NUCLEAR, BIOLOGICAL, AND CHEMICAL RECONNAISSANCE SYSTEM (NBCRS) BLOCK II

Army ACAT III Program		**Prime Contractor**
Total Number of Systems:	33 (thru FY05)	TBD
Total Program Cost (TY$):	$113M	
Average Unit Cost (TY$):	$2.3M	
New Material Release:	1QFY05	
First Unit Equipped:	2QFY05	

SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2020

The Nuclear, Biological, and Chemical Reconnaissance System (NBCRS) is intended to detect, identify, mark, collect samples, and report chemical and radiological contamination on the battlefield. The NBCRS crew accomplishes these functions by using a sophisticated suite of nuclear and chemical alarms and detectors integrated within the vehicle chassis. The Block I version of this vehicle (the M93A1 Fox), which is currently being fielded, has an on-board M21 Remote Sensing Chemical Agent Alarm. The M21 allows the crew in a stationary vehicle to detect remote chemical agent clouds. The crew can perform chemical and radiological reconnaissance operations while operating in a shirtsleeve environment inside the NBCRS vehicle, even while the vehicle is operating in a contaminated area.

Block II will provide capabilities beyond that of the Block I variant. The Block II vehicle will incorporate the latest technology in nuclear, biological, and chemical agent detectors, as well as the capability of being far more fully integrated into the digitized battlefield.

Block II will be equipped with the Chemical Biological Mass Spectrometer (CBMS) Block II, which will provide an enhanced chemical detection system as well as a capability to detect and identify biological agents. The Block II version will also replace the M21 with the Joint Services Lightweight Stand-off Chemical Agent Detector (JSLSCAD), which will provide the vehicle with on the move, 5-kilometer stand-off chemical agent vapor detection capability.

Additional Block II improvements include a meteorological on-the-move capability and the latest navigational and mapping technologies. Block II is also planned to incorporate remote detection capability through the use of unmanned aerial vehicles and unmanned ground vehicles, as well as enhanced real-time feedback through satellite communications.

NBCRS is intended to be one of the Infantry Carrier Vehicle variants of the IAV, which will improve the survivability and mobility of Army ground forces by providing increased situational awareness and ***information superiority*** to supported headquarters and combat maneuver elements. With the ability to provide rapid and accurate chemical and radiological contamination information to these elements, the NBCRS vehicle forms a key portion of ***full-dimensional protection***.

BACKGROUND INFORMATION

Based on the perceived need to quickly field a chemical reconnaissance vehicle to U.S. forces in Europe in the late 1980s, the NBCRS Non-Developmental Item program was structured into three acquisition phases. The first phase, Interim System Production, provided 48 urgently needed German-produced vehicles (designated the M93) that met many of the American requirements. As part of this phase, the German government donated an additional 60 Americanized German M93 vehicles to the U.S. government in support of Operation Desert Storm.

The second phase, the System Improvement Phase, designed a vehicle (designated the XM93E1) that satisfied all American operational requirements. This vehicle underwent IOT&E from March-May 1994 at Ft. Bliss, TX. The Director determined that, combined with chemical warfare agent test results from Dugway Proving Ground, UT, the test was adequate, but the vehicle was neither operationally effective nor operationally suitable. That assessment was based on the system demonstrating chemical warfare agent detection capabilities well below the requirement, the need for excessive maintenance, and low reliability. Crew performance indicated inadequate training and/or overly complex tasks.

After integrating significant human factor improvements into the XM93E1, the Army type-classified the vehicle in June 1995 as the M93A1. The Director approved the NBCRS TEMP in December 1996. This TEMP included plans for an operationally focused Limited User Test (LUT) to be conducted as a part of the vehicle's Production Verification Testing.

The third phase of the program, the Block I modification phase, upgraded many of the M93 vehicles to the M93A1 configuration. The Test and Experimentation Command conducted the LUT in May 1998 at Yuma Proving Ground, AZ. It consisted of two M93A1 Block I configured NBCRS vehicles, each completing two 96-hour scenarios at wartime operational tempo. The vehicles performed

both route and zone/area reconnaissance operations. The Director determined that this test provided enough information to assess the system as operationally effective, operationally suitable, and survivable.

TEST & EVALUATION ACTIVITY

During FY00, no testing was conducted on the Block II NBCRS vehicle itself. However, testing was conducted on various components that will be integrated into the Block II vehicle. The JSLSCAD and the CBMS Block II, which are being developed under separate programs, are currently undergoing engineering development testing.

Once the JSLSCAD, CBMS, and other sensors have been individually developed, they will be integrated into the NBCRS Block II.

TEST & EVALUATION ASSESSMENT

DOT&E is monitoring the integration of the various components into the overall vehicle system. Once this integration process is completed, DOT&E will review for approval both the TEMP and test plans for the operational testing of the Block II.

CONCLUSIONS, RECOMMENDATIONS AND LESSONS LEARNED

The NBCRS Block I LUT demonstrated the need for the system vehicles under test to operate as part of a functioning tactical unit, including the presence of good unit leadership. Several times during the test, vehicle operators reported chemical reconnaissance results that, upon reflection, were either clearly inaccurate or insufficient to meet supported units requirements. A functioning unit command and control element would have provided the crews a more realistic environment for real-time feedback on the sufficiency of their performance.

It is important that it be determined before a test whether the test unit will use school-approved doctrine or the unit's own Standard Operating Procedures (SOP). During the NBCRS Block I LUT, the unit's SOP conflicted with school-approved doctrine. Since the test was constructed based on the school doctrine, the unit's non-compliance with this doctrine affected test conduct and assessment. Due to the short length of the test and the absence of NBCRS unit leadership at the test site, the test director had little time or influence to modify unit operating procedures. Test results had to be assessed with consideration for the different operating guidance.