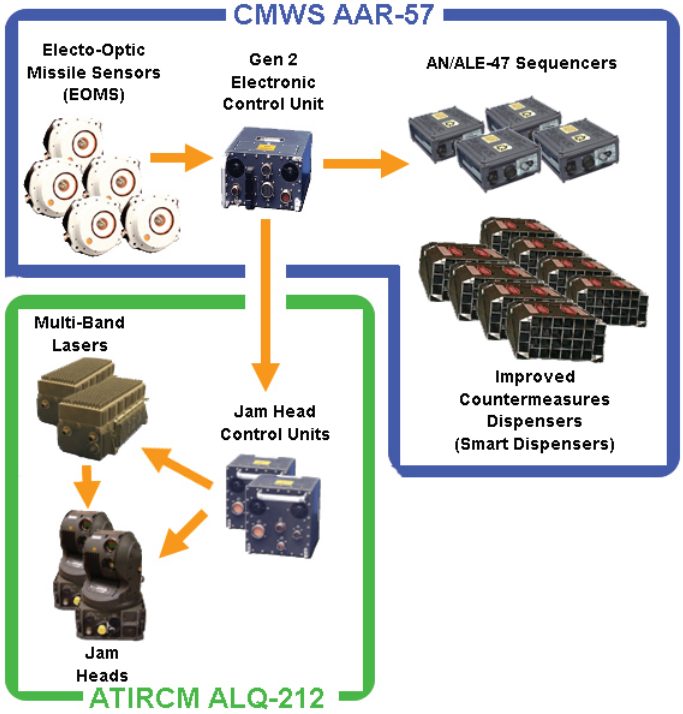
Advanced Threat Infrared Countermeasures (ATIRCM) Quick Reaction Capability (QRC) / Common Missile Warning System (CMWS)

Executive Summary

- The Army declared a critical Nunn-McCurdy breach for the combined Advanced Threat Infrared Countermeasures (ATIRCM) and Common Missile Warning System (CMWS) programs on March 25, 2010. The Milestone Decision Authority rescinded the programs' Milestone C approval in June 2010. The Milestone Decision Authority reinstated Milestone C for the CMWS subprogram, but the ATIRCM subprogram did not receive a new milestone approval. However, the ATIRCM Quick Reaction Capability (QRC) program proceeded as planned.
- The Army continues to equip its helicopters and fixed-wing aircraft with CMWS. The OH-58D Kiowa Warrior helicopter is the next major platform to begin receiving CMWS. No dedicated OT&E of CMWS has taken place since the IOT&E in November 2005.
- CMWS has some system effectiveness limitations due to the lack of more advanced threat detection algorithms. The generation (GEN) 3 Electronic Control Unit (ECU) hardware upgrade is designed to provide improved computing and processing accommodating advanced algorithms that may improve system effectiveness.
- The Army continues to equip the CH-47D Chinook helicopter with the ATIRCM QRC system. The Army deployed these Chinooks in support of Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF). The Army completed the first unit equipped with ATIRCM QRC in November 2009.
- The results from ATIRCM QRC testing show satisfactory system performance against the threats that were tested. The Army tested ATIRCM laser jam codes at the Guided Weapons Evaluation Facility (GWEF) at Eglin AFB, Florida, during 2010. DOT&E analysis of ATIRCM QRC test results led to the discovery of a major inconsistency in jam code testing between the way the GWEF at Eglin AFB, Florida, incorporated the ATIRCM laser into their facility and how it actually operated on the aircraft. The Army has eliminated this inconsistency.

System

- CMWS and ATIRCM QRC are the Army's aircraft missile countermeasure systems designed to detect incoming infrared-guided missiles, to warn pilots of the threat, and to command automatic employment of laser and/or flare infrared countermeasures.
- The CMWS consists of electro-optical missile sensors that detect an oncoming missile threat, and an ECU that informs the crew of the threat and activates countermeasures.



- CMWS, coupled with flare dispensers, is currently fielded on 1,097 Army CH-47, UH-60, AH-64, C-12 series, C-23, and UC-35 aircraft. The Army Procurement Objective is currently 2,002 B-kit systems. (B-kits are the components of the CMWS and ATIRCM QRC system. A-kits are the airframe modifications such as wiring and structural modifications that support the B-kit installations).
- ATIRCM QRC adds an infrared laser jammer to the CMWS to provide improved infrared defensive countermeasures. The Army objective is to field ATIRCM QRC on 83 CH-47D/F Chinooks. The Army has currently fielded 54 ATIRCM QRC-equipped Chinooks. The ATIRCM program will be terminated at the end of the QRC effort.

Mission

- Combatant Commanders currently use the fielded version of CMWS and flares to warn pilots and provide infrared countermeasures within the design parameters of the system. The system is used to protect Army helicopters and fixed-wing aircraft and crews during vulnerable low-altitude operations such as normal take-off and landing, assault, attack, re-supply, rescue, and forward arming and refueling missions from

shoulder-fired, vehicle-launched, and other infrared-guided missile threats.
- Combatant Commanders use the integrated ATIRCM QRC and CMWS suite to provide improved notification against infrared-guided missiles for CH-47D/F Chinook helicopters.

Major Contractors
BAE Systems, Electronics and Integrated Solutions, and Electronic Warfare Division – Nashua, New Hampshire

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Activity
- The Army declared a critical Nunn-McCurdy breach for the combined ATIRCM and CMWS programs on March 25, 2010. The Milestone Decision Authority rescinded the programs' Milestone C approval in June 2010. The Milestone Decision Authority reinstated Milestone C for the CMWS subprogram but the ATIRCM subprogram did not receive a new milestone approval. However, OSD allowed the ATIRCM QRC program to proceed as planned.

CMWS
- The Army has continued to field the production CMWS designed to support immediate needs, while continuing development of an advanced full-threat-capable CMWS. The Army plans to begin developmental testing of the advanced full-threat-capable CMWS algorithms in support of worldwide operations in FY11.
- The Army accomplished qualification testing of the existing GEN 2 ECU and other system components throughout FY10.
- The Army is developing an upgraded GEN 3 ECU to enable the full-threat-capable CMWS. The Army accomplished qualification, reliability, and developmental flight testing throughout FY10.
- The Army accomplished qualification, installation, and performance flight testing of the CMWS and flares system on the OH-58D Kiowa Warrior. Fielding of the CMWS and flares system for the OH-58D will begin in FY11.
- The Army is updating the November 2005 Test and Evaluation Master Plan (TEMP) with current test plans and resources to support fielding of the GEN 3 ECU and full-threat-capable CMWS. The Army has planned for Integrated Developmental and Operational Testing in 3QFY11.

ATIRCM QRC
- The Army began installing production A-kits and B-kits on the CH-47D Chinooks for the ATIRCM QRC and CMWS in May 2009, and completed the First Unit Equipped in November 2009. The Army has fielded 54 ATIRCM QRC-equipped Chinooks in support of operations for OIF and OEF since July 2010.
- The Army accomplished ATIRCM QRC installation and flight testing for the CH-47F aircraft in June 2010 at Fort Rucker, Alabama.
- The Army tested ATIRCM QRC laser jam codes at the GWEF at Eglin AFB, Florida, during 2010. DOT&E analysis of ATIRCM QRC test results led to the discovery of a major inconsistency in jam code testing between the way the GWEF at Eglin AFB, Florida, incorporated the ATIRCM QRC laser into their facility and how it actually operated on the aircraft. The Army has eliminated this inconsistency.
- The Army has conducted all testing in accordance with the DOT&E-approved TEMP.

Assessment

CMWS
- CMWS has some system effectiveness limitations due to the lack of advanced threat detection algorithms. The GEN 3 ECU hardware upgrade is designed to provide improved computing and processing to accommodate advanced algorithms that may improve system effectiveness.
- The reliability data the Army has collected from deployed operations show that the system exceeds its reliability requirements of 423 hours by achieving 1,155 hours. However, the overall reliability has decreased in FY10 compared to FY09.

ATIRCM QRC
- The results from ATIRCM QRC testing show satisfactory system performance against OIF and OEF threats.
- The reliability data collected by the Army from deployed operations show the combined CMWS and ATIRCM QRC system exceeding its reliability requirement of 150 hours by achieving 293 hours, demonstrating system reliability improvements.

Recommendations
- Status of Previous Recommendations. The Army has satisfactorily addressed two of the three FY09 recommendations. The Army has not accomplished accreditation of their digital system model for CMWS, which DOT&E recommended in FY09.
- FY10 Recommendations. None.