Joint Nuclear, Biological, and Chemical Reconnaissance System (JNBCRS)

Executive Summary

- The Joint Service Light Nuclear, Biological, and Chemical Reconnaissance System (JSLNBCRS) Increment 1 completed First Article Testing and government production verification testing to assess readiness for Multi-Service Operational Test and Evaluation (MOT&E) in FY06. The Joint Program Executive Officer for Chemical and Biological Defense (JPEO(CBD)) shortened the program name to JNBCRS to match updated capabilities documents.
- The Army, Marine Corps, and Air Force operational test agencies conducted the JNBCRS Increment 1 MOT&E in April 2006. They conducted the MOT&E for Marine Corps and Air Force units employing Service-unique JNBCRS variants. They conducted the MOT&E in accordance with the DOT&E-approved test plan with one major exception. The exception was that testers released simulants, used to test Marine Corps JNBCRS crews employing the Joint Services Lightweight Standoff Chemical Agent Detector (JSLSCAD), in quantities much larger than approved in the test plan.
- The Joint Services Lightweight Standoff Chemical Agent Detector (JSLSCAD) performance against chemical warfare agents (CWAs) in different operational environments is evaluated with aid of modeling and simulation.
- The Air Force withdrew from the JNBCRS Increment 1 program based on a changed threat environment for airbases.
- The Marine Corps requested additional operational testing of JNBCRS Increment 1 for which planning is ongoing to conduct in FY08.
- The JPEO (CBD) plans to make a full-rate production decision for the JNBCRS Increment 1 in 1QFY09.
- The Joint Project Manager is developing an Increment 2 program using emerging technologies from the Joint Chemical Dismountable Reconnaissance System Limited Objective Experiment and the Chemical Unmanned Ground Reconnaissance Advanced Concept Technology Demonstration.

System

- The JNBCRS Increment 1 is a mobile suite of chemical, biological, radiological, and nuclear (CBRN) reconnaissance and surveillance sensors with communications integrated onto a Light Armored Vehicle (LAV) for the Marine Corps. The suite was integrated onto the High Mobility Multi-purpose Wheeled Vehicle (HMMWV) for the Air Force.
- A JNBCRS crew uses this suite to locate, detect, identify, mark, sample, and report CBRN hazards while the LAV's filtering and over-pressure system provides protection from CBR threats.
- The CBRN mission equipment package includes:
  - Joint Biological Point Detection System
  - Chemical and Biological Mass Spectrometer (CBMS) to detect liquid CWAs on the ground collected by a Dual Wheeled Sampling System (DWSS)
  - NATO standard markers and deployment system
  - Automatic Chemical Agent Alarm to provide point detection of CWA vapors
  - Radiological detectors
  - JSLSCAD has been removed from the JNBCRS Increment 1 configuration.

Mission

- Marine Corps NBC reconnaissance squads (two JNBCRS) conduct searches, surveys, surveillance, sampling, and reconnaissance (route and area) to confirm the presence or absence of CBRN hazards.
- These squads report CBRN information to the supported Marine Air Ground Task Force.

Activity

- The Army, Marine Corps, and Air Force operational test agencies conducted the JNBCRS MOT&E in April 2006 at Dugway Proving Ground, Utah, with Marine Corps and Air Force JNBCRS teams performing CBRN reconnaissance missions under realistic field conditions and simulant challenges. Testers executed the test plan as approved by DOT&E except they released simulants in larger quantities than approved in a threat test support package.

- The JSLSCAD project manager conducted modeling and simulation of the JSLSCAD's performance against CWAs in different operational environments.
- The Air Force withdrew from the JNBCRS Increment 1 program in March 2007 based on a changed threat environment for airbases. The Air Force desires an autonomous CBRN reconnaissance capability on unmanned air or ground vehicles.
- The Marine Corps requested to terminate integration of JSLSCAD onto the JNBCRS Increment 1 LAV in September 2007. The JSLSCAD meets the JNBCRS requirement for chemical standoff surveillance for some CWAs that produce vapor clouds, but does not detect and identify other CWAs.
- The Joint Requirements Oversight Council intends to review the JSLSCAD requirement in November 2007.
- The Marine Corps requested additional operational testing for the JNBCRS Increment 1. Planning is ongoing to test in FY08.
- The project manager added a rear-viewing camera and modified the DWSS for the CBMS. With procedural changes, these were customer-tested to improve the CBMS/DWSS reliability and availability.
- The JPEO(CBD) plans to make the full-rate production decision for JNBCRS Increment 1 in 1QFY09.

Assessment

- Although government and contractor technical testing verified key system performance parameters, software stability, and integration of the CBRN sensors were effective and suitable with limitations, the Marine Corps requested JNBCRS Increment 1 operational effectiveness and suitability be reconfirmed in additional operational testing.
- Naturally occurring atmospheric interferents degrade JSLSCAD detection performance.
- The Joint Biological Point Detection System provided very limited capability to detect biological warfare agents because the two JNBCRSs were not operated as part of a larger array.

Recommendations

- Status of Previous Recommendations. There were no previous recommendations.
- FY07 Recommendations. Confirm reliability improvements in the planned FY08 JNBCRS Increment 1 IOT requested by the Marine Corps.