

THE VEHICLE

THE SATELLITE

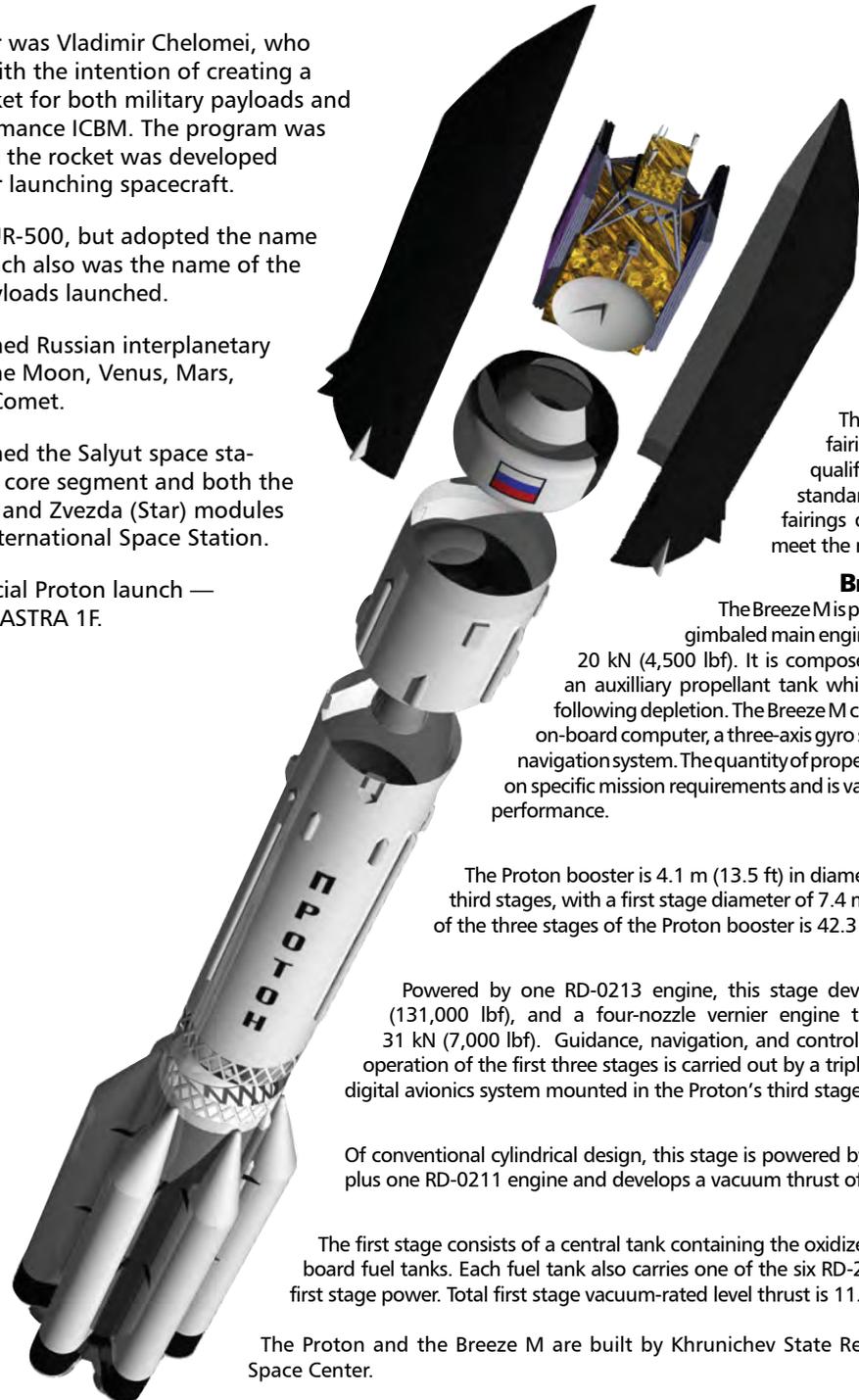


www.ilslaunch.com

PROTON HISTORY

- Lead designer was Vladimir Chelomei, who designed it with the intention of creating a powerful rocket for both 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
56.2 m (184 ft)

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

PROPELLANT
UDMH and N₂O₄

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 outboard 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

Telesat
www.telesat.com

SATELLITE MANUFACTURER

Space Systems/Loral
www.ssloral.com

PLATFORM

1300 Spacecraft Bus

SEPARATED MASS

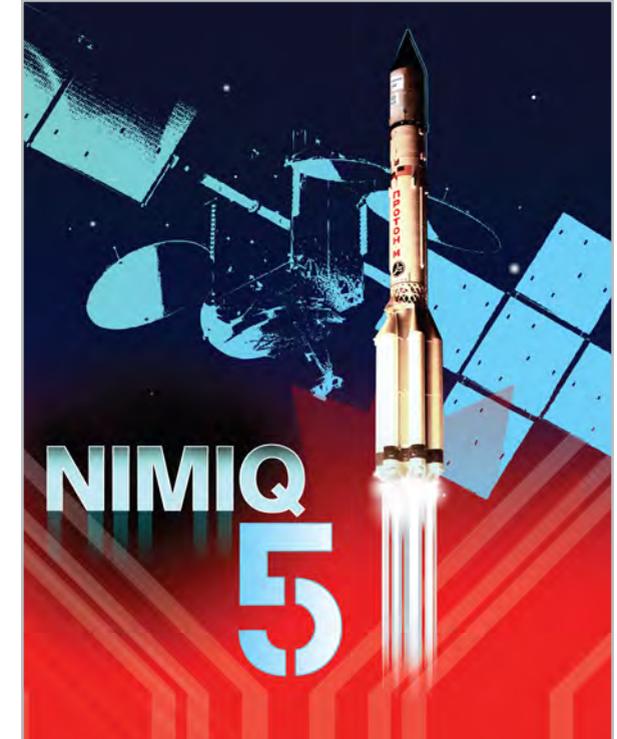
4745 kg

SATELLITE DESIGN LIFE

15 Years

SATELLITE MISSION

Nimiq 5 is a commercial communications satellite built by Space Systems/Loral. The satellite has a 32 transponder Ku-Band payload with capability to switch capacity between Canada and the Continental United States coverage areas. The satellite will be located at 72.7° West longitude. This satellite will be dedicated to the provision of direct-to-home services as part of Telesat's DTH fleet



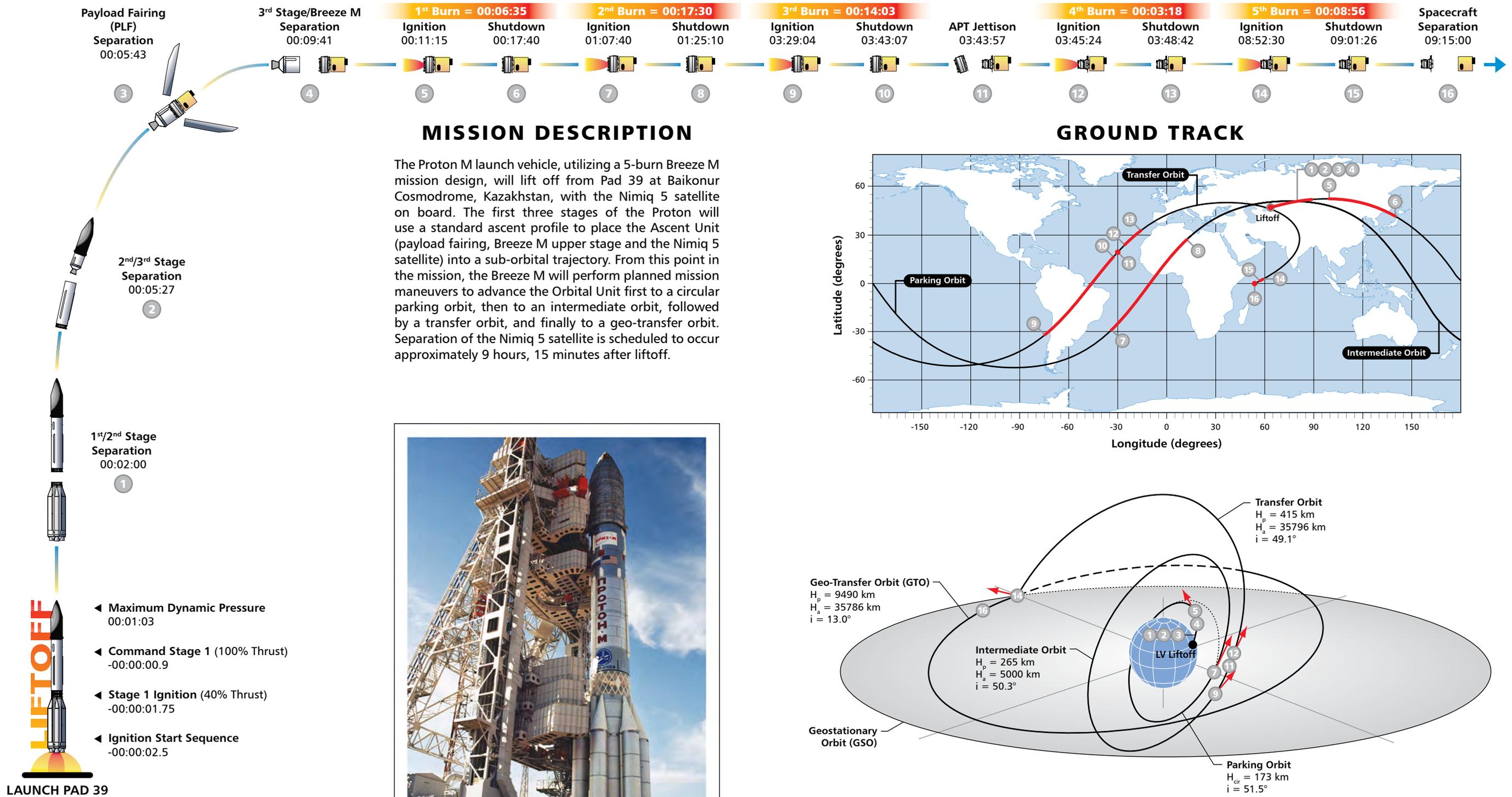
Nimiq 5

MISSION OVERVIEW

- 7th Proton Launch of 2009/
5th ILS Proton Launch of 2009
- 54th Proton Launch for ILS
- 6th Telesat satellite launch with ILS Proton
- 13th Space Systems/Loral Satellite Launched on a Proton



THE MISSION



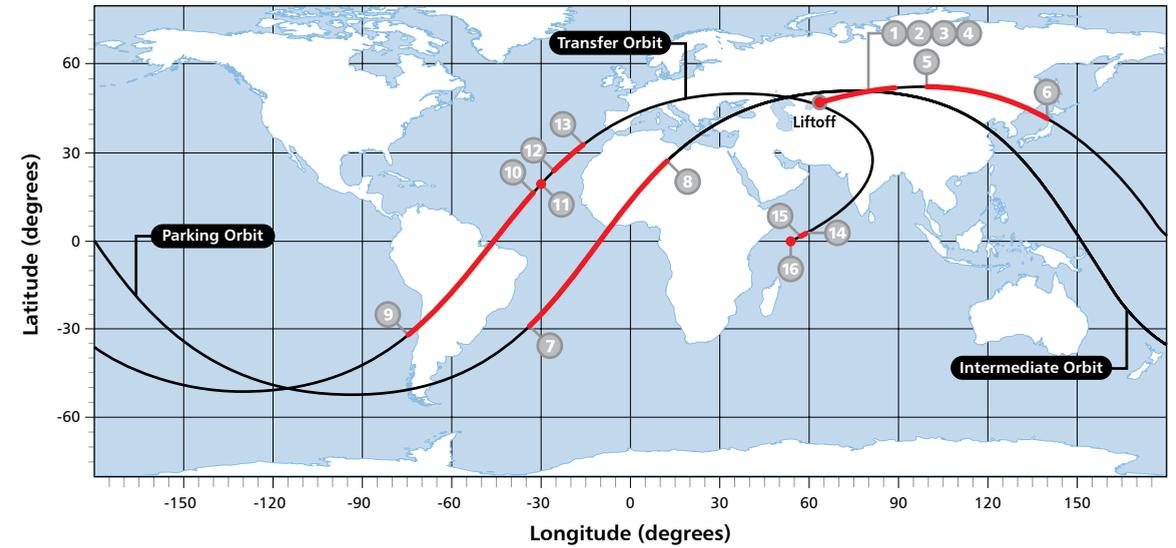
MISSION DESCRIPTION

The Proton M launch vehicle, utilizing a 5-burn Breeze M mission design, will lift off from Pad 39 at Baikonur Cosmodrome, Kazakhstan, with the Nimiq 5 satellite on board. The first three stages of the Proton will use a standard ascent profile to place the Ascent Unit (payload fairing, Breeze M upper stage and the Nimiq 5 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, and finally to a geo-transfer orbit. Separation of the Nimiq 5 satellite is scheduled to occur approximately 9 hours, 15 minutes after liftoff.



PROTON ON PAD 39

GROUND TRACK



ORBIT INSERTION

ASCENT PROFILE