude. This satellite will be dedicated to the provision of direct-to-home services as part of Telesat's DTH fleet



Mission Overview



Experience ILS: Achieve Your Mission
QUALITY | PERFORMANCE | EXPERIENCE | DEDICATION

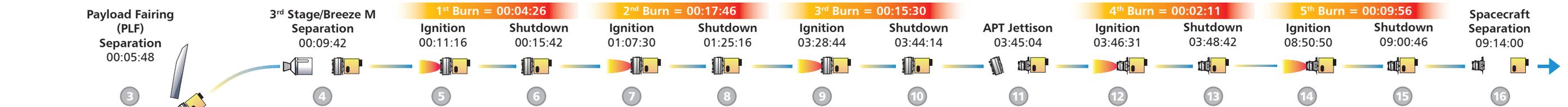


www.ilslaunch.com

Nimiq 6

- 8th Telesat Satellite Launched on ILS Proton
- 4th ILS Proton Launch in 2012
- 22nd Space Systems/Loral Satellite Launched on ILS Proton
- 73rd ILS Proton Launch Overall

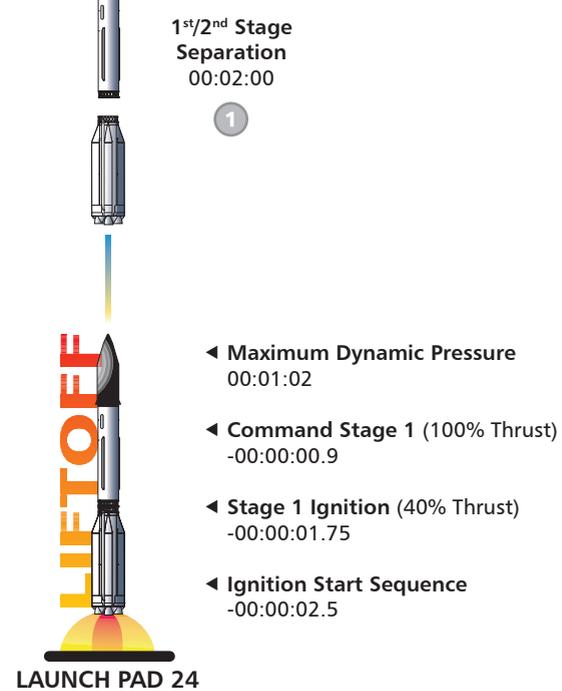
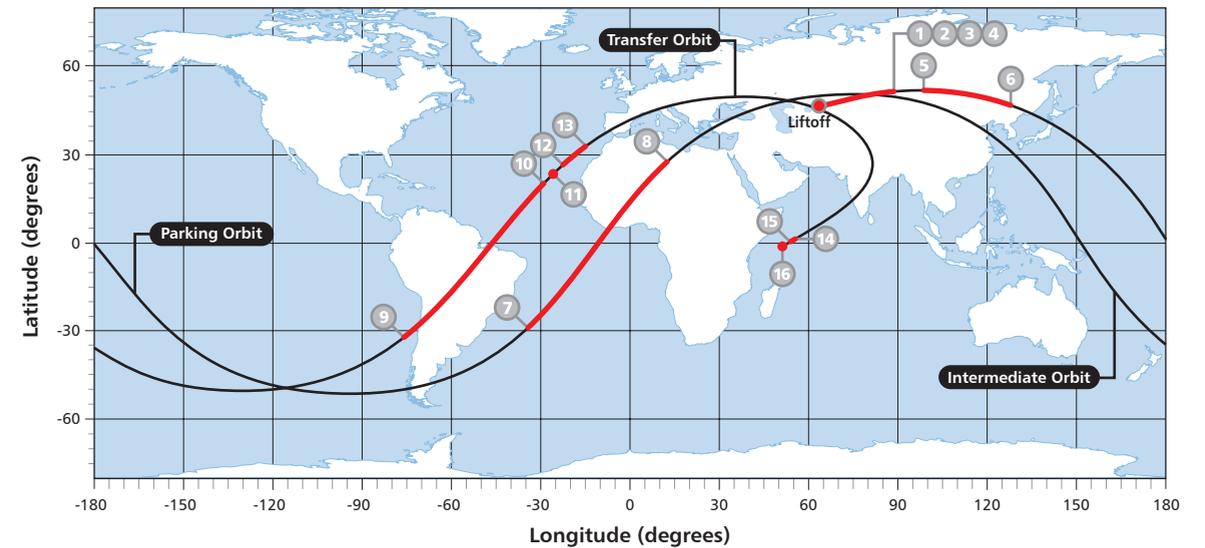
THE MISSION



MISSION DESCRIPTION

The Proton M launch vehicle, utilizing a 5-burn Breeze M mission design, will lift-off from Pad 24 at Baikonur Cosmodrome, Kazakhstan, with the Nimiq 6 satellite on board. The first three stages of the Proton will use a standard ascent profile to place the orbital unit (Breeze M upper stage and the Nimiq 6 satellite) into a sub-orbital trajectory. From this point in the mission, the Breeze M will perform planned mission maneuvers to advance the orbital unit first to a circular parking orbit, then to an intermediate orbit, followed by a transfer orbit. Separation of the Nimiq 6 satellite is scheduled to occur approximately 9 hours, 14 minutes after liftoff.

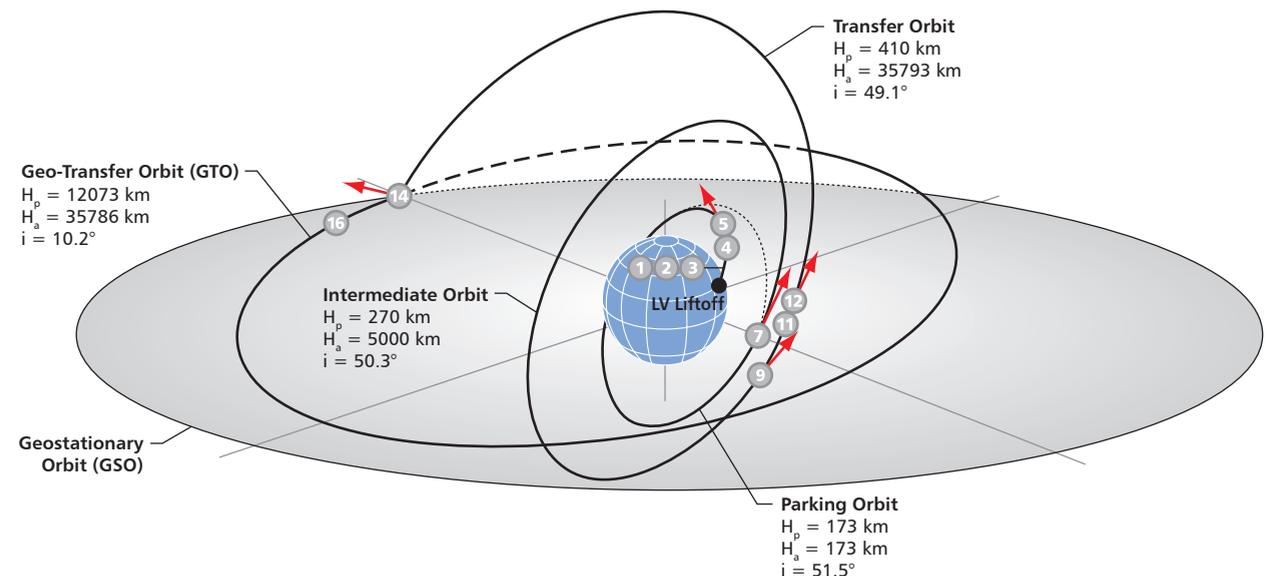
GROUND TRACK



ASCENT PROFILE



PROTON ON PAD 24



FLIGHT DESIGN