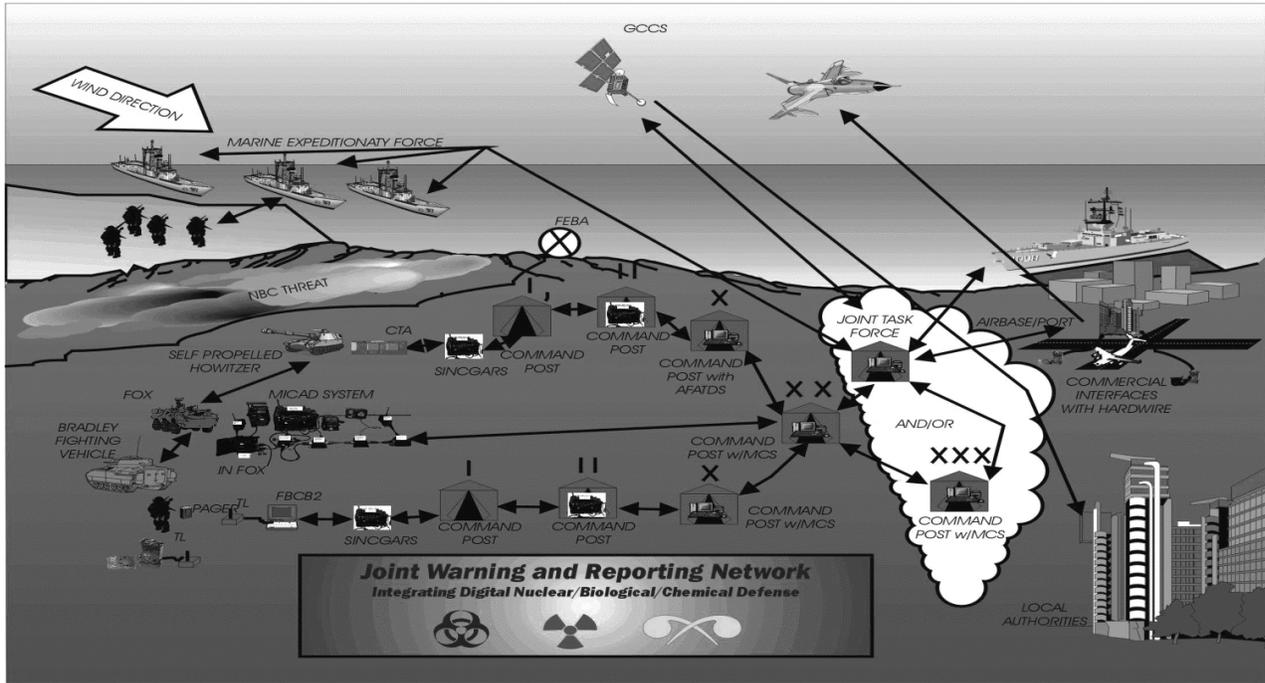


## JOINT WARNING AND REPORTING NETWORK (JWARN)



### USMC ACAT III Program

Total Number of Systems:	
HID	49,349
Software	2,380
Total Program Cost (TY\$):	\$135.44M
Average Unit Cost (HID) (TY\$):	\$1,700
Full-rate production:	1QFY04

### Prime Contractor

Source selection completed. Contractor will be announced after MS II

### SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2020

The Joint Warning And Reporting Network (JWARN) is a standardized software application that is intended to provide NBC warning and reporting, downwind hazard prediction, operations planning, and NBC management capabilities for Joint Forces, from battalion to theater-level command. JWARN will be located in the NBC Cell of Command and Control Centers and employed by NBC specialists and other designated personnel. In peacetime, JWARN will assist local commanders to assess and predict the effects of Toxic Industrial Materials (TIM) accidents. Its primary functions are summarized below:

#### *Essential Wartime tasks*

- Report and warn Commanders and personnel of NBC attacks.
- Perform analysis of NBC information, and conduct hazard prediction, modeling, and simulation of NBC attacks.
- Support planning and assessments of NBC defense.

### *Peacetime tasks*

- Support assessments and predict effects of TIM accidents.

### *Supporting tasks*

- Support sensor management including maintenance planning, configuration control, performance monitoring, and testing.
- Perform Network Security.

JWARN will be hosted by Joint and Service-unique C<sup>4</sup>ISR systems, and will share with other data bases – linked in common to the host – information on friendly and enemy forces, terrain, and weather. JWARN will also be required to use the host's messaging and overlay generators to perform its essential tasks. As a C<sup>4</sup>ISR-interoperable application, JWARN is required to be compliant with the Joint Technical Architecture (JTA) and its Defense Information Infrastructure Common Operating Environment (DII COE) to facilitate the exchange of compatible information. JTA and its mandated DII COE is a broad set of common DoD guidelines, standards, and specifications for C<sup>4</sup>ISR software applications and operating systems. Compliance with these standards is the first step toward achieving interoperability of software applications. JWARN is intended to interoperate with the following C<sup>4</sup>ISR systems: Global Command and Control System (GCCS), GCCS-Army (GCCS-A), GCCS-Maritime (GCCS-M), Maneuver Combat System (MCS), the Theater Battle Management Core Systems (TBMCS), Force XXI Battle Command, Brigade and Below (FBCB2), Advanced Field Artillery Tactical Data System (AFATDS), and Command and Control PC (C2PC).

This system is intended to exchange information with legacy and new development NBC sensors, including the M8A1 Chemical Agent Alarm, M21 Remote Sensing Chemical Agent Automatic Alarm (RSCAAL), M22 Automated Chemical Agent Detection Alarm (ACADA), Integrated Point Detection System (IPDS), RADIAC AN/VDR-2, RADIAC ADM-300A, and the following Oversight systems: Joint Biological Point Detection System (JBPDS), Joint Services Lightweight Standoff Chemical Agent Detector (JSLSCAD), Joint Chemical Agent Detector (JCAD), NBCRS Fox, and Joint Services Light NBC Reconnaissance Vehicle (JSLNBCRS). A Hardware Interface Device (HID) will link these NBC sensors to JWARN and Service command and control systems via radio or wire communications.

JWARN supports *Joint Vision 2020* goals of *full-dimensional protection* and *situational awareness* by providing new information warning and dissemination systems for commanders.

## **BACKGROUND INFORMATION**

The Marine Corps is the lead Service for JWARN development, and the Commander, Marine Corps Systems Command, is the Milestone Decision Authority (MDA).

The program is associated with a Joint DoD Mission Need Statement for NBC Defense, dated July 16, 1999. A draft Joint Operational Requirements Document (JORD), dated July 27, 1999, is in the final stages of staffing, and will be the baseline for operational testing and the Milestone III decision. Although the Capstone System Threat Assessment (STAR), Chemical and Biological Systems, dated June 2, 1997, has expired, the program responds to numerous threat documents, including the Defense Intelligence Agency Threat Environment Projection: Chemical and Biological Warfare 2000-2025.

The current program evolved from an earlier program called Block I JWARN. In FY97 the MDA approved the fielding of Block IA, which comprised a collection of Commercial and Government Off-The-Shelf (COTS/GOTS) software: NBC analysis for DOS, Hazard Prediction Assessment Capability (HPAC), Vapor Liquid, Solid Tracking (VLSTRACK), and Emergency Information Management System (EMIS). Since this initial fielding, JWARN functions have been successfully integrated with the Army's UNIX-based Maneuver Control System (MCS) (Block IB), and with the Windows 98 and Windows NT operating environments for the USAF, USN, and USMC (Block IC). Blocks IA and IC have been fielded. Block IB was not fielded, but successfully demonstrated the compatibility of JWARN with the JTA and DII COE. Additionally, Block IB demonstrated the transfer of information between an Army legacy chemical sensor (MICAD), a hardware interface, and the tactical Internet. The Block I program eventually led to the formal designation by OSD of HPAC and VLSTRACK as standard DOD hazard prediction models.

Block IA and Block IC testing has been technical, focused on stand-alone functionality and integration with the Windows operating system. Block IB integration of basic JWARN functionality with MCS is significant, since this architecture, including the use of an open DII COE compliant operating system, shared data bases, and message servers, is typical of the C<sup>4</sup>ISR systems targeted by JWARN. Block IB testing was a limited, and successful, technical demonstration of information compatibility and DII COE compliance. Following an evolutionary approach to development, Block I has served as a significant risk-reduction measure for the current program.

On December 18, 1997, the MDA approved a Program Definition and Risk Reduction (PDRR) phase for Block II development, the current program, and activities associated with this effort were completed in January 2000. During PDRR, a Performance Specification and the Interface Requirements Specification were completed as a prelude to a solicitation for Engineering and Manufacturing Development (EMD). The MDA has completed source selection, but the contract will not be awarded until a successful Milestone II.

After achieving a successful Milestone II decision, the development of JWARN is planned to proceed incrementally, first targeting Service C<sup>4</sup>ISR systems that are DII COE compliant, and then expanding to include Service-unique systems. The development of JWARN functionality and integration of this functionality with the C<sup>4</sup>ISR systems is planned to proceed incrementally as well. First, JWARN messaging capability will be integrated with GCCS, GCCS-M, MCS, and TBMCS (Core Capabilities Increment). Second, integration with overlays and overlay drivers and interfaces with joint DII COE compliant data bases (e.g., NBC data, friendly forces, weather, terrain, intelligence) will be developed for these systems and for GCCS-A, AFATDS, FBCB2, and C2PC (Full Capabilities Increment). The Hardware Interface Devices will be developed concurrently, and low-rate quantities will be delivered to the government to support IOT&E in mid-FY03.

## **TEST & EVALUATION ACTIVITY**

Following designation as a DOT&E oversight program on January 18, 2000, the USMC, as lead Service, has undertaken an extensive review of the JWARN TEMP and Acquisition Strategy. Following a failed Milestone II review in May 2000, the MDA changed program management by forming a partnership between the C<sup>4</sup>ISR SE&I branch and CSLE MAR/NBC branch of Marine Corps Systems Command. DOT&E has worked closely with the program since its placement on the Oversight list to improve its TEMP, and the JWARN team continues to address the many issues raised by DOT&E. These issues include: failure to adequately describe the content of the program, integrated schedule, performance measures, scope of technical and operational testing, and resources. The MDA will

schedule a Milestone II review of the program when its TEMP is completed and approved by the Services and DOT&E.

A post-Milestone II Operational Assessment (OA) is planned for 1QFY03 (near the end of Full Capabilities Increment EMD phase). This OA will support an LRIP decision for the HIDs for IOT and is timed to influence software stability prior to the operational test.

A multi-Service IOT is scheduled for 3QFY03 to support a Milestone III decision in 1QFY04. Although the EMD is intended to proceed incrementally – function-by-function and system-by-system – the IOT&E will assess the full capabilities of JWARN as specified in the JORD. The Joint Interoperability Test Command (JITC) will play a key role in certifying technical compliance of JWARN prior to entering IOT, and in assessing its interoperability with the Service C<sup>4</sup>ISR systems as a part of the operational test.

### **TEST & EVALUATION ASSESSMENT**

No specific threat support package or threat CONOPS to support JWARN testing has been developed. The JORD does not include a top-level, user-oriented Interface Exchange Requirement (IER) as required by CJCSI 3170, Requirements Generation System that explains the basic characteristics of the information that needs to be exchanged in order to accomplish the mission.

JWARN is an extremely complex system – first, because it is inherently a software application and, second, because it must integrate with so many joint C<sup>4</sup>ISR systems and NBC sensors. To date, Measures of Effectiveness and Performance have been exclusively technical, or focused on maintainability and environmental suitability. As a result, a significant degree of planning is necessary to bridge the gap between technical criteria and operational criteria for IOT, and to understand exactly what information is to be exchanged and by what systems. There also has been a tendency to view the performance of JWARN in isolation – first from the NBC sensors and, second, from the host C<sup>4</sup>ISR systems. The IOT will be challenged to conduct operational testing within the context of the total system of forces, sensors, and C<sup>4</sup>ISR systems.

Despite the significant development already demonstrated with Block I and the PDRR phase, the program has yet to develop a sound Acquisition Strategy, and the TEMP has failed to describe system content, development priorities, scope of planned testing, and resources adequately.

### **CONCLUSIONS, RECOMMENDATIONS AND LESSONS LEARNED**

The MDA's decision to form a partnership between NBC and C<sup>4</sup>ISR program managers responds directly to the shortcomings of the program and its designation as a DOT&E Oversight program. A continuing and expanding partnership with the C<sup>4</sup>ISR community, including program managers of targeted command and control systems, and with the program managers of new development sensors, will be required for successful planning and testing.

Before the TEMP is approved by DOT&E, it must present a coherent test program consistent with the guidelines of DoD Directive 5000.2-R.