Advanced Threat Infrared Countermeasures / Common Missile Warning System (ATIRCM/CMWS)

Executive Summary

Common Missile Warning System (CMWS)

- CMWS is the newest Army aircraft missile warning system designed to detect incoming surface-to-air infrared missiles and to command automatic employment of Infrared Countermeasures (IRCM). The fielded CMWS is not integrated with an infrared laser jammer and only cues expendable flares.
- The Army authorized full-rate production of CMWS in May 2006, following the classified DOT&E Beyond Low-Rate Initial Production report to Congress. DOT&E determined that CMWS was operationally effective and suitable for combat operations in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) when installed on the CH-47, UH-60, and C-12 aircraft.
- Based on follow-on testing, DOT&E assessed that CMWS was also operationally effective and suitable for the OIF/OEF mission environments when coupled with the AH-64 Apache's aircraft navigation system, but with specific platform integration limitations.
- The fielded version of CMWS offers significant advantages in the OIF/OEF environments over the legacy missile warning sensor it is replacing. However, CMWS has substantial effectiveness limitations outside the current OIF/OEF environments. Additional development and testing is needed before CMWS should be deployed for combat operations outside the current OIF/OEF environments.

Advanced Threat Infrared Countermeasures (ATIRCM)

- The Army stopped testing of the ATIRCM laser jammer in FY05 due to significant reliability problems identified while testing.
- The Army incorporated a redesigned ATIRCM system with a planned low-risk schedule. ATIRCM is expected to enter government testing in FY07 and be assessed through a methodical test process to support a planned initial operational capability in FY10.
- DOT&E is unable to make an assessment of ATIRCM performance until adequate government testing is conducted.

System

- CMWS is the newest Army aircraft missile warning system designed to detect incoming surface-to-air infrared missiles and command automatic employment of IRCM. The fielded CMWS is not integrated with an infrared laser jammer and only cues expendable flares.

- The Army will use CMWS as the first missile warning sensor on some aircraft, while augmenting the legacy ALQ-144 passive infrared jammer and replacing the legacy AN/AAR-47 or AN/ALQ-156 missile warning sensors.
- Production CMWS are currently fielded on approximately 500 Army CH-47, UH-60, AH-64, C-12 series, and UC-35 aircraft. The Army is purchasing a total of 1,710 CMWS systems.
- The Army plans to install ATIRCM/CMWS on most H-47 Chinook, H-60 Blackhawk, and H-64 Apache helicopters. CMWS-Only is the planned configuration for Army fixed-wing C-12 and UC-35 series aircraft.
- ATIRCM is a defensive countermeasure system for Army helicopters.
- ATIRCM incorporates an active infrared laser jammer to provide Army helicopters with improved infrared defensive countermeasures. It will be integrated with the CMWS sensor.
- The Army plans to integrate ATIRCM and CMWS in FY09.

Mission

- Combatant Commanders use ATIRCM/CMWS to protect aircraft and crews during normal take-off and landing, as well as during assault, attack, re-supply, rescue, forward arming, and refueling missions.
- ATIRCM/CMWS protect helicopters against shoulder-fired, vehicle-launched, and other infrared-guided missile threats.
- The combined ATIRCM/CMWS suite enhances threat warning and improves defensive countermeasures for helicopters and some fixed-wing aircraft.

Activity

CMWS

- Because the full-threat CMWS effectiveness was not sufficiently mature, the Army delayed development of a full-threat capable CMWS in order to more rapidly field an interim CMWS that supports the current OIF/OEF threat environments.
- The Army revised the ATIRCM/CMWS Test and Evaluation Master Plan (TEMP) to reflect the separation of CMWS from the ATIRCM laser infrared jammer program. DOT&E approved the revised ATIRCM/CMWS TEMP and IOT&E test plan in 1QFY06.
- The Army conducted the CMWS IOT&E on the CH-47 and UH-60 aircraft in 1QFY06.
- The Army conducted additional testing in 2QFY06 to assess CMWS effectiveness during more dynamic attack helicopter mission profiles, based on lessons learned from the IOT&E and earlier development test efforts.
- The Army authorized full-rate production of CMWS in May 2006, following the classified DOT&E report to Congress on CMWS.
- The Army fielded CMWS-equipped AH-64 Apaches in 3QFY06 after conducting follow-on testing of CMWS on the AH-64 Apache at Fort Rucker, Alabama.
- All CMWS testing in FY06 was conducted in accordance with the DOT&E-approved TEMP and test plan.

ATIRCM

- In FY05, the Army stopped testing of the ATIRCM laser jammer due to significant reliability problems identified while testing.
- The Army initiated a fundamental redesign of the ATIRCM laser jammer in FY06.
- The Army has purchased a total of 37 ATIRCM low-rate initial production units.
- In FY06, the ATIRCM contractor began a five-phase reliability growth test to assess the reliability of the ATIRCM design. This testing is scheduled to continue until FY09.

Assessment

CMWS

- Army testing during CMWS IOT&E and follow-on testing was adequate to evaluate operational effectiveness and suitability for CMWS use in OIF/OEF mission environments.
- DOT&E determined that CMWS was operationally effective and suitable for combat operations in OIF/OEF when installed on the CH-47, UH-60, and C-12 aircraft.
- Based on follow-on testing, DOT&E assessed that the CMWS was also operationally effective and suitable for the OIF/OEF mission environments when coupled with the AH-64 Apache's aircraft navigation system, but with specific platform integration limitations.
- The fielded version of CMWS offers significant advantages in the OIF/OEF environments over the legacy missile warning sensor it is replacing. However, CMWS has substantial effectiveness limitations outside the current OIF/OEF environments. Additional development and testing is needed before CMWS should be deployed for combat operations outside the current OIF/OEF environments.
- In FY06, the Army incorporated incremental improvements to CMWS that mitigate some of the limitations reported by DOT&E. The Army's long-term plan is to upgrade the missile warning sensor to be effective for worldwide operations and operationally test a full-threat capable system in FY08.
- The Army has not accredited their end-to-end CMWS simulation model, which has the potential to reduce the flight test requirements of follow-on testing.
- The Army's plan to transition from the interim CMWS fielded in OIF/OEF to the full-threat capable CMWS is not reflected in the approved TEMP.

ATIRCM

- The Army incorporated a redesigned ATIRCM system and is expected to begin government testing in FY07, and have a full system (CMWS and ATIRCM) IOT&E in FY09.
- DOT&E is unable to make an assessment of current ATIRCM performance until adequate government testing of the redesigned system is conducted.

Recommendations

- Status of Previous Recommendations. The Army has taken effective action on the DOT&E recommendations from the FY05 report.
- FY06 Recommendations. The Army should:
  1. Test and report on near-term improvements to CMWS effectiveness and suitability for OIF/OEF mission environments and long-term enhancements to CMWS performance for use in worldwide mission environments. These improvements are identified as recommendations in the classified 2006 CMWS DOT&E report to Congress.
  2. Provide a revised TEMP that clearly describes the development and test efforts required to support assessment of the full-threat capable CMWS and redesigned ATIRCM.
  3. Continue to develop the end-to-end simulation model for ATIRCM and CMWS to support the FY10 ATIRCM/CMWS full-rate production decision.