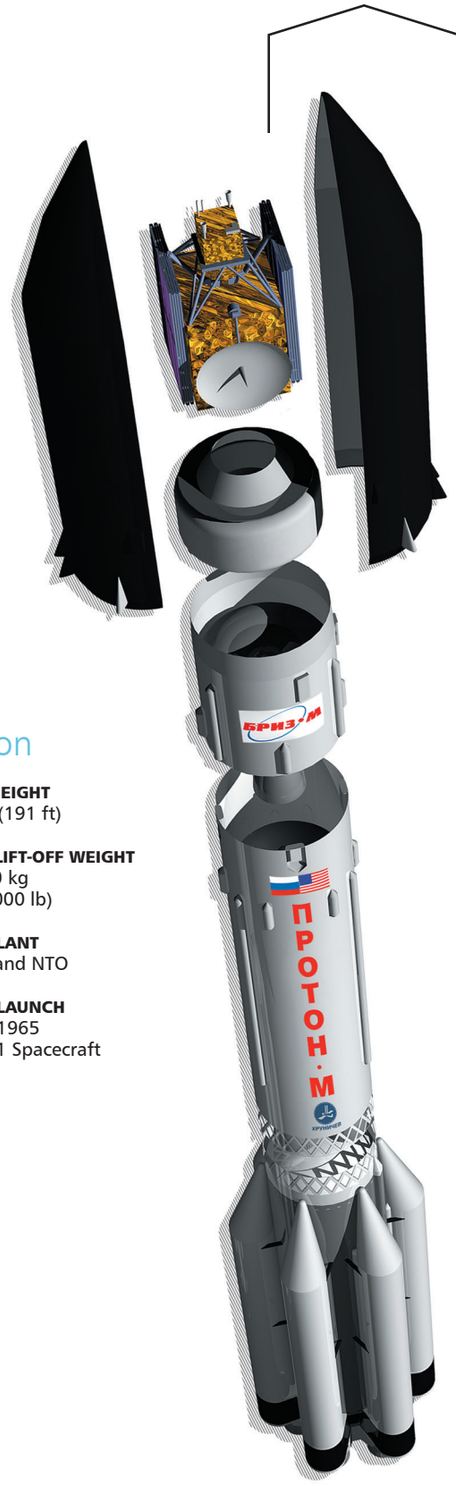
Proton

TOTAL HEIGHT
58.2 m (191 ft)

GROSS LIFT-OFF WEIGHT
705,000 kg
(1,554,000 lb)

PROPELLANT
UDMH and NTO

INITIAL LAUNCH
16 July 1965
Proton-1 Spacecraft



PAYLOAD FAIRINGS

This mission will utilize the standard PLF-BR-15255 commercial payload fairing which is 4.1 meters in diameter and 15.255 meters in length. The PLF encapsulates the satellite along with the Breeze M upper stage to provide protection from the dense atmosphere for the first 5 minutes and 47 seconds after launch.

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 consists of three stages (described below). The overall height of the three stages of Proton is 42.3 meters (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

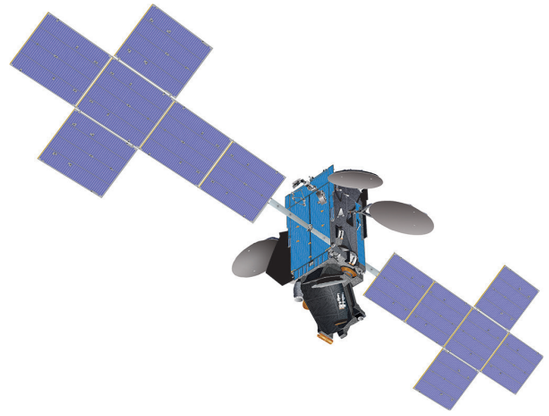
SATELLITE OPERATOR
AsiaSat
www.asiasat.com

SATELLITE MANUFACTURER
SSL
www.sslmda.com

PLATFORM
SSL 1300

SEPARATED MASS
6140 kg

SATELLITE DESIGN LIFETIME
15+ Years



SATELLITE MISSION

AsiaSat 9 is AsiaSat's most powerful satellite designed with enhanced performance, higher efficiency and greater flexibility for DTH, video distribution, VSAT broadband and mobility services. AsiaSat 9 is a replacement satellite for AsiaSat 4 at 122°E with 28 C-band and 32 Ku-band transponders, and a regional Ka-band payload. It carries the world's first dedicated Ku-band Myanmar beam, new Ku-band beams for Indonesia and Mongolia, in addition to two enhanced Ku-band beams serving Australasia and East Asia and a wider high-power C-band coverage across the Asia-Pacific region. The five Ku-band beams onboard AsiaSat 9 are equipped with cross-strap beam switching capability to provide flexible coverage.

Mission Overview

- **3rd** ILS Proton Launch in 2017
- **96th** ILS Proton Launch Overall
- **5th** AsiaSat Satellite Launched on ILS Proton
- **31st** SSL Satellite Launched on ILS Proton

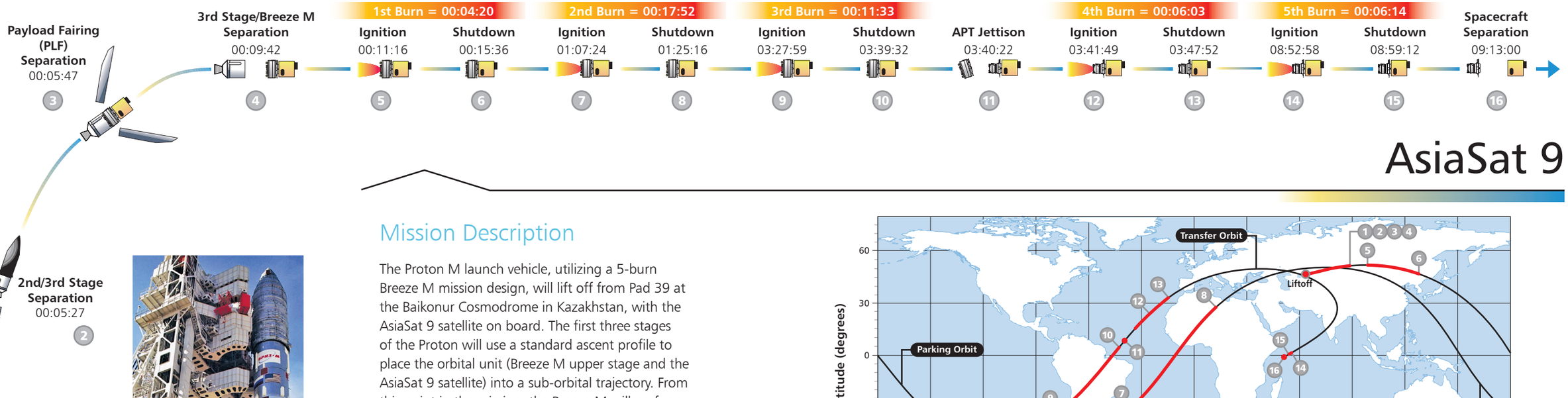
AsiaSat 9

ILS

KHRUNICHEV STATE RESEARCH AND PRODUCTION SPACE CENTER

www.ilslaunch.com

AsiaSat 9



Launch Pad
39

Ascent Profile

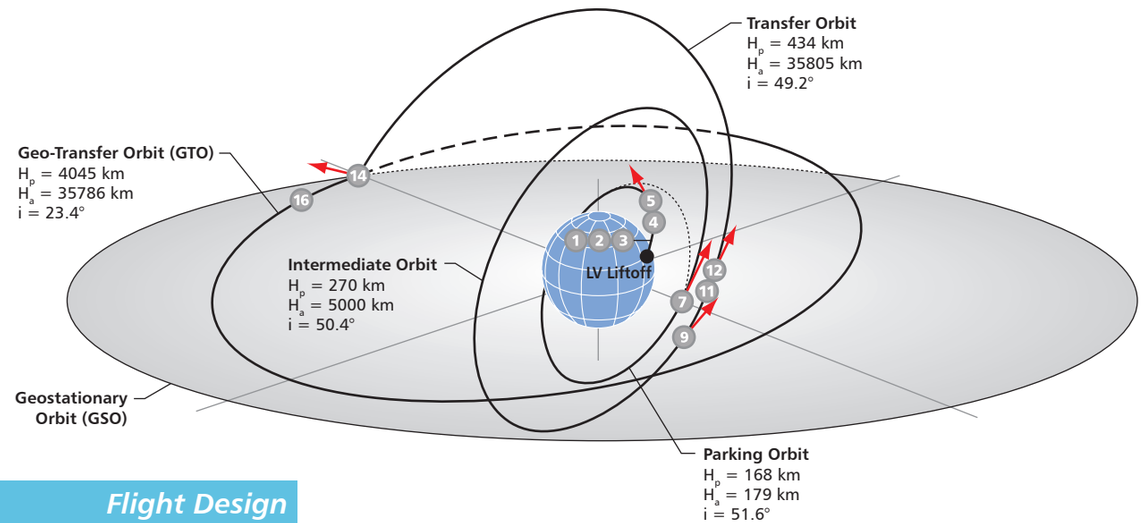
Mission Description

The Proton M launch vehicle, utilizing a 5-burn Breeze M mission design, will lift off from Pad 39 at the Baikonur Cosmodrome in Kazakhstan, with the AsiaSat 9 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 AsiaSat 9 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 nearly circular parking orbit, then to an intermediate orbit, followed by a transfer orbit, and finally to a geosynchronous transfer orbit. Separation of the AsiaSat 9 satellite is scheduled to occur approximately 9 hours, 13 minutes after lift-off.

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
- 400th Proton launch — 15 December 2014
- 50th year in service in 2015
- KhSC 100 year anniversary — 30 April 2016

Ground Track



Flight Design