

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

Executive Summary

- The Command, Control, Battle Management, and Communications (C2BMC) capability, interactions with other elements, and the number of installations grew rapidly in FY06.
- The Missile Defense Agency (MDA) corrected many C2BMC display inaccuracies and improved data presentation. However, MDA will need to conduct more tests in stressing scenarios for a full assessment.
- C2BMC is still primarily a situational awareness tool that is slowly developing into a battle management capability. MDA is developing a Global Integrated Fire Control capability as part of C2BMC.

System

- C2BMC is the warfighter's interface to the fully integrated Ballistic Missile Defense System (BMDS).
- Initial configuration includes C2BMC data terminals at the Joint National Integration Center, Cheyenne Mountain, Colorado; Fort Greely, Alaska; Strategic Command, Northern Command, Pacific Command, and the National Command Authority.
- The current C2BMC system provides situational awareness data only. The C2BMC terminals provide warfighters and the National Command Authority with information on missile events, BMDS status, and system coverage. Aegis Ballistic Missile Defense (BMD) and Ground-Based Midcourse Defense (GMD) elements use their own command, control, battle management systems, and mission planning tools.
- The Block 06 C2BMC is intended to provide integrated command and control for the entire BMDS.



Mission

U.S. Strategic Command and U.S. Pacific Command 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

Activity

- During FY06, MDA improved the capabilities of C2BMC, including:
 - Upgraded all installations with software Spiral 4.5, which upgraded situational awareness and battle management features, as well as sensor management of the Forward-Based X-band -Transportable (FBX-T) radar
 - Installed a second U.S. Pacific Command C2BMC suite
 - Developed software Spiral 6.2; testing begins in December 2006
 - Conducted Aegis BMD radar cueing tests using other sensor data
 - Established an independent interface with the Space-Based Infrared System/Defense Support Program (SBIRS/DSP)
- MDA began improving the suitability and survivability of C2BMC through activities, such as:
 - Interoperability exercises with SBIRS/DSP, PATRIOT, and Aegis BMD
 - Integration of C2BMC into the online Distributive Multi-Echelon Training System for the warfighters in June 2006
 - Testing of data fusion, track correlation, and discrimination capabilities using real data from flight tests
- MDA increased the participation of C2BMC in test events, including:
 - Seven GMD-centric and BMDS-centric ground tests
 - Aegis BMD, GMD, and PATRIOT flight tests

BALLISTIC MISSILE DEFENSE SYSTEMS

- Wargames, such as Amalgam Phantom 06 and Vigilant Shield 07
- Interoperability exercises, such as a demonstration with PATRIOT in May 2006, and a System Integration Test with SBIRS/DSP conducted July - October 2006
- Data fusion, track correlation, and discrimination tests using real data, such as GMD flight tests, countermeasures flight tests, and unscheduled missile launch targets-of-opportunity
- C2BMC participated in real-world events during the May and July 2006 timeframe

Assessment

- C2BMC is a critical component of the BMDS. Its installations, capabilities, and interactions with other elements significantly increased and improved last year.
- MDA reduced the shortcomings that exist in C2BMC situational awareness capabilities. Warfighters are experiencing better data accuracy and, based on data from ground and flight tests, are suggesting access and display content improvements.
- C2BMC is essential to use the FBX-T. Although C2BMC correctly passed on the radar data to Ground-Based Midcourse Defense Fire Control in eight tests, it did not do this over

the operational communications networks. MDA plans to demonstrate management of FBX-T using operational communication paths in December 2006.

- C2BMC demonstrated limited interoperability with theater assets, but requires more extensive tests in order to support development of tactics, techniques, and procedures. C2BMC correctly received PATRIOT data during the December 2005 PATRIOT flight test and the Limited User Test in August 2006, but is not yet capable of tasking the PATRIOT radar.

Recommendations

- Status of Previous Recommendations. MDA has taken action on all of the FY05 DOT&E recommendations.
- FY06 Recommendations. MDA should:
 1. Review and improve the processes and procedures its contractors use for tracking and reporting on C2BMC problems and performance.
 2. Implement quantitative analysis of C2BMC track accuracies and track correlations between data from multiple radar sensors.
 3. Include assessments of information assurance during BMDS-centric C2BMC testing.