CHINESE LAUNCH

China launched a Long March 4B from Taiyuan on 15 May carrying the 428kg (940lb) Fengyun 1D meteorological satellite and the country's first dedicated ocean-monitoring satellite, the 360kg Haiyang 1, into polar, sun-synchronous orbit. China plans to launch the biggest-ever thermo-optical/X-ray space telescope in 2005, but has ditched plans to launch a national direct broadcast satellite.

COBRA ADVANCES

The Pratt & Whitney and Gencorp Aerojet joint venture, established to support NASA's Space Launch Initiative, has completed testing on the first of three subscale preburners, the fabrication of a 40% milled channel-wall nozzle and prototype engine design reviews for the project. The partners are developing the Co-optimised Booster for Reusable Applications (COBRA) and expander cycle hydrogen-fuelled engines.

INTERNATIONAL SPACE STATION TIM FURNISS / LONDON

Endeavour cleared for next ISS building-block mission

Space Shuttle will install construction aid and carry cargo and replacement crew

The Space Shuttle *Endeavour* has been cleared for launch on mission STS 111 from the Kennedy Space Center, Florida. The flight will be a logistics, construction and crew exchange mission to the International Space Station (ISS) on 30 May.

During three spacewalks, the Canadian Mobile Base System will be installed to enable the Canadarm 2 robotic arm to move along a "railway track" on the ISS truss, which was installed on the previous Shuttle flight. The track will allow astronauts to continue building and maintaining the ISS. The two-man team will also replace a faulty joint on the robotic arm.

The Italian Leonardo logistics module will make its third cargo-carrying visit to the ISS as part of the mission.

The fifth ISS expedition crew will replace the fourth crew, which will return to Earth on 11 June.

The Elektron oxygen generator at the space station is working again following a week-long failure this month which forced the crew to use solid fuel oxygen candles to supply oxygen. The ISS has also overcome a thermal control system failure which placed the station in automatic "survival mode" for 3h on 20 May.

Meanwhile, Russia may be forced to train an extra Russian flight engineer to fly in the third seat of the next Soyuz TM spacecraft mission to the ISS in October because a third potential space tourist who was due to make the flight has not materialised in time for training.

■ NASA has confirmed the closer integration of the Space Shuttle and ISS programmes with the appointment of Michael Kostelnik as deputy associate administrator for the joint programmes, a new management position within the Office of Human Space Flight.

■ The possibility of a terrorist attack on the Space Shuttle *Columbia* is worrying NASA. *Columbia* is set for launch on 19 July on the STS 107 independent FreeStar science mission, carrying Israeli crew member Ilan Ramon.

MALFUNCTION

Generic processor fault strikes 601 craft again

Another former Hughes Space and Communications (HSC) – now Boeing Space Systems – 601 series spacecraft, DirecTV 3, has been hit by what appears to be a generic spacecraft control processor (SCP) fault. The problem has been found in 25 of this model of satellite built before mid-1997.

DirecTV 3, launched in June 1995, will become an in-orbit spare after suffering an SCP shutdown. Traffic has been diverted to DirecTV 4. With the recent Proton launch of DirecTV 5, the broadcasting company has operational satellites at 101°W, 110°W and two at 119°W in geostationary orbit. DirecTV 7S will be launched by an Ariane 5 next year.

The 601-based Galaxy IV, Galaxy VII and Solidaridad 1 satellites have already been written off as total losses after prime and back-up SCP failures. DirecTV 1, DirecTV 3, PanAmSat 4 and Galaxy IIIR have experienced single SCP failures.

The problem results from electrical shorts caused by tin-plated relay latching switches that act as on-off switches in the prime and back-up SCPs.

HSC found that a tiny crystalline structure, less than the width of a hair, can grow and bridge a relay terminal to its case, causing an electrical short. Boeing now uses nickel-plate switches and improved processes, which appear to have corrected processor faults on later 601 models.

■ Ball Aerospace and Technology has been selected to build: a National Polar Orbiting Operational Environment Satellite System (NPOESS); preparatory project spacecraft to provide a first flight opportunity for three NPOESS instruments; microwave and infrared sounders; and a visible/infrared imager radiometer. They will fly on the satellite in 2006.

LAUNCH VEHICLES

Atlas V closer to flight after countdown demonstration

The maiden flight of the first US Air Force Evolved Expendable Launch Vehicle programme Lockheed Martin Atlas V booster has moved a step closer with a second full launch day "wet" countdown demonstration test at Cape Canaveral, Florida. The Atlas V will make its maiden commercial flight, operated by International Launch Services, in July. The booster, with its first stage loaded with kerosene fuel, was rolled out vertically from the Lockheed Martin-built Vertical Integration Facility, then fully loaded with liquid oxygen oxidiser for the first and second stages and liquid hydrogen fuel for the Centaur second stage. It made two fully recycled countdowns to T-45s with a simulated abort and to T-1s with a simulated ignition. The Atlas V will launch Eutelsat's Hot Bird 6 communications satellite.