

## Joint Chemical Agent Detector (JCAD)

### SUMMARY

- The Joint Chemical Agent Detector (JCAD) program was restructured during this fiscal year.
- Late in FY04, testing started for initial chemical detection and false alarm rejection testing of several commercial off-the-shelf (COTS) candidate devices.
- Evaluation for effectiveness, suitability, and survivability of the selected JCAD will occur in FY05.
- The JCAD's Test and Evaluation Master Plan is currently under revision and staffing within the Services.

### SYSTEM DESCRIPTION AND MISSION

The Services envision JCAD as a hand-held device that automatically detects, identifies, and warns users of the presence of nerve, blister, and blood chemical agents. The intent is to fasten JCAD to the operator's load-bearing equipment or mount it on a ground vehicle, aircraft, or ship.

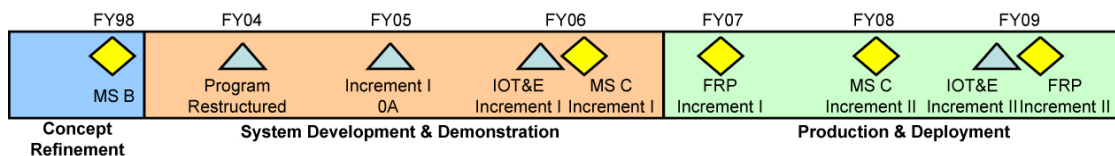
Increment I will provide a chemical detection capability that automatically and simultaneously detects, identifies, and quantifies acute point exposure of chemical warfare agent vapors by agent class and will be employed on individuals, vehicles, naval ships, and fixed site installations.

Increment II will provide all the capabilities of Increment I, with the addition of a capability to determine cumulative exposure and enhanced sensitivity. The JCAD Increment II will be employed on individuals, vehicles, naval ships, fixed site installations, and aircraft interiors.

The Services intend JCAD to replace the currently fielded M22 Automatic Chemical Agent Detector Alarm, Chemical Agent Monitor, Improved Chemical Agent Monitor, M8A1 Automatic Chemical Agent Alarm, and other unique Service detectors and alarms. All Services will use one basic JCAD configuration.

In October 2003, the Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD) determined that the JCAD program was in breach of its Acquisition Program Baseline. The JCAD technology, then under development, was not meeting technical performance, cost, or schedule goals. The detector did not meet the detection requirement for two of the required nine chemical warfare agents, had an unacceptably high false alarm rate, and experienced degradation following exposure to chemical agents. The JPEO-CBD restructured the JCAD program into the two increments defined above. The restructured program relies on selecting COTS devices to meet the users' requirements.

### TEST AND EVALUATION ACTIVITY



The Services are currently staffing the JCAD's Test and Evaluation Master Plan.

During August and September of 2004, the Army's West Desert Test Center at Dugway Proving Ground, Utah, conducted initial JCAD chemical surety testing. This testing supported an initial assessment of the chemical warfare agent detection capabilities of the COTS devices submitted by four manufacturers versus the performance of the currently fielded M22.

Also in August and September 2004, the Army's Developmental Test Command evaluated the performance of each of the COTS devices in rejecting false alarms while operating in several real world environments during a series of one-week monitoring events. These events took place at Nellis Air Force Base; Philadelphia Naval Shipyard; the Port of Norfolk,

## DOD PROGRAMS

Virginia; Ft. Hood, Texas; Wallops Island, Virginia; and Eglin Air Force Base. Combined with the initial chemical surety test data, this limited screening will allow the Joint Program Office to select, in early FY05, one or more COTS devices to continue on to a more rigorous round of testing during FY05.

### **TEST AND EVALUATION ASSESSMENT**

Chemical agents used on the battlefield or in terrorist incidents are unlikely to be pure chemical agents. Rather, these agents would contain impurities, stabilizers, by-products, and decomposition products. JCAD chemical surety testing must include challenging the JCAD with threat-realistic agents, as well as other mixes that threat forces would likely use against United States or allied forces.

Adequate JCAD operational testing must include the robust use of chemical agent simulants to evaluate the response of the JCAD, its operators, and the operators' associated units to simulated chemical agent challenges. Before these simulants are used under field conditions, the response of the JCAD to these simulants must be related to the response of the JCAD to actual chemical warfare agents. The JCAD testers must also address Service concerns about any hazards to personnel and equipment that are properties of some candidate simulants.