IN ORBIT

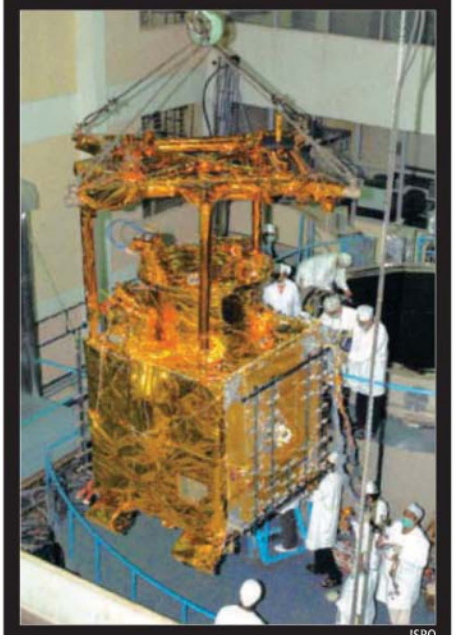
Edited by Frank Morring, Jr.

Back in Business

Russia's Proton Breeze M launch vehicle underscored its return to service with a Sept. 20 launch of Nimiq 4 for Telesat, hard on the heels of Inmarsat 4F3 on Aug. 19. That mission ended a five-month shutdown following a mid-March mishap that left SES Americom's AMC-14 stranded in useless orbit (*AW&ST* Sept. 1, p. 18). International Launch Services President Frank McKenna says 46 different quality initiatives were put in place to get the Proton M back on its feet, including independent and internal audits of prime contractor Khrunichev, Breeze M contractor Khimash and the Baikonur launch pad, and an in-depth review of the full Proton launch system and its quality-control processes. Khrunichev moved to involve designers more closely in production and testing, establish a single system-wide data bank, track more key parameters and upgrade quality control and measurement tools. For its part, McKenna says, ILS created a quality director, matching a step taken earlier this year by Khrunichev.

Killer Ap

Surrey Satellite Technology Ltd. says it has demonstrated a new "bundle" protocol that can compensate for frequent disruptions in space-based Internet transmissions. The bundle disruption- and delay-tolerant networking protocol, which had never been used before in space, successfully delivered sensor data from SSTL's UK-DMC, a British spacecraft in the company's disaster monitoring constellation. Four of the five satellites in the DMC rely on standard Internet-protocol networking to send mission-critical imagery. The first complete image—of South Africa's Cape of Good Hope—was downloaded in fragments in two satellite passes to a "bundle agent" at an SSTL ground station, using a Cisco Systems Internet router. From there it was sent to NASA's Glenn Research Center in Cleveland, where the fragments were reassembled before being returned to SSTL for post-processing and orthorectification. The process will be presented at the International Astronautical Congress in Glasgow, Scotland, on Sept. 30.



ISRO

LAUNCH DATE

Engineers at the Indian Space Research Organization (ISRO) are preparing to launch their country's first lunar spacecraft—Chandrayaan-1—on Oct. 22. The spacecraft is entering final vibration and acoustic tests at the ISRO Satellite Center in Bangalore. Set for launch on a Polar Space Launch Vehicle (PSLV-C11) from the Satish Dhawan Space Center on Sriharikota Island in the Bay of Bengal, the probe will perform high-resolution remote sensing of the Moon in the visible, near-infrared (NIR), low-energy X-ray and high-energy X-ray wavelengths. It will orbit the Moon for a planned two-year mission carrying six Indian and five international scientific instruments, which were designed to prepare a three-dimensional atlas with a resolution of 5-10 m. (16-32 ft.) of both the near and far sides and conduct chemical and mineralogical mapping of the entire surface. Chandrayaan-1 will take about eight days to get to its final orbit 100 km. (62 mi.) above the lunar surface. Weighing 1,304 kg. (2,900 lb.) at liftoff, the spacecraft will be launched into a highly elliptical transfer orbit with an apogee of about 24,000 km. and then raised to a lunar transfer orbit by multiple in-plane perigee maneuvers, which will boost the spacecraft to the required 386,000-km. apogee.

O3B Update

Sea Launch Co. will launch as many as two sets of eight satellites each for O3b, the Google-backed K_a-band satellite network intended to bridge the digital divide in emerging and isolated countries (*AW&ST* Sept. 15, p. 37). Sea Launch will develop a new multi-satellite dispenser for the Thales Alenia Space birds, which weigh about 700 kg. (1,540 lb.) each. The first launch is set for late 2010. Meanwhile, Gilat Satellite Networks will develop a new line of VSAT terminals to serve O3b. The terminals and associated gateway interfaces will be based on Gilat's SkyEdge platform and will include specific models for 3G cellular and WiMax backhaul, as well as IP trunking and broadband connectivity for small business and ISP backhaul. Start of service, which could ultimately include more than 2 million cellular and wireless towers, is expected in mid-2010.

Burst-Watching

By next month, NASA's Fermi Space Telescope will have the ability to repoint itself quickly for closer study of the unpredictable cosmic explosions known as gamma-ray bursts. Formerly the Gamma-ray Large Area Space Telescope (Glast), Fermi was launched in June and released its first-light image of the ever-changing gamma-ray sky in August (*AW&ST* Sept. 1, p. 14). The observatory features two primary instruments: the Large Area Telescope (LAT), which can survey the entire sky in 3 hr., and the Glast Burst Monitor (GBM). If either LAT or GBM detects a burst, it can direct the spacecraft to drop out of its nominal sky-survey mode and autonomously focus on the burst area for several hours—a capability similar to NASA's Swift telescope. Using its reaction wheels, Fermi can slew 75 deg. in 10 min. or less. The repointing ability has been tested, but the team is still fine-tuning it before it's incorporated into routine operations in October, according to Steven Ritz, Fermi project scientist at NASA's Goddard Space Flight Center. Fermi began its formal science phase in August, after a two-month checkout. The spacecraft is functioning well and has experienced only minor glitches.

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