KC-130J Aerial Tanker / Airlift Aircraft

Executive Summary

- DOT&E has not fully characterized the KC-130J in a worldwide threat environment because adequate testing has not been accomplished on the integration of the ALR-56M radar warning receiver.
- Since initial deployment, aircraft have been upgraded with the AN/AAR-47 Missile/Laser Warning System.
- Operational evaluation of the Sargent Fletcher aerial refueling pod system successfully completed in FY06.
- A Navy analysis showed that retroactive installation of an Onboard Inert Gas Generator System (OBIGGS) to mitigate the removable fuselage fuel tank hydrodynamic ram vulnerability is not feasible.

System

- The KC-130J is a medium-size, 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 aerial refueling pods that contain a hose with a drogue. The hose is connected to a retractable inertia reel system inside the pod.
- It has enhanced defensive systems and foam in fuel tanks for increased survivability in non-permissive environments.

Mission

- Combatant commanders can use this aircraft to provide an aerial refueling capability for fixed-wing, rotary-wing, and tilt-rotor aircraft.

- The aircraft has the added capability to provide rapid-ground refueling for helicopters, ground vehicles, and fuel caches.
- Secondary missions include:
  - Transportation of personnel and cargo for airland or airdrop delivery
  - Emergency aero-medical evacuation
  - Special operations mission support

Activity

- Operational Test-IIIC Phase I was conducted in FY04 to evaluate the operational effectiveness and suitability of selected KC-130J defensive systems. Additional testing of the AN/AAR-47 sensor completed in October 2005.
- Operational units began Operational Test-IIIC Phase II for the redesigned, Sargent Fletcher aerial refueling pods in August 2005. Testing was suspended shortly thereafter when cracks were found in the refueling pod pylons. A redesign of the pylon was conducted at the end of 2005 and the system was recertified for operational evaluation in January 2006.
- The Navy conducted an OBIGGS feasibility analysis in FY06. The analysis showed that retroactive installation of an OBIGGS to mitigate vulnerability of the removable fuselage fuel tank to hydrodynamic ram is not feasible.
- The Navy plans to revise the Test and Evaluation Master Plan and submit it to OSD in 3QFY07.
- The Navy conducted an analysis which showed that retroactive installation of an OBIGGS for ullage inerting is not feasible. Testing of a ballistic foam liner is scheduled at China Lake, California, during FY07. Ballistic foam will be installed in the removable fuselage fuel tank if testing shows that it reduces hydrodynamic ram damage.

Assessment

- Defensive systems testing conducted during Phase II in 1QFY06 to assess AN/AAR-47 characteristics as installed on the KC-130J was adequate. AN/AAR-47 is operationally effective as installed on KC-130J. However, there is one significant limitation, the details of which are classified.
- The ALR-56M radar warning receiver has not been fully characterized as installed on the KC-130J because the system is not mature enough to commence operational test and

evaluation. Although deficiencies in the ALR-56M radar warning receiver have been identified and discussed with the Air Force for incorporation and/or correction in future software builds, coordinated planning between the Navy and Air Force for this phase of testing has not been initiated.

- The Navy identified deficiencies in false alarm indications within the built-in-test system of the KC-130J. These are to be corrected in later software upgrades but are not funded.
- The removable fuselage fuel tank is vulnerable to hydrodynamic ram damage from ballistic threat impacts.

Recommendations

- Status of Previous Recommendations. The Navy has acted on two of the four FY05 DOT&E recommendations. The following recommendations remain unresolved:
  FY05 #3: DOT&E recommended the Navy develop plans for testing the ALR-56M in an operationally realistic environment. The Navy has not initiated this planning.
  FY05 #4: DOT&E Live Fire test and evaluation recommended that the Navy consider ullage inerting or ballistic foam to reduce or eliminate the ballistic vulnerability of the removable fuselage fuel tank.
- FY06 Recommendations. The Navy should:
  1. Consider ballistic testing to evaluate the effectiveness of a foam liner for the removable fuselage fuel tank.
  2. Complete adequate operational evaluation for characterizing ALR-56M performance as installed on the KC-130J in coordination with Air Force C-130J ALR-56M test and evaluation.
  3. Revise the TEMP to include funding and physical resources for test events to include testing of the KC-130J with ALR-56M installed.