C-130 Avionics Modernization Program (AMP)

The purpose of the C-130 Avionics Modernization Program (AMP) is to lower the cost of ownership of the U.S. military's C-130 fleet, while complying with the Air Force Navigation and Safety Master Plan, required navigation performance requirements, and other applicable Global Air Traffic Management (GATM) requirements. This will be done through a cockpit modernization program that replaces aging, unreliable equipment, and adds equipment necessary to meet Navigation/Safety and GATM requirements. New equipment is intended to lower the cost of ownership by reducing cockpit crew manning, increasing aircraft reliability, maintainability, and sustainability. The C-130 AMP is intended to provide an improved precision airdrop capability for the combat delivery fleet, meet Night Vision Imaging System (NVIS) requirements, and improve the C-130's precision approach and landing capability. This program provides the interfaces necessary to integrate real time information in the cockpit. A standard cockpit layout is planned allowing crewmembers to be trained to fly in one aircraft type and required to undergo mission qualification only when reaching their new units - unlike the current situation.

A C-130 AMP/Common Avionics Architecture for Penetration (CAAP) Test Planning Working Group has been established to provide a forum for all cognizant test organizations to participate in the C-130 AMP/CAAP test planning process. The using commands and the Air Force Operational Test and Evaluation Center (AFOTEC) will provide crew members, as required, to support ground and flight-tests during combined Developmental Test/Operational Test and dedicated Operational Test and Evaluation (OT&E). The Program Office will manage the Live Fire Test and Evaluation (LFT&E) program.

The Milestone II decision resulted in the Boeing Company being awarded the C-130 AMP contract in July 2001. Contractor ground tests will be conducted at the Boeing facility in San Antonio, Texas, the plant at Long Beach, California, and Edwards Air Force Base. Following a series of shakedown flights at the contractor facility, initial prototypes will transition to Edwards Air Force Base for the start of formal Developmental Test and Evaluation (DT&E). DT&E flight-tests will be accomplished by a combined government and contractor integrated test team. AFOTEC personnel will participate as part of the government contingent.

TEST & EVALUATION ACTIVITY

The program is in the very early stages of contractor development and preliminary design reviews. A Test Planning Working Group and a LFT&E integrated team have been created to formulate the specifics of the LFT&E program and the Test and Evaluation Master Plan (TEMP).

The updated C-130 AMP TEMP was approved by DOT&E in September 2002. An update will be required due to program funding changes that will impact the currently planned test schedule.

TEST & EVALUATION ASSESSMENT

The entire C-130 AMP/CAAP program is being restructured due to funding changes. The primary proposal is to cancel the previously planned Risk Reduction effort (18 months of flying a development radar in a special operations forces (SOF) Combat Talon I aircraft and tested at a government range) for feasibility studies on the new radar, new data processing algorithms, and enhanced

C-130 Avionics Modernization Program cockpit modernization program.

situational awareness features for Terrain Following/Terrain Avoidance missions with Low Probability of Intercept. Elimination of the planned Risk Reduction raises the SOF C-130 AMP/CAAP from a medium risk (technical, schedule, and cost) to high risk for success. This is a change in both the acquisition and the test and evaluation strategies that were approved at Milestone B for this program.

The successful testing of AMP components across a broad range of aircraft configurations and mission requirements (see table below) will always be a significant challenge. The concept is feasible; however, it is essential that the various users commit to a unified fleet management approach for the modification of all aircraft. Fleet management of more than 700 aircraft is one of the keys to success. A tentative plan calls for some aircraft being retired, others being moved from one unit to another to manage structural life, some sent to depot, and still others used for test purposes. In addition, concurrent development of different mission design series modifications will add risk to the schedule.

The following lists the different Mission Design Series (MDS) of the C-130s to be modified and some of the special test requirements for them:

C-130's and Special Test Requirements by MDS

MDS	Nomenclature	Special Tests
C130E/H/H1/H2/H3	Combat Delivery	Global Air Traffic Management, Terrain Collision Avoidance System, Terrain Awareness Warning System, Night Vision Imaging System, Flight Management System
AC-130H/U	Gunship	Gunfire Accuracy, Enhanced Situational Awareness, Defensive
EC-130E	Airborne Battlefield Command & Control Center	Mission Unique
EC-130H	Compass Call	Mission Unique
HC-130N/P	Combat Rescue	Mission Unique
MC-130E	Combat Talon I	Terrain Following/Terrain Avoidance Navigation
MC-130H	Combat Talon II	Terrain Following/Terrain Avoidance Navigation, Enhanced Situational Awareness, Defensive
MC-130P	Combat Shadow	Mission Unique
LC-130H	Ski	Mission Unique