

Stryker – Nuclear, Biological, and Chemical Reconnaissance Vehicle (NBCRV)

Executive Summary

- The 2006-2007 Initial Operational Test (IOT) demonstrated that the Stryker Nuclear, Biological, and Chemical Reconnaissance Vehicle (NBCRV) platoon in a Stryker Brigade Combat Team (BCT) is operationally effective for chemical surveillance and chemical route reconnaissance missions. Operational effectiveness for chemical surveillance and chemical route reconnaissance missions resulted from redundancy among the three NBCRVs in the platoon. The NBCRV platoon was not operationally effective for chemical area reconnaissance missions. Single NBCRV teams were not operationally effective. The Stryker NBCRV is not operationally suitable because the base vehicle and its mission equipment package are not yet reliable. The Stryker NBCRV needs performance, safety, and reliability improvements, which will be evaluated in a Reliability Growth Test. The project managers for the NBCRV and its mission equipment package are actively working reliability corrective actions and verification.
- The Stryker NBCRV LFT&E program found the NBCRV has similar vulnerabilities as other Stryker variants but its mission equipment package is more vulnerable to ballistic damage than other Stryker variants.
- The Army expanded its plan to field Stryker NBCRVs increasing from 39 to support Stryker BCTs to 355 to include the support of Heavy BCTs and Chemical Companies.
- The Army will seek a low-rate initial production (LRIP) or full-rate production (FRP) decision in 2QFY08.

System

- The NBCRV is one of 10 specialized variants of the Stryker family of vehicles. The NBCRV uses a modified Infantry Carrier Vehicle chassis.
- Chemical, biological, and radiological sensors and communications are integrated with the Stryker base vehicle to perform chemical, biological, radiological, and nuclear (CBRN) detection, identification, marking, sampling, and reporting of these hazards.
- The NBCRV's armor provides ballistic protection to the crew against small arms, mines, and artillery fragments. The armor has been enhanced with slat armor. The vehicle is also equipped with a filtering and over-pressure system that provides protection from CBR threats.
- The CBRN mission equipment package includes:
 - Joint Biological Point Detection System
 - Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)



- Chemical and Biological Mass Spectrometer to detect liquid chemical warfare agents on the ground collected by a Surface Contamination Sampler
- Chemical Vapor Sampling and Storage System
- NATO standard markers and deployment system
- Automatic Chemical Agent Detector Alarm to provide point detection of chemical warfare agent vapors
- Radiological detectors
- A NBCRV team consists of an NBCRV and its four-person crew. Two or more teams are organized into CBRN reconnaissance platoons. These platoons are assigned to a:
 - Stryker Brigade Combat Team (BCT), with one platoon of three NBCRVs
 - Heavy BCT, with one platoon of two NBCRVs
 - Chemical Company – Combat Support, with one platoon of six NBCRVs; this company is assigned to a Division or Corps

Mission

- CBRN reconnaissance platoons perform tactical route and area reconnaissance and tactical surveillance operations. A CBRN reconnaissance platoon, as part of an early entry combat force, is capable of limited independent operations.
- Each NBCRV team, a NBCRV and its four-person crew, reports information to the Reconnaissance Squadron in the Stryker BCT and other units within a BCT based on platoon employment for an assigned mission.

ARMY PROGRAMS

Activity

- DOT&E approved the revised NBCRV Test and Evaluation Master Plan (TEMP) in April 2006.
- The program manager conducted government production verification tests in 1QFY06-3QFY07.
- Army testers successfully completed a test event in July 2006 to demonstrate the vehicle's capability for deployment on a C-130 transport aircraft.
- The Army's NBCRV LFT&E program completed in FY07.
- The Army conducted the NBCRV IOT in August-October 2006 in accordance with the DOT&E-approved test plan with one exception. Biological simulant releases to test the biological point detector on the NBCRV were not in accordance with the approved threat test support package.
- The JSLSCAD program manager continued modeling and simulation of the JSLSCAD's performance against chemical warfare agents in different operational environments through July 2007.
- The Army conducted a Soldier Demonstration in May 2007 to assess base Stryker vehicle and CBRN mission equipment package modifications and procedures changes recommended from IOT findings.
- The Army expanded its plan to field Stryker NBCRVs to support Stryker BCTs from 39 to 355 to support also Heavy BCTs and Chemical Companies.
- The United States Army Chemical School is staffing doctrinal changes to use two or more NBCRVs in a mission set for all NBCRV-equipped units.

Assessment

- DOT&E focused its evaluation on the ability of the Stryker BCT CBRN reconnaissance platoon's three NBCRVs to accomplish its mission. The platoon demonstrated in the IOT that it is operationally effective for chemical surveillance

and chemical route reconnaissance. Effectiveness resulted from redundant coverage by sensors. The platoon was not successful for chemical area reconnaissance missions. Single NBCRV team performance was not operationally effective. The Stryker NBCRV base vehicle and its mission equipment package are not yet reliable.

- The Joint Program Executive Office for Chemical and Biological Defense provides the mission equipment package for the NBCRV as government-furnished equipment. The Army operational test agency conducted operational testing with three NBCRVs operating as a platoon. Testers executed biological simulant releases not in accordance with the approved test plan.
- The Surface Contamination Sampler (SCS) used with the Chemical Biological Mass Spectrometer was easily misaligned or damaged during off-road operation causing 10 times greater unscheduled maintenance than the user requires. The project managers demonstrated improved user procedures to stow and protect the SCS in a Soldier Demonstration conducted by Army Test and Evaluation Command in May 2007.
- NBCRV employment is in squads of two in Heavy BCTs and Chemical Companies. The IOT did not adequately test employment of squads.

Recommendations

- Status of Previous Recommendations. The Army accepted all previous recommendations.
- FY07 Recommendation.
 1. The Army should conduct additional operational testing to validate reliability, availability, and maintainability improvements and assess squad performance before fielding to Heavy BCTs or to Chemical Companies.