KC-130J Aerial Tanker/Airlift Aircraft

Executive Summary
- End-to-end testing has not been completed in all intended operational environments. Some major mission areas remain untested. Overall system operational effectiveness and suitability cannot be fully characterized.
- The aircraft was deployed to Iraq without Aircraft Survivability Equipment having been fully characterized. Testing of the defensive systems in order to characterize system effectiveness was not adequate during initial operational evaluation in FY04.
- There are no Milestone or production decisions. Deficiency corrections are not funded until the FY08-FY09 timeframe. The Marine Corps has accepted delivery of more than 20 aircraft.
- Live Fire ballistic tests showed that the removable fuselage fuel tank is vulnerable.

System
- The KC-130J is a medium-sized four-engine turboprop aerial refueling aircraft capable of operating from short, unimproved airfields.
- The KC-130J has a removable fuselage fuel tank and reconfigurable cargo compartment.
- It is equipped with improved Sargent Fletcher pods for hose-and-drogue aerial refueling.
- It has enhanced defensive systems and foam in fuel tanks for increased survivability in non-permissive environments.

Mission
- The combatant commanders can use this Marine Corps aircraft to provide an aerial refueling capability for fixed- or rotary-wing, and tilt-rotor aircraft.
- Executes rapid-ground refueling for helicopters, ground vehicles, and fuel caches.
- Secondary missions include:
  - Transportation of personnel and cargo for air-land or airdrop delivery
  - Emergency aeromedical evacuation
  - Special operations mission support

Activity
- The Marine Corps began Operational Test (OT)-IIIC in FY04 to evaluate the operational effectiveness and suitability of selected KC-130J defensive systems.
- The current Test and Evaluation Master Plan was approved in October 2003.
- Operational Test IIIC Phase I, from May 9, 2004, through September 22, 2004, evaluated the Aircraft Survivability Equipment and determined it to be effective in a limited operational environment, but not operationally suitable. Additional testing is ongoing.
- Defensive systems sensor baseline and upgrade testing occurred in October 2004 and January 2005.
- AN/AAR-47 V(2)+ defensive systems Phase I testing occurred in June 2005. Phase II is planned for 1QFY06.
- Operational units began OT-IIIC Phase II for the redesigned, variable speed aerial refueling pods in a non-permissive environment on August 8, 2005. Testing was suspended shortly thereafter. On September 16, 2005, the system was decertified because of cracks in the refueling pod pylons. A redesign of the pylon and recertification for OT&E are expected before the end of 2005.
- The LFT&E program completed:
  - Ballistic testing of the removable fuselage fuel tank. The test report is in preparation.
  - An ullage fuel vapor measurement test series of the removable fuselage fuel tank.

Assessment
- PMA-207 is revising the Test and Evaluation Master Plan for submittal in early 2006.
- The AN/AAR-47 has not been fully characterized as installed on the KC-130J. The test was not adequate due to ground-based missile plume simulator procedures and comprehensive end-to-end assessment.
- The Navy has developed an adequate test strategy to assess AN/AAR-47 as installed on the KC-130J in early FY06.
- The ALR-56M radar warning receiver has not been fully characterized as installed on the KC-130J.

- The KC-130J is not suitable due to deficiencies in documentation, training, and false alarm indications within the built-in test system. These deficiencies will be re-evaluated in the next phase of operational test.
- Live Fire testing demonstrated that the removable fuselage fuel tank is vulnerable to ballistic threats.

Recommendations

1. The Navy should include funding and physical resources for test events throughout FY06 and FY07 on its next revision of the Test and Evaluation Master Plan.
2. Sufficient developmental testing and evaluation should be conducted on the re-designed refueling pod pylons before the system is re-certified to begin OT-IIIC Phase II.
3. The Navy must execute the AN/AAR-47 testing as planned in early FY06, and develop plans for testing of the ALR-56M in an operationally realistic environment.
4. The Navy should consider ullage inerting or ballistic foam to reduce or eliminate the ballistic vulnerability of the removable fuselage fuel tank.