

Spider XM7 Network Command Munition

Executive Summary

- The Army uses Spider instead of persistent landmines to comply with the requirements of the 2004 National Landmine Policy.
- The Army continued fielding Spider Increment 1 low-rate initial production (LRIP) systems to deployed and non-deployed units during FY13.
- During FOT&E conducted in 1QFY13 (FOT3), Spider Increment 1 demonstrated effectiveness and suitability, overcoming deficiencies identified during FOT2.
- In February 2013, DOT&E published a post-FOT3 report to support an Army Full-Rate Production decision for the Spider Increment 1 system.
- During FY13, the Army completed requirements for the Spider Increment 1A program to become a program of record and awarded an Engineering and Manufacturing Development (EMD) contract to Northrop Grumman.

System

- The Army intends to use Spider as a landmine alternative to satisfy the requirements outlined in the 2004 National Landmine Policy that directs the DoD to:
 - End use of persistent landmines after 2010
 - Incorporate self-destructing and self-deactivating technologies in alternatives to current persistent landmines
- A Spider munition field includes:
 - Up to 63 Munition Control Units, each housing up to 6 miniature grenade launchers or munition adapter modules (the modules provide remote electrical and non-electrical firing capabilities)
 - A remote control station, used by the operator to maintain “man-in-the-loop” control of all munitions in a field
 - A communications relay device known as a “repeater” for use in difficult terrain or at extended ranges
- Spider incorporates self-destructing and self-deactivating technologies to reduce residual risks to non-combatants.
- Spider Increment 1A builds upon existing Spider Increment 1 capabilities with the addition of a new Remote Control Unit that will include an enhanced mapping capability and will provide the capability to communicate munition field status and location to the Mission Command System via radio frequency.



Mission

Engineer units of Brigade Combat Teams employ Spider to provide force protection and countermobility obstacles using lethal and non-lethal munitions. Spider functions as a stand-alone system or when combined with other obstacles to accomplish the following:

- Provide Early Warning
- Protect the Force
- Delay and Attrite Enemy Forces
- Shape the Battlefield

Major Contractors

Spider Increment 1

- Command and Control hardware and software: Textron Defense Systems – Wilmington, Massachusetts
- Munition Control Unit and Miniature Grenade Launcher: Alliant-Techsystems, Advanced Weapons Division – Plymouth, Minnesota

Spider Increment 1A

- Command and Control hardware and software: Northrop Grumman Information Systems Sector, Defense Systems Division – Carson, California

Activity

Spider Increment 1

- The Army continued fielding Spider Increment 1 LRIP systems to deployed and non-deployed units during FY13.
- During October through November 2012, the Army conducted Spider Increment 1 FOT3 in accordance with

a DOT&E-approved Test and Evaluation Master Plan (TEMP) and test plan.

- In February 2013, DOT&E published a post-FOT3 report stating Spider Increment 1 is operationally suitable, and remains operationally effective, lethal, and survivable.

ARMY PROGRAMS

- Following publication of the DOT&E Spider Increment 1 report, the Army scheduled a Spider Increment 1 Full-Rate Production decision for 1QFY14.

Spider Increment 1A

- In June 2013, the Spider Increment 1A program achieved several key objectives to become a program of record:
 - Headquarters, United States Army approved a Spider Increment 1A Capabilities Development Document.
 - DOT&E approved the initial Spider Increment 1A TEMP in support of the scheduled Milestone B decision. This TEMP included a requirement for the Army to provide an updated TEMP in FY14 following selection of a system contractor and identification of a materiel solution.
 - The Spider Increment 1A Milestone Decision Authority approved Milestone B and the system's entry into EMD.
- In August 2013, the Spider Increment 1A Program Management Office announced the selection of Northrop Grumman as the system contractor and awarded an EMD contract.
- At the end of FY13, the Army was updating the June Spider Increment 1A TEMP to reflect the materiel solution proposed by the Spider Increment 1A contractor. Contractor developmental testing is expected to begin in 3QFY14 and a Limited User Test to support a pre-Milestone C assessment is projected for 1QFY16.

Assessment

- In FOT3, Spider Increment 1 demonstrated resolution of suitability deficiencies discovered in FOT2 conducted in May 2010.
 - Spider is operationally suitable, and remains operationally effective, lethal, and survivable as previously reported based on data from FOT2 and previous testing.

- Operational effectiveness – a trained unit can employ Spider Increment 1 as a component of a protective obstacle and provide obstacle effects as desired by the commander.
- Lethality – Spider Increment 1 grenades and remotely-initiated munitions can produce personnel casualties. Army Modeling and Simulation determined the Spider Increment 1 can produce 30 percent casualties under the lethality Key Performance Parameter conditions.
- Survivability – Spider Increment 1 components are survivable in an operational environment.
- The two major deficiencies observed in FOT2 were demonstrated in FOT3 to be corrected through hardware and software modifications. The deficiencies were:
 - Failure to meet Munition Control Unit mission reliability and re-use requirements
 - Inability of a unit to “train-as-you-fight”
- FOT3 was the last test event for Spider Increment 1.

Recommendations

- Status of Previous Recommendations. The Army corrected Spider Increment 1 deficiencies addressed in previous recommendations.
- FY13 Recommendation.
 1. The Army should design the Spider Increment 1A Limited User Test to enable the characterization of the system's end-to-end mission effectiveness over the operational envelope to inform the system operators of its capabilities and limitations in the various conditions that will be encountered during combat operations.