

NASA RANGE SAFETY PROGRAM 2005 ANNUAL REPORT

Enhanced Flight Termination System Program

The objective of the Enhanced Flight Termination System program is to develop the next generation flight termination system for the Department of Defense and NASA ranges. The program addresses robust command links for flight termination, including message formats, modulation methods, and encryption.

Previous Status

The Range Safety Group of the Range Commanders Council initiated a study task and ultimately selected continuous phase frequency shift keying as the modulation scheme, a 64-bit triple data encryption standard for security, and the layout of the 64-bit message for the new system. The Air Force Flight Test Center then let a contract to build prototype enhanced flight termination receiver decoders and an encoder for the ground transmitter. The receiver decoder and encoder units successfully demonstrated that the enhanced flight termination system would function in flight and in an operational setting. In August 2004, two contracts to develop the enhanced flight termination receiver decoder engineering development units were awarded to L-3 Cincinnati Electronics (CE) and Herley Industries.

Current Accomplishments

Currently, the Central Test and Evaluation Investment Program is funding the development of the flight termination receiver decoders, encoders, monitors, and encryption units for different range applications, such as uninhabited aerial vehicles, space launch vehicles, and missiles. Milestones accomplished this year are described below.

- During the first quarter of 2005, a request for proposal for the development of the encryption unit, encoder, and monitor was released and a contract awarded to L-3 CE in August. A system design review and a preliminary design review have already been held to resolve issues. Early delivery of the contracted hardware is expected.
- In June 2005, L-3 CE successfully delivered the flight termination receiver decoder engineering development unit shown below at the critical design review and was awarded a delivery order for qualification units with an expected Summer 2006 delivery date.
- In November 2005, the Herley Industries critical design review was conducted.

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Future Plans

The Enhanced Flight Termination System program plans to test the operational hardware on an advanced, mid-range, air-to-air missile in the summer of 2006 using the qualified flight termination receiver and the ground equipment currently under development.

The final phase of the program provides the mechanism to field ground systems for production and deployment on all Department of Defense and NASA ranges. This part of the program is expected to begin in the 2007 timeframe.