

## Command, Control, Battle Management, and Communications (C2BMC) System

### Executive Summary

- The Command, Control, Battle Management, and Communications (C2BMC) system capabilities and interactions with other elements, particularly the Terminal High-Altitude Area Defense (THAAD) and AN/TPY-2 (FBM) radar, expanded significantly in FY08.
- The Missile Defense Agency (MDA) continues to correct C2BMC display inaccuracies and improve data presentation.
- Although C2BMC is still principally used as a situational awareness and deliberate BMDS planning tool, the MDA in FY08 improved sensor management and demonstrated track forwarding capabilities.

### System

- C2BMC is the warfighter's interface to the fully integrated Ballistic Missile Defense System (BMDS).
- Initial configuration includes C2BMC data terminals at the Missile Defense Integration and Operations Center (MDIOC), Schriever Air Force Base, Colorado; Cheyenne Mountain, Colorado; Fort Greely, Alaska; U.S. Strategic, Northern, and Pacific Commands, and the National Military Command System.
- The current C2BMC system provides situational awareness to warfighters and the National Command Authority with information on missile events, BMDS status, and system coverage. C2BMC also provides above-element deliberative planning at the combatant command and component level, permitting a federation of planners across the BMDS. Aegis Ballistic Missile Defense (Aegis BMD) and Ground-based Midcourse Defense (GMD) elements use their own command, control, battle management systems and mission planning tools for stand-alone engagements.
- Currently, the C2BMC provides command and control for the AN/TPY-2 (FBM) radar located at Shariki Japan.
- C2BMC provides track forwarding of AN/TPY-2 (FBM) and AN/SPY-1 tracks to GMD. Additionally, it provides



track forwarding of AN/TPY-2 (FBM) tracks to Aegis BMD for cueing.

### Mission

U.S. Strategic, Northern, and Pacific Commands currently use the C2BMC to provide communications necessary to support ballistic missile defense engagements, as follows:

- Deliberate planning
- Collaborative dynamic planning
- Situational awareness
- Consequence management
- Network management
- AN/TPY-2 (FBM) sensor management and control

### Prime Contractor

- Boeing

### Activity

- In FY08, C2BMC participated in five ground tests (integrated hardware-in-the-loop tests and distributed tests that used operational hardware and software) and five flight tests.
- Software spiral 6.2 is operational at all Combatant Commands. Development and verification testing of software spiral 6.4 has begun and will continue into FY09. Hardware upgrade installation in preparation of spiral 6.4 is taking place at some Combatant Commands and other sites.
- C2BMC was used during the Japan Flight Test Mission-1 in December 2007. This was the first opportunity in a live fire test for C2BMC to receive and display both THAAD and Aegis BMD track data.
- In the flight test FTX-03, C2BMC demonstrated the passing of AN/TPY-2 (FBM) track data to GMD for the cueing of Upgraded Early Warning Radars (UEWR), and the passing of Aegis BMD track data to GMD for the cueing of the

Sea-based X-Band Radar (SBX). It also demonstrated the down-selection and forwarding of AN/TPY-2 (FBM) tracks to Aegis BMD for cueing.

- In FY08, C2BMC participated in two wargames associated with major combatant commander exercises: Terminal Fury 08 and Assured Response 08a.
- C2BMC capability (web browser and planner) was installed at U.S. Central Command and U.S. European Command.
- C2BMC accomplished upgrades to the BMDS network infrastructure which increased redundancy and survivability at the early warning sites, increased bandwidth between major sites and nodes, and enhanced the performance of the satellite teleport sites at Germany and Hawaii.
- C2BMC implemented the BMDS Network Operations and Security Center (BNOSC), which enables active network monitoring and analysis, a full time operations cell that will protect the networks against intrusion, manage upgrades, and provide real-time outage reporting and resolution.

#### **Assessment**

- C2BMC continues to demonstrate the ability to provide situational awareness by receiving and displaying data from a variety of sensors, and demonstrating AN/TPY-2 (FBM) track forwarding and radar management functions.

- C2BMC is a critical component of the BMDS. Its interactions with other elements continued to increase and improve in FY08, and it now has limited battle management capabilities. Warfighters manning C2BMC consoles can direct the AN/TPY-2 (FBM) radar to execute focused search plans or respond to a precision cue, as well as forward radar tracks to Aegis BMD.
- Spiral 6.4 introduces the Global Engagement Manager (GEM), which ties together sensors across different areas of responsibility allowing for global resource management, system-wide detection and tracking, and control of AN/TPY-2. However, the important initial capability of generating a single system track from multiple sensor source tracks is still in development.
- C2BMC continues to demonstrate interoperability with more elements, but requires more extensive testing to support development of tactics, techniques, and procedures.

#### **Recommendations**

- Status of Previous Recommendations. The MDA addressed six of the previous eight recommendations. The MDA continues to make progress on the remaining two FY06 recommendations.
- FY08 Recommendations. None.