

COMMUNICATION SATELLITES

NASA accepts TDRS-H

Transfer of Tracking and Data Relay Satellite finally agreed after performance shortfall

Control of the Boeing-built TDRS-H tracking and data relay satellite, launched by an Atlas booster in June last year, has finally been transferred to NASA.

The transfer had been delayed because of inadequacies on the multiple-access phased-array antenna which resulted in five of the 18 TDRS-H communications services falling short of specifications. The spacecraft provides S-, Ku- and Ka-band communications services.

NASA and Boeing have tenta-

tively agreed on a settlement, the terms of which are being finalised. "We are certain that a repeat of this performance shortfall will not occur," says Randy Brinkley, president of Boeing Satellite Systems. High data rates using the single-access antennas are not affected.

The remaining "switchboard in the sky" satellites in the programme, TDRS-I and J, are scheduled for launch in October this year and October 2002. These satellites will double the capacity of

data transmission and provide nearly continuous communications between the Earth, the Space Shuttle, the International Space Station and dozens of unmanned scientific satellites.

The first six TDRS satellites were built by TRW, the first being launched in 1983. The H, I and J satellites add Ka-band single-access capability to the fleet, allowing high data rates at more favourable frequencies with less susceptibility to interference from the increasingly busy radio environment.

TECHNOLOGY TRIALS

X-33 engines get final test

The last of three hot-fire tests on the twin Boeing Rocketdyne XRS-2200 linear aerospike engines was conducted as part of NASA's Space Launch Initiative programme at the Stennis Space Center, Mississippi, on 6 August.

The engines, originally built for the cancelled X-33 programme, fired for 90s at 85% thrust, primarily to gain data on electro-mechanical actuator technology, which controls the flow of propellants. The technology, which will provide weight savings, is seen as a replacement for conventional pneumatic and hydraulic fluid systems.

EARTH MONITORING

Space station crew snaps Etna



The second expedition crew aboard the International Space Station took this image of Sicily's Mount Etna erupting. Several spacecraft, including NASA's Terra polar platform and the Orbital Sciences OrbView, equipped with the SeaWiFS sensor, have been monitoring the eruption and its effects on the environment, including lava movement in the immediate area and the extent of the volcanic plume and dust in the atmosphere.

SPACECRAFT DEVELOPMENT

India designs reusable spaceplane

India has designed a 25t reusable horizontal take-off and landing, air-breathing orbital spaceplane, dubbed Avatar.

Powered initially by turbofan, ramjet and scramjet engines, its cryogenic engine would ignite at 33,000ft (10,000m) altitude, using 15t of onboard liquid hydrogen and 21t of atmosphere-derived liquid oxygen.

India first plans to develop a 3t

"mini-Avatar" for demonstration purposes to be built by CIM Technologies within five years. The full-scale craft would require international funding for development in 10 years. Avatar would be able to fly 100 missions carrying up to 100t of payload.

Meanwhile, the Indian Space Research Organisation (ISRO) says the country's Polar Satellite Launch Vehicle, with alternate liquid- and

solid-fuel stages, will launch the Indo-French atmospheric research satellite Megha Tropiques in 2005.

ISRO and French space agency CNES have signed a memorandum of understanding to design and develop the satellite, which will be based on CNES's Proteus platform.

From its orbit at 867km and an inclination of 20°, Megha Tropiques will collect atmosphere and climate data.

GENESIS TAKES OFF

After five launch cancellations, NASA's solar wind-collecting spacecraft, Genesis, was launched by a Boeing Delta II from Cape Canaveral on 8 August. The Discovery programme spacecraft will make a three-year, 35 million km journey around the sun to return particles of solar wind to Earth in September 2004.

POLAR WIN

Boeing Satellite Systems has been awarded a \$130.8 million National Polar-orbiting Operational Environmental Satellite System (NPOESS) contract for two conical microwave imager-sounder (CMIS) instruments for a new series of satellites. The contract, which includes options for four more instruments, is potentially worth \$298 million. The NPOESS will combine two separate but similar satellites – the military Defense Meteorology Satellite Programme spacecraft and the civil National Oceanic and Atmospheric Administration satellite.

AGRANI APPROVAL

The Indian Government has approved Agrani Satellite Services' Rs3.543 billion (\$75.2 million) foreign investment proposal, clearing the way for India's first privately owned satellite communications system to have up to 74% foreign equity participation. The Alcatel-built Agrani satellite is due to be launched by a European Ariane booster late next year and the European launcher company has already expressed interest in taking a stake (*Flight International*, 17-23 July).

HISPASAT LINK

The recently-privatised Eutelsat European communications satellite operator will acquire a 21.15% stake in Spain's Hispasat organisation, with the potential to increase its holding to 30%. The companies plan to establish a joint venture company, Amazonas, which will launch a satellite into a 61° position in geostationary orbit to provide commercial services to the Americas.