

ARMY PROGRAMS

Suite of Integrated Infrared Countermeasures (SIIRCM)/Common Missile Warning System (CMWS, AN/AAR-57) Includes: Advanced Threat Infrared Countermeasures (ATIRCM, AN/ALQ-212)

The Army intends for the Suite of Integrated Infrared Countermeasures (SIIRCM)/Common Missile Warning System (CMWS) to enhance individual aircraft survivability against advanced infrared (IR) guided missiles. The SIIRCM concept of IR protection includes new IR flare decoys, the Advanced Infrared Countermeasures Munitions, and passive IR features. These passive IR features include host platform modifications such as engine exhaust/heat suppression and special coatings intended to reduce the platform IR signature.

The Advanced Threat Infrared Countermeasure (ATIRCM) is a sub-set of the SIIRCM program and is specifically comprised of an active IR jammer for use on helicopters and the passive CMWS. CMWS was originally to be used on both helicopters and fixed wing aircraft, but the Air Force and Navy have dropped out of the program. The initial application of ATIRCM/CMWS will be on Special Operations Command helicopters. The Service's will begin installing ATIRCM on helicopters in FY05. The Army controls the funding for both the Army and Special Force's programs. The focus of the aircraft testing is for the ATIRCM jam head and CMWS warning system.

The Army's lead platforms for Engineering and Manufacturing Development (EMD) are the MH-60K and the EH-60. The first operational application will be on the Special Operating Forces' MH-47 helicopters. One ATIRCM laser jam head will be the normal configuration for most helicopters. The objective for CMWS is to provide passive missile detection, threat declaration, positive warning of a post-launch missile that is homing on the host platform, countermeasures effectiveness assessment, false alarm suppression, and cues to other on-board systems. ATIRCM adds active directional countermeasures via an arc lamp and laser. The Army and Special Operations Command intend for ATIRCM to demonstrate integration with the Army's Suite of Integrated Radio Frequency Countermeasures (SIRFC), when it becomes available.

In 1999, CMWS sensor and jam head laser production difficulties, Operational Flight Plan development delays, and other EMD issues resulted in a cost and schedule breach and subsequent re-baselining. ATIRCM/CMWS entered government development and combined developmental testing/operational testing (DT/OT) in early FY01. In response to the September 11, 2001, attacks, and based on the positive test results on the CMWS in FY01, the Services recommended CMWS for accelerated fielding. Subsequently, the Army awarded a limited production contract to BAE for up to 96 CMWS systems. In addition, in FY01 the Army integrated the program into the Aircraft Survivability Equipment's office, under the Information, Electronic Warfare, and Surveillance Office.

During FY01, the Program Manager decided to make a change in the CMWS hardware configuration. The initial EMD version of CMWS was used for early test and evaluation. The UK is buying a production version of CMWS that was advertised to have better performance, fewer parts, and greater reliability. Although the EMD version of CMWS performed well, the Program Manager decided that the cost, reliability, and performance advantages of the production design upgrade (PDU) version of CMWS (also being purchased by the UK) were sufficient to warrant a change late in the test program.



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During FY04, the Army plans to award a limited production contract for 59 ATIRCM systems. The Army plans to buy a total of 619 systems beginning in FY05. The Army will not field any of these ATIRCM systems until the successful completion of the FY04 DT/OT tests and the FY05 IOT&E.

TEST & EVALUATION ACTIVITY

Contractor testing of the ATIRCM redesign and of software upgrade for CMWS were the predominant test activities in FY03. The Special Operating Forces will conduct a limited users test in the FY04 for the CMWS-only configuration on the MH-47 helicopter, primarily to assess the pilot vehicle interface. A second live fire test will be conducted at the ACR starting in FY04. Together, with the Reliability Development Test (RDT) and the logistics demonstration, these will comprehensively test the overall redesigned ATIRCM/CMWS system. Successful completion of these is the criterion for entering IOT&E in FY05. DOT&E approved a revised Test and Evaluation Plan in March 2003 that covers these tests.

Hardware-in-the-Loop (HITL) modeling capabilities are essential to providing an assessment of the operational effectiveness and operational suitability of the ATIRCM/CMWS system. Developing new T&E concepts, which employ modeling and simulation, reduced actual missile firings and drone target requirements from 400 to 175 events. Contractor HITL testing in FY01 was beneficial in validating modeling and simulation conclusions.

TEST & EVALUATION ASSESSMENT

The ATIRCM/CMWS has demonstrated adequate performance to date. The tests have shown the need to modify the software for certain operational conditions and these modifications need to be re-evaluated during subsequent testing, especially with live fire shots at the aerial cable facility. The redesigned jam head has performed satisfactorily in the contractor tests to date.

With the changes incorporated into the laser jam head and the limited testing on the newer PDU CMWS sensor, the FY04 RDT, logistics demonstration, and live fire tests are essential to ensure system performance has not been degraded. The newer PDU sensor is much lower risk than the updates to the ATIRCM jam head redesign.

During the FY01 tests, the IR jammer experienced a number of reliability problems, requiring some significant mechanical redesign. The redesign is now complete and the contractor environmental tests to date have shown satisfactory progress. The redesigned units will enter into a 1,100-hour RDT in July FY04 as part of the DT/OT. Also during the FY01 tests, the built-in test performed unsatisfactorily. The built-in test has since been redesigned and will be tested during the Logistics Demonstration scheduled for FY04.

Modeling and simulation is a critical element of the T&E program because the matrix of potential missile-aircraft interactions would require a substantial increase in the number of test firings. The development of the end-to-end model has progressed this past year and, in addition to being used for pre-test predictions and post-test analyses, has some utility for scenario evaluations. The Army has not completely verified, validated, or accredited the model for use in an operational evaluation. Verification and validation have progressed satisfactorily in FY03. The accreditation requirement remains a significant challenge. The overriding issue for SIIRCM/CMWS is the need to conduct OT&E on the upgraded SIIRCM/CMWS.