

Section 1A Technologies for Future Spaceports and Ranges Space-Based Telemetry And Range Safety Flight Demonstration 1

Space-Based Telemetry and Range Safety (STARS) is a proof-of-concept project designed to reduce operational costs and increase operational flexibility using a satellite-based communications system to relay launch vehicle tracking data and telemetry to the ground and flight termination signals (FTS) from the ground to the vehicle with the necessary reliability and coverage. STARS comprises the Range Safety (RS) system for tracking and flight termination and the Range User (RU) system for voice, video, and vehicle/payload data.

Flight Demonstration 1 consisted of seven F-15B flights at Dryden Flight Research Center during summer 2003. These highly dynamic flights successfully demonstrated STARS' ability to maintain a communications link with the Tracking and Data Relay Satellite System. Contributors included ten NASA facilities and the US Air Force Eastern and Western Ranges.

All test objectives were met. Large amounts of data were recorded for analysis. All FTS commands sent were successfully processed, the RS GPS receiver maintained track except during extreme maneuvers, the RS telemetry was sent in near real-time to NASA facilities for monitoring, and the RU link margin met or exceeded predicted performance. The RS return link margin was less than predicted and post-flight testing is on-going to identify the root cause.

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