

NASA sets November ISS date

TIM FURNISS/LONDON

NASA HAS set 20 November as the date for the International Space Station (ISS) project finally to get airborne. Six years later than planned when the project was initiated in 1984, Russia's Zarya control module will be the first section launched into space aboard a Proton booster.

The lift-off will be followed by the Space Shuttle *Endeavour* STS88 on 3 December, carrying the US Node 1 model, the Unity, which will be docked to the Zarya.

Russia's Service Module, however, will not be launched to the Space Station until July 1999 – a delay from April – and the first crew to operate on the orbital base will therefore not now arrive until January 2000 at the earliest (*Flight*

International, 9-15 September).

Russia will lease the use of its Service Module to NASA for \$60 million, with a further \$40 million later, to provide cash to assist the country to fulfill its ISS commitments. As a result, NASA is paying Russia for the Zarya – which was built under a separate \$200 million contract – as well as the Service Module. The latter was originally meant to have been supplied as part of the Russian commitment to the project.

The US space agency is to ask US Congress for an additional \$1.2 billion on top of about \$2 billion budgeted to keep the ISS programme on course in 1998. With NASA unable to rule out further Russian difficulties and its relations with Congress continuing to deteriorate, however, winning approval

for extra funds is not guaranteed.

A further \$500 million is planned to help Russia to supply Progress and Soyuz vehicles, while the remaining funds will be used to modify the three ISS Space Shuttle orbiters, the *Atlantis*, *Discovery* and *Endeavour*, to carry additional propellants to maintain the ISS' orbit.

In addition to the Service Module, there will be four ISS Shuttle missions and one Russian Progress refuelling flight in 1999.

The following year will see 15 ISS missions, including delivery of the NASA Laboratory Module and other equipment, and three Soyuz and six Progress missions.

The newly announced schedule casts doubt on the planned completion of the ISS in 2002-3 and it appears likely that 2004 is now a more realistic target. □

STEX is launched on third Taurus booster

ORBITAL SCIENCES launched its third Taurus booster from Vandenberg AFB, California, on 3 October, carrying the \$90 million National Reconnaissance Office (NRO) Space Technology Experiment (STEX) satellite. The STEX incorporates 29 new technologies, including a 5km-long Advanced Tether Experiment.

The Lockheed Martin-built 6,985kg STEX is designed to explore new commercial off-the-shelf technologies to enhance future space missions at a lower cost. It is the first of a planned series of missions by the NRO's Advanced Systems and Technology Directorate. The second is the GeoLite, built by TRW, which will be launched on a Delta 2 in 2001.

Other technologies on the STEX include an electric xenon ion propulsion module based on a Russian unit, a powerful solid-state data recorder, multifunctional solar cell arrays and high density nickel-hydrogen batteries. □

Ariane logs another success

ARIANESPACE launched Eutelsat's W2 and the Swedish Sirius 3 communications satellites into geostationary transfer orbit aboard the Ariane 44L/V111 from Kourou at 22:51 GMT on 5 October. The W2 was built by Alcatel (formerly Aerospatiale's satellite division) and the Sirius by Hughes Space and Communications. The launch came just 19 days after flight V110.

Another Eutelsat satellite, the Matra Marconi Space-built Hot Bird 5, was due to be launched by an Atlas 2A from Cape Canaveral on 9 October. Arianespace's next launch will be V113 on 28 October, using another 44L model, the payloads for which have not been officially confirmed. Flight 112, scheduled for 20 October, is the third development launch of the Ariane 503 (*Flight International*, 7-13 October).

■ The Boeing-led Sea Launch project's Odyssey floating launch pad arrived at Seal Beach, California on 4 October in preparation for the first launch of the Zenit 3 booster – of a dummy satellite – in March 1999 from the mid-Pacific. Boeing has paid a \$10 million penalty to the US Government to settle charges that it transferred military technology to Russia and Ukraine during the course of development work.

■ The next commercial customer for the ILS International Launch Services Russian Proton, the Telstar 6, which was to have been launched on 16 October, has been delayed until at least the end of November by Loral Space and Communications to conduct tests on French-German built travelling wave tubes that may be susceptible to thermally induced fatigue. □



Soyuz booked

SPACE SYSTEMS LORAL has signed a contract with Starsem, a joint venture of Russia's Samara, Arianespace and Aerospatiale, to launch 12 Globalstar satellites on three Soyuz boosters in 1999. This follows the loss of 12 satellites caused by the failure of a Zenit firing on 10 September, and brings to six the number of Soyuz Globalstar launches. Three of these, covering an initial 12 – the first planned for November – will have been completed before the end of this year.

NEWS IN BRIEF

■ MARS ENGINE TEST

Kaiser Marquardt has tested a low-temperature propulsion system that could be used for NASA's Mars Ascent spacecraft, which will attempt to bring back samples to earth in about 2005, or after. The hypergolic nitric oxide-monomethylhydrazine propellant thruster operates at -40°C, simulating the Martian surface temperature.

■ AEROSPIKE TEST

The first successful power-pack test of the Boeing Rocketdyne division's Linear Aerospike Engine for the Lockheed Martin X-33 sub-orbital technology demonstrator was completed at NASA's Marshall Space Flight Center, Alabama, on 1 October. The test calibrated the liquid oxygen and liquid hydrogen fuel turbopumps and settings.

SEPTEMBER SATELLITE LAUNCH LOG

No	Date	Spacecraft	Type	Launcher*	Country*	Launch site*
51	8 Sep	5 Iridium	Comsats	Delta 2/8>	USA 22	Vandenberg 5
52	16 Sep	PAS 7	Comsat	Ariane 4/6>	Europe 6	Kourou 6
53	22 Sep	8 Orbcomm	Comsats	Pegasus XL/4	USA 23	Air launch 4
54	29 Sep	Molniya 1/91	Comsat	Molniya M/3	Russia 16	Plesetsk 5

> Delta 7290/6, Ariane 44LP/2

+ 79 Iridiums launched, 72 operational, 5 in-orbit spares, 2 non-operational

Failures: Ukrainian/Russian Zenit 2 launched on 10 September from Balkonur failed to place 12 Globalstar satellites into orbit

Last Satellite Launch Log: *Flight International*, 23-29 September