

Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)

SUMMARY

- In September 2003, the Joint Program Executive Office for Chemical and Biological Defense restructured the program into Increments, requiring separate Test and Evaluation Master Plans (TEMPs) for each Increment.
 - The Army will mount the mobile configuration of Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD) Increment 1 on the Stryker Nuclear, Biological, and Chemical (NBC) Reconnaissance Vehicle.
 - The Services require integration of the JSLSCAD Increment 2 into the Joint Service Lightweight NBC Reconnaissance System (JSLNBCRS), and employment at fixed sites such as air bases and aboard Navy landing ship docks (or equivalent aviation capable amphibious ships).
- The Army's test of the JSLSCAD Increment 1 with the Stryker NBC Reconnaissance Vehicle during October and November 2003 demonstrated performance that did not meet requirements.
- The greatest challenge evaluating this system is to estimate its field performance to detect chemical warfare agents using simulants. This is to be accomplished through the use of modeling and simulation in accordance with recommendations from the National Research Council.



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SYSTEM DESCRIPTION AND MISSION

The Army intends the JSLSCAD Increment 1 to be a passive detector of chemical agent vapors at ranges from 0 to 2 kilometers when mounted in the Stryker NBC Reconnaissance Vehicle to provide real-time detection of specific classes of chemical warfare threats while on-the-move.

The JSLSCAD will have visual and audible indicators to display the chemical agent class (nerve and blister), and to indicate the azimuth and elevation (but not distance) to the detection. The operator may review and distribute the information manually or it will automatically be sent into Service command, control, communications, computers, and intelligence (C4I) systems via the host vehicle's communications systems. JSLSCAD is to be interoperable with the Joint Warning and Reporting Network when that system becomes available.

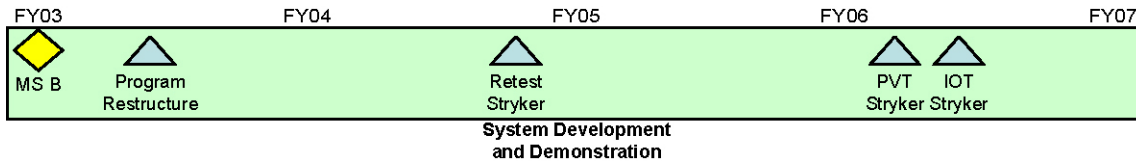
JSLSCAD Increment 1 consists of three major components: scanner module, sensor electronics module, and operator display unit. The Army plans to use the mobile configuration of JSLSCAD Increment 1 in the Stryker NBC Reconnaissance Vehicle.

Plans call for integration of JSLSCAD Increment 2 into the JSLNBCRS, and for employment at fixed sites such as air bases and aboard Navy landing ship docks (or equivalent aviation capable amphibious ships).

DOD PROGRAMS

Army and Navy helicopters, as well as selected Air Force C-130 aircraft, will carry JSLSCAD Increment 3. Present plans call for the JSLSCAD to be carried as an unmanned aerial vehicle payload, but the unmanned aerial vehicle has not been selected.

TEST AND EVALUATION ACTIVITY



The Army tested Increment 1 with the Stryker NBC Reconnaissance Vehicle during October and November 2003. Because it did not perform well, its processing algorithm was altered and it was re-tested in June 2004. JSLSCAD did not meet its minimum detection requirements in either test. In September 2003, the Joint Program Executive Office for Chemical and Biological Defense decided to restructure the program into Increments, requiring TEMP's for each Increment.

TEST AND EVALUATION ASSESSMENT

The program was restructured to address detection and identification processing problems. The proposed strategy is to use a limited number of the Increment 1 systems for integration into the Stryker Reconnaissance Vehicle. Three contractors have submitted their systems for the Increment 2 selection as a commercial buy upon completion of government testing. A test and evaluation strategy supporting this plan will be documented in the Increment 2 TEMP. The test strategy must include a protocol (such as that recommended by the National Research Council (NRC) for passive infrared standoff detectors) that can provide confidence that JSLSCAD can detect and identify actual chemical warfare agents in a realistic environment at standoff distances. Test limitations in the multi-Service operational test and evaluation will include the use of simulants instead of actual agents in field testing. Although the chosen simulants approximate spectral or physical characteristics of agents, they do not match them. Current testing is intended to support the ability to create a relationship between detecting and identifying concentration levels of real chemical vapors and concentration levels of simulant vapors used for field testing. Although a relationship between chemical warfare agents and their simulants can be established in a laboratory chamber setting, the relationship does not appear to carry over to field releases of the simulants. Implementation of the NRC recommendations is essential for an adequate test and evaluation strategy.

Other test limitations include the simulation of agent delivery by explosive, line, and stack-release devices instead of actual weapons and a restricted network warning capability instead of a full-theater or joint task force C4I system. Achieving ideal delivery conditions during tests is difficult; the uncertainties of weather and the desired effects of the atmospheric mixing layer dictate that releases are best made during pre-dawn hours, but this is the same challenge any threat force would face. The test site at Dugway, an isolated, desert location that does not represent military bases, cities, or many types of battlefields where JSLSCAD likely will be deployed, is a limitation. The Navy plans to conduct a test at sea, and the Air Force will test the system at Eglin Air Force Base.