

M4 Joint Chemical Agent Detector (JCAD)

Executive Summary

- The Joint Project Manager and the Service Operational Test Agencies (OTAs) completed a comprehensive developmental and operational test (DT/OT) program for the JCAD Increment 1 during FY08. DOT&E delivered the JCAD Beyond Low-Rate Initial Production (BLRIP) Report to Congress in August 2008. The Joint Program Executive Office for Chemical and Biological Defense (JPEO(CBD)) made a full-rate production decision.
- JCAD Increment 1 is operationally effective and suitable for detecting blister, nerve, and blood chemical warfare agents. JCAD can detect chemical agents at concentration levels within time durations required to prevent acute health effects to personnel. Its performance was at least as good as currently fielded detectors. JCAD met user false alarm requirements.

System

- JCAD is a hand-held device that automatically detects, identifies, and alerts warfighters to the presence of nerve, blister, and blood chemical agent vapors, and some toxic industrial chemical vapors.
- JCAD Increment 1 is a non-developmental item modified from a commercially available device. It will operate as a stand-alone detector. It will be carried by personnel and placed onto various platforms, including ground vehicles, at fixed site installations, and at collective protection shelters. It supplements or replaces existing fielded chemical agent vapor detectors.
- The JPEO intends JCAD Increment 2 to be a commercially available device designed to detect lower levels of chemical vapors and have a networking capability.
- The total quantity of Increment 1 systems is 60,000 detectors, with 6,000 low-rate initial production. The total planned Acquisition Objective for JCAD is 145,150 detectors.
- The JCAD will be issued to:
 - Army squads
 - Marine platoons
 - Air Force aircraft, base reconnaissance, and ground-service personnel
 - Navy shore installations, and riverine or land-based units



Mission

- Units use JCAD to provide hazard level indication of chemical warfare agent and toxic industrial chemical vapors to alert personnel to take personal protection measures including masking and unit force protection measures.
- JCAD accomplishes the following tasks:
 - Personal chemical vapor detector
 - Monitor in and around a vehicle or shelter's interior and exterior, or aircraft interior
 - Fixed installation monitor or array of monitors to provide remote alarming

Prime Contractors

- Increment 1: Smith's Detection
- Increment 2: Contract not yet awarded

Activity

- The Joint Project Manager with the Service OTAs conducted a comprehensive DT/OT program for the non-developmental JCAD Increment 1 in FY06 and FY07. The Army Test and Evaluation Command led the Service OTAs in conducting the Multi-Service Operational Test and Evaluation (MOT&E) in accordance with the DOT&E-approved Test and Evaluation

- Master Plan (TEMP) and test plan. DOT&E delivered the JCAD Increment I Report to the congressional committees in August 2008.
- The program conducted initial customer developmental testing on three industry-provided candidates for the JCAD Increment 2 detector during FY08.

Assessment

- JCAD Increment 1 is operationally effective and suitable for detecting blister, nerve, and blood chemical warfare agents. JCAD can detect chemical agents at concentration levels within time durations required to prevent acute health effects to Service personnel. Its performance was at least as good as currently fielded detectors. JCAD met user false alarm requirements.
- JCAD is easy to operate, troubleshoot, and maintain. Its light weight and small size makes it more portable than currently fielded chemical warfare agent point detectors.
- The currently-fielded Automatic Chemical Agent Detector Alarm should be used instead of JCAD for the detection of VX nerve agent. The currently-fielded Improved Chemical Agent Monitor should be used instead of JCAD for detecting Sulfur Mustard and Lewisite.
- JCAD Increment 1 is not effective for detecting most toxic industrial chemicals.
- Due to concerns regarding the loss of sensitivity over time during developmental testing, the program manager developed a surveillance, inspection, and calibration plan for JCAD.

Recommendations

- Status of Previous Recommendations. The Joint Program Manager addressed DOT&E's previous recommendations.
- FY08 Recommendation.
 1. The Joint Program Manager should implement the surveillance, inspection, and calibration program for fielded JCADs.