

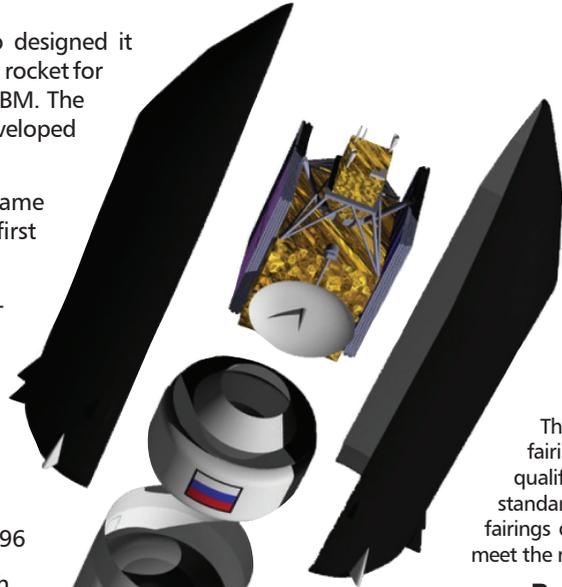
THE VEHICLE

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

PROTON DESCRIPTION



TOTAL HEIGHT
58.2 m (191 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 pumped 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 Khronichev State Research and Production Space Center.



SATELLITE OPERATOR

Sirius XM Radio Inc.
www.siriusxm.com

SATELLITE MANUFACTURER

SSL
www.ssloral.com

PLATFORM

SS/L 1300

SEPARATED MASS

6018 kg

SATELLITE MISSION LIFETIME

15 Years

SATELLITE MISSION

Sirius FM-6 is a high-power geostationary satellite from SiriusXM, America's largest radio broadcaster measured by revenue and one of the world's largest pure-play audio entertainment companies. Sirius FM-6 will help with the delivery of commercial-free music, and premier sports, news, talk, entertainment and Latin programming, traffic and weather to more than 25 million subscribers. Sirius FM-6 will also help in the delivery of traffic and other data service information to markets across North America for vehicles with navigational systems. SiriusXM is installed in vehicles of every major automaker and available for sale at retail locations nationwide. Sirius FM-6 will ensure SiriusXM's array of audio and data services are received by vehicles, mobile devices and home receivers and will play an important role in bolstering the continuity of service for years to come.



Mission Overview



Experience ILS: Achieve Your Mission

QUALITY | PERFORMANCE | EXPERIENCE | DEDICATION

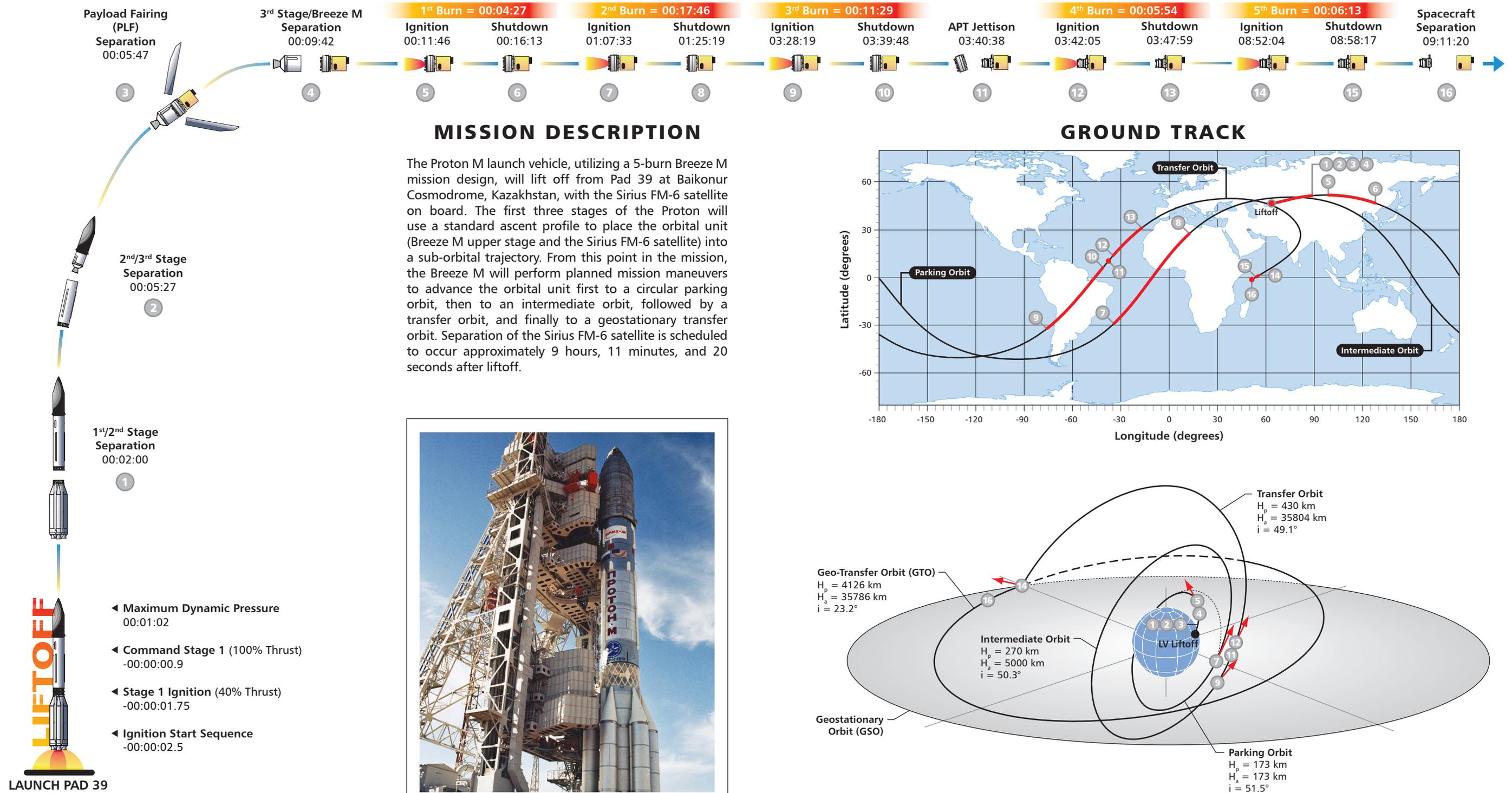


www.ilslaunch.com

Sirius FM-6

- 6th SiriusXM Satellite Launched on ILS Proton
- 6th ILS Proton Launch in 2013
- 27th SSL Satellite Launched on ILS Proton
- 83rd ILS Proton Launch Overall

THE MISSION



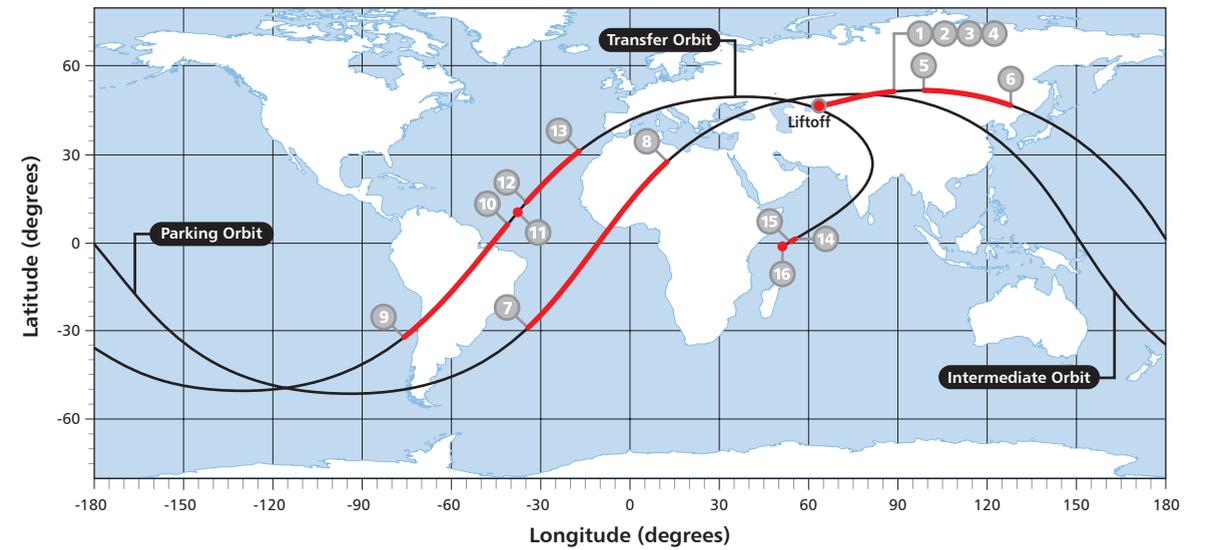
MISSION DESCRIPTION

The Proton M launch vehicle, utilizing a 5-burn Breeze M mission design, will lift off from Pad 39 at Baikonur Cosmodrome, Kazakhstan, with the Sirius FM-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 Sirius FM-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, and finally to a geostationary transfer orbit. Separation of the Sirius FM-6 satellite is scheduled to occur approximately 9 hours, 11 minutes, and 20 seconds after liftoff.



PROTON ON PAD 39

GROUND TRACK



FLIGHT DESIGN

ASCENT PROFILE