

Theater Battle Management Core Systems (TBMCS)

Executive Summary

- Led by the Air Force, the Services conducted Force Development Evaluation (FDE) and Security Test and Evaluation (ST&E) of Theater Battle Management Core Systems (TBMCS) Force-level 1.1.3, software upgrades (Service Packs) during March 2007. Force-level regression testing is ongoing.
- Significant TBMCS Unit-level Operations (UL-Ops) testing occurred during FY07. However, no significant TBMCS unit-level intelligence operational testing occurred.
- TBMCS UL-Ops testing was adequate and revealed improvements in base mapping and unit scheduling functions. Documentation changes were made and regression testing occurred, resulting in a significant reduction of mission downtime during system upgrade. TBMCS UL-Ops remains operationally effective, suitable, survivable, and has been approved for fielding.

System

- TBMCS is an integrated command and control, intelligence, surveillance, and reconnaissance system, which provides hardware, software, and communications interfaces to support the preparation, modification, and dissemination of the force-level Air Battle Plan (ABP). The ABP includes the Air Tasking Order (ATO) and Airspace Coordination Order (ACO).
- TBMCS incorporate servers, routers, communications links, operator workstations, and software to improve real-time targeting, accuracy of targeting, data handling and dissemination, and interoperability with national intelligence databases.
- Planned TBMCS fielding includes every theater air component, all Navy aircraft carriers and command ships, all Marine Air Wings, and all Air Force flying wings and Air Support Operations Center (ASOC) squadrons. Army Battlefield Coordination Detachments, Army Missile Defense Command will interface with TBMCS through the Army Battle Command System.

Mission

- The TBMCS force-level system provides intelligence, targeting, and airspace deconfliction applications at the theater



Joint Force Air Component Commander (JFACC) level, the ASOC, and the Direct Air Support Center to support the coordination of precision engagement fires, safe passage zones, and near real-time warnings of impending air attack.

- TBMCS UL-Ops and unit-level intelligence provide Air Force Wings and Bases the capability to receive the ABP, parse it, and manage wing operations and intelligence to support execution of the ABP.
- The TBMCS air and surface surveillance and weapons coordination engagement options enables synchronized operations and correct weapons employment for each target.
- All TBMCS network participants contributing to improved decision-making by commanders share engagement intentions and results assessments.
- Units equipped with TBMCS are able to:
 - Provide the JFACC and component commanders with decision support tools
 - Support joint air campaign planning and execution
 - Provide computer-supported management of all joint theater airborne assets in the area of responsibility within the Air Operations Center (AOC) construct

Activity

- FDE and ST&E of TBMCS Force-level 1.1.3, software upgrades were conducted during March 2007, with follow-on regression testing conducted June 2007. TBMCS test participants were:
 - 46th Test Squadron, Eglin AFB, Florida
 - Air Mobility Command (AMC), Scott AFB, Illinois
 - Space and Warfare Systems Center (SPAWAR), San Diego, California

AIR FORCE PROGRAMS

- Marine Corps laboratory at Idaho National Laboratories, Idaho Falls, Idaho
- Redstone Arsenal, Alabama
- A classified operational military location
- Combined developmental testing and operational testing (DT/OT) and ST&E of TBMCS Force-level 1.1.3, Service Pack testing was conducted at various times in 2007 by the 46th Test Squadron and SPAWAR in lab environments. The Marines led a combined DT/OT of a specific Service Pack at a classified location. The 46th Test Squadron and SPAWAR supported the DT/OT from stateside test labs.
- 605th Test Squadron personnel conducted FDE and ST&E of TBMCS UL-Ops Spiral 9.1 during July 2007.
- There was no significant TBMCS unit-level intelligence operational testing in 2007.

Assessment

- Operational Service Pack testing provided feedback to the user community and program office on the overall effectiveness and suitability of the enhancements to the TBMCS Force-level program. These enhancements enable TBMCS users to interface directly with AMC's new Global Decision Support System-2 (GDSS2) for command and control of AMC missions.
- TBMCS testing had few significant limitations, which had only minimal effect on test adequacy when testing the interface with GDSS2. Limitations were:
 - The system administrators' ability to detect and react to an Information Assurance system penetration attempt was not evaluated.
 - There were no internal multi-level security protocols available, and TBMCS-GDSS2 interface testing was strictly at the Secret level.
 - During operations, AMC employs an electronic guard when interfacing between the TBMCS Secret information and the GDSS2 Unclassified information. Thus, GDSS2 will require testing to ensure the classification bridge works correctly to keep both Secret and Unclassified databases synchronized.
- Loading TBMCS software requires a minimum of four hours, which exceeds the amount of mission downtime allowed for availability requirements. The program office has worked with operational sites to use a combination of contractor support (to minimize actual load time) and extra hardware (to allow loading to occur with minimal impact to live operations) to satisfactorily address system availability requirements.
- Individual service plans for mitigating TBMCS 1.1.3 Service Pack installation time have been coordinated and deemed acceptable by the Army, Navy, Marine Corps, and Air Force. During the June 2007 regression testing of Service Packs, the Air Force and Navy were able to close all outstanding critical problem reports. The Marines were unable to complete testing for their Service Packs, and they continue to search for the reasons for failure.
- TBMCS Force-level 1.1.3, with Service Packs, is operationally effective, suitable with exceptions, and survivable. One Service Pack has been approved for limited fielding to select Air Force and Marine Corps sites in order to enable timely Field Training Unit course development, Help Desk training, and risk mitigation prior to general fielding. After fielding to one unit, the Marine Corps will re-evaluate to ensure that Service Packs have no deficiencies. Upon that determination, the Marine Corps will then support a full fielding.
- TBMCS Force-level Service Packs were assessed to be low risk, and operational testing was adequate and successful.
- TBMCS UL-Ops (UL-Ops) testing of Spiral 9.1 upgrades revealed improvements in base mapping and unit scheduling functions. Documentation changes were made and regression tested, resulting in a significant reduction of mission downtime during the system upgrade. TBMCS UL-Ops remains operationally effective, suitable, and survivable, and Spiral 9.1 has been approved for fielding.

Recommendations

- Status of Previous Recommendations. There are no previous recommendations.
- FY07 Recommendations. The Air Force should:
 1. Continue efforts to instrument the network and TBMCS servers in the AOC during testing. Problems attributable to "unexplained slowdowns" will be more easily diagnosed, reducing time and money spent for contractor debug efforts.
 2. Ensure system administrators and Help Desk personnel attain and maintain a high level of proficiency, enabling them to quickly fix problems. One recommendation is to ensure 24-hour Help Desk manning, and the contractor's facility Tier 2 Help Desk having ready access to the classified Internet [SIPRNET], which would facilitate communication with end users to better identify and address system problems more quickly.
 3. Prepare system installation plans addressing how the system will be upgraded from the legacy version to the new software version early so that operational testing can better examine how software upgrades impact operational readiness and system availability.