

## NASA To Take Control Of TDRS-H Satellite

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Control of the Boeing-built Tracking and Data Relay Satellite, TDRS-H, launched June 2000, will be officially transferred to NASA's Goddard Space Flight Center by manufacturer Boeing Satellite Systems (BSS) upon government acceptance. Designed as a communications link between astronauts and Earth, as well as orbiting satellites to their ground stations, TDRS-H is one of three Tracking and Data Relay satellites under contract to BSS, a unit of The Boeing Company (NYSE:BA). The remaining two, TDRS-I and J, are scheduled to launch on Oct. 29, 2001 and October 2002, respectively.

TDRS-H is in excellent health and is ready to proceed toward providing services. The highly capable and flexible satellites will operate like a switchboard in the sky. Once in place, the three next-generation TDRS satellites will double the capacity of data transmission and will provide nearly continuous communications links between Earth and space for the Space Shuttle, the International Space Station, and with dozens of unmanned scientific satellites in low-earth orbit.

The TDRS satellites relay large volumes of user satellite data - including voice, television and scientific - from manned missions or orbiting scientific spacecraft back to ground control centers. TDRS supports spacecraft with research targets ranging from the birth of stars deep in distant galaxies to the subtleties of environmental phenomena on Earth. Though research approaches and instruments of these spacecraft vary widely, TDRS' two-way communications will serve all low- and medium-orbit customer vehicles generating this ground-breaking information. The TDRS fleet is also unique in its ability to follow the motion of fast moving satellites, providing nearly continuous communication with controllers and researchers on Earth. In addition to the Space Shuttle, other NASA programs using the TDRS fleet include the Hubble Space Telescope, STARlink, the Tropical Rainfall Measuring Mission (TRMM), Landsat (LSAT), the Earth Observing System (EOS), Expendable Launch Vehicle tracking, and the International Space Station.

TDRS-H adds Ka-band Single Access (SA) capability to the TDRS fleet, allowing for higher data rates at a more favorable band and making it less susceptible to interference from the increasingly busy radio environment. The SA data rates on TDRS-H are 300 megabits/second (Mbps) at Ku- and Ka-band, and 6 Mbps at S-band. TDRS-H carries the additional capability for Ka-band receive rates of up to 800 Mbps. Transmit data rates are 25 Mbps for Ku- and Ka-band, and 300 kilobits/second (Kbps) for SA S-band. The S-band Multiple Access (MA) phased array antenna has been designed to receive signals from five spacecraft at once at up to 3 Mbps, and transmit to a single user at up to 300 Kbps.

The acceptance of TDRS-H by NASA has been delayed due to a performance shortfall on the multiple-access phased array antenna. Five of the 18 communications services provided by TDRS-H are performing at less than specified capability due to this problem. The high data rate services that make use of the 15-foot-diameter Single Access antennas are not affected and are performing nominally. NASA and BSS have tentatively agreed to a settlement, the terms of which are being finalized. Negotiations are expected to be concluded in late August.

"We have identified the cause of the problem to be rooted in one specific material used in the assembly of the antenna, and have implemented straightforward corrective measures for TDRS-I and TDRS-J. We are certain that a repeat of this performance shortfall will not occur," said Randy Brinkley, president of Boeing Satellite Systems. "This antenna design is unique to the TDRS satellites, therefore no other Boeing 601 or 601HP satellites are affected," Brinkley added.

Boeing is the world's leading manufacturer of commercial communications satellites, and is also a major provider of space systems, satellites, and payloads for national defense, science and environmental applications.

The Boeing Company is the largest aerospace company in the world and the United States' leading exporter. It is NASA's largest contractor and the largest manufacturer of commercial jetliners and military aircraft. The company's capabilities in aerospace also include rotorcraft, electronic and defense systems, missiles, rocket engines, launch vehicles, satellites, and advanced information and communication systems. The company has an extensive global reach with customers in 145 countries.

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