Backgrounder

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TDRS K, L, M
Generation to Generation, A Lower Risk Relay

Description and Purpose:
The next-generation series of Tracking and Data Relay Satellites (TDRS) provides NASA with crucial crosslink communications capability between Earth-orbiting spacecraft and control and data processing facilities on the ground.

Customer:
NASA has returned to Boeing to build its next-generation series of Tracking and Data Relay Satellites (TDRS). The new Boeing-built TDRS-K series spacecraft will augment the earlier TDRS constellation that serves as NASA's means of continuous, high-data rate communication with the Hubble Space Telescope, the International Space Station and dozens of unmanned scientific satellites in low earth orbit.

The expertise of The Boeing Company and best-of-industry teams work together to deliver satellite solutions to NASA with superior program execution. Boeing has teamed with General Dynamics, which will update and modify the existing TDRS system ground terminals. The ground terminals, known as the White Sands Complex, provide the primary two-way communications link between the TDRS satellites and the user control centers and data processing facilities.

General Characteristics:
The TDRS-K series of satellites will incorporate a modern design based on flight-proven performance. The Boeing 601HP model spacecraft includes Boeing 702HP-class electronics, which are the standard for Boeing's current satellite product line. These new satellites will again provide high data rate Ka-band service capability.

Boeing will integrate its patented, innovative spring-back antenna design, first used and proven on the TDRS-H, I and J satellite series, into the new TDRS spacecraft. The 15-foot diameter antennae are designed with flexible membrane reflectors that fold up for launch, then spring back into their original cupped circular shape on orbit. The steerable, single-access antennas can simultaneously transmit and receive at S-band and either Ku- or Ka-band, supporting dual independent two-way communication.

Boeing is building the TDRS-K series of satellites at the Satellite Development Center in El Segundo, California. Boeing is a leading manufacturer of commercial communications satellites and also a major provider of space systems, satellites and payloads for national defense, science and environmental applications. The TDRS-K satellite was launched on January 30, 2013; TDRS-L launched on January 23, 2014; TDRS-M will be ready for delivery to the NASA customer in 2015.

Customer	NASA	NASA	NASA
Spacecraft	Boeing 601HP	Boeing 601HP	Boeing 601HP
Launch	TDRS-K	TDRS-L	TDRS-M
Date	2013	2014	2015 Est.
On-orbit Life	15 years	15 years	15 years

Background:
Boeing was awarded a contract to build NASA's TDRS K series in December 2007. Previously, Boeing built the three satellites in the TDRS-H, I and J series for NASA Goddard Space Flight Center in Greenbelt, Md. Launched between 2000 and 2002, these satellites continue to provide excellent service. The newest TDRS award for Boeing continues its role supporting NASA's key programs over a period that spans more than four decades.

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