

THE VEHICLE

THE SATELLITE

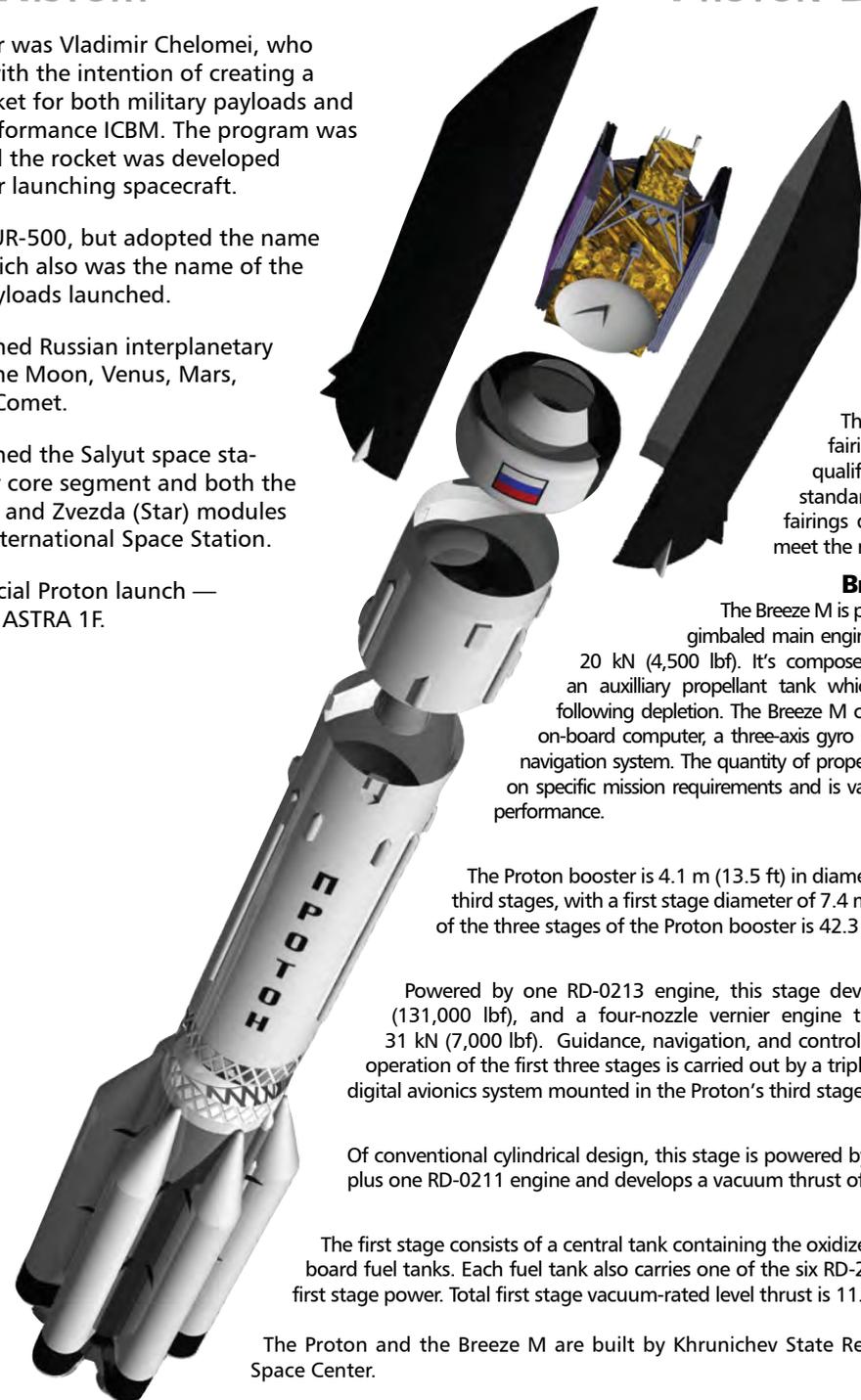


www.ilslaunch.com

PROTON HISTORY

- Lead designer was Vladimir Chelomei, who designed it with the intention of creating a powerful rocket for both military payloads and as 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 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's 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
5,900 kg

SATELLITE DESIGN LIFE
15 Years

SATELLITE MISSION
W2A has a triple band mission (Ku-band, C-band and S-band), expanding one of Eutelsat's most important and longstanding orbital neighbourhoods, 10° East. Extending Ku-band capacity for telecommunications services, W2A will serve Europe, North Africa and the Middle East via a fixed widebeam footprint and southern Africa and Indian Ocean islands via a second Ku-band fixed beam. Boosting Eutelsat's C-band resources, W2A will increase the fleet's C-band capacity for broadband and telecommunications services in Europe, Africa, the Middle East, India and Latin America, enabling interconnections across these continents. W2A will also feature a major innovation, carrying Europe's first S-band capacity. This state-of-the-art payload will be an essential building-block for a hybrid infrastructure over Europe, combining satellite and terrestrial networks, to provide universal coverage for mobile TV services and direct communications services such as security communications or crisis management. The S-band payload will be commercialised by Solaris Mobile, a venture jointly owned by Eutelsat and SES Astra.



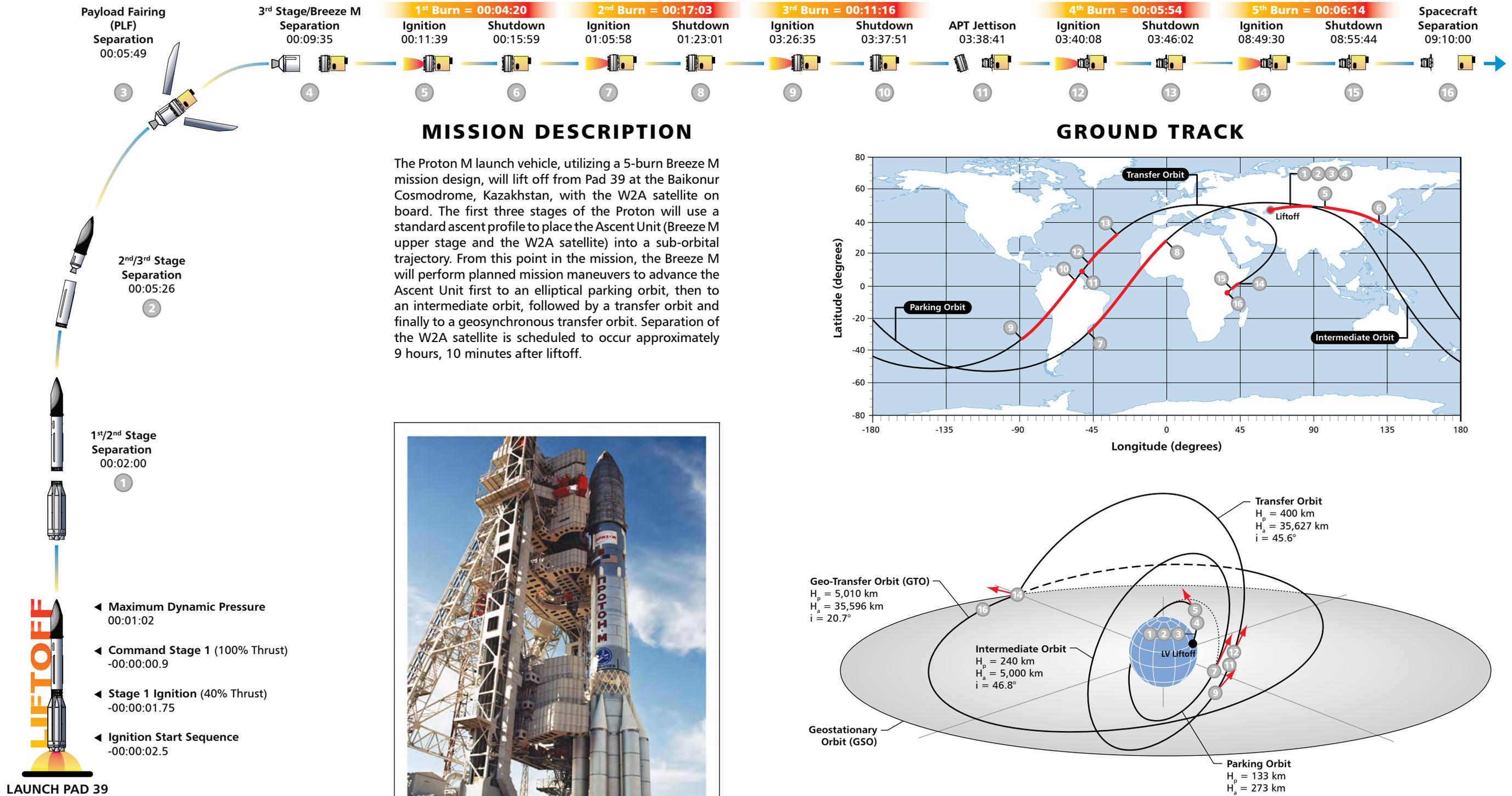
W2A

MISSION OVERVIEW

- 50th Proton Launch for ILS
- 4th Proton Launch for Eutelsat
- 4th Spacebus 4000 Launched on a Proton
- 1st S-band Satellite for Europe



THE MISSION



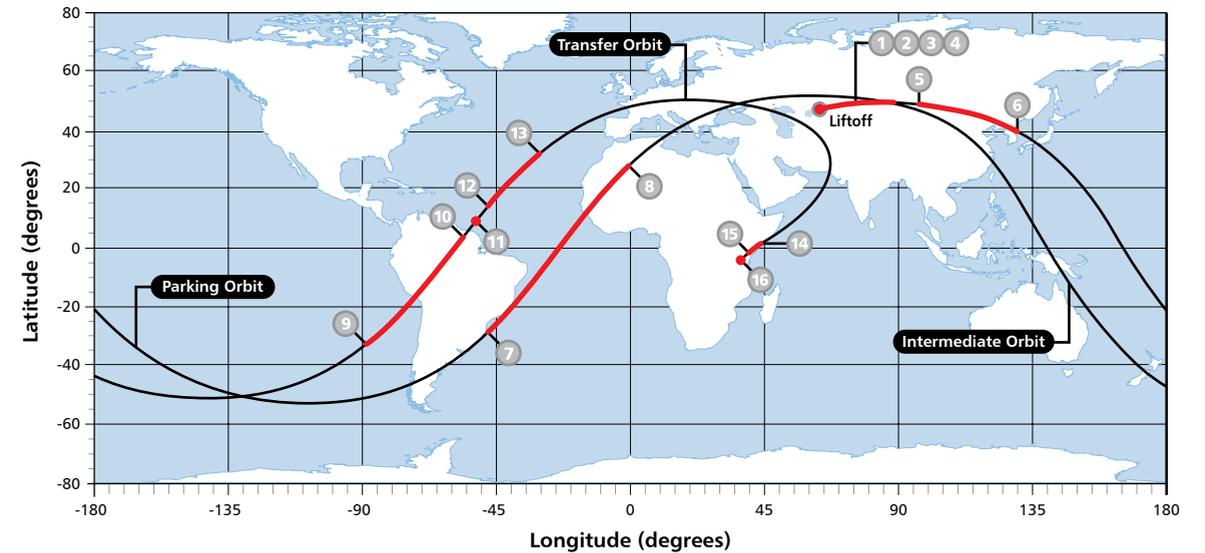
MISSION DESCRIPTION

The Proton M launch vehicle, utilizing a 5-burn Breeze M mission design, will lift off from Pad 39 at the Baikonur Cosmodrome, Kazakhstan, with the W2A satellite on board. The first three stages of the Proton will use a standard ascent profile to place the Ascent Unit (Breeze M upper stage and the W2A satellite) into a sub-orbital trajectory. From this point in the mission, the Breeze M will perform planned mission maneuvers to advance the Ascent Unit first to an elliptical parking orbit, then to an intermediate orbit, followed by a transfer orbit and finally to a geosynchronous transfer orbit. Separation of the W2A satellite is scheduled to occur approximately 9 hours, 10 minutes after liftoff.



PROTON M ON PAD 39

GROUND TRACK



ORBIT INSERTION

ASCENT PROFILE