

Miniature Air Launched Decoy (MALD), including MALD-Jammer (MALD-J)

Executive Summary

- The Air Force Operational Test and Evaluation Center (AFOTEC) began a Miniature Air Launched Decoy (MALD) IOT&E in July 2009 to support a full-rate production decision in FY11.
- MALD-Jammer (J) continued Technology Development of the jammer payload in FY09.
- A MALD-J Capability Development Document (CDD) and Test and Evaluation Master Plan (TEMP) will be required to support a Milestone B decision in FY10.

System

- MALD is a small, low-cost, expendable, air-launched vehicle that replicates what fighter, attack, and bomber aircraft look like to enemy radar operators.
- MALD-J is an expendable close-in jammer designed to degrade and deny an early warning or acquisition radar's ability to establish a track on strike aircraft while maintaining the ability to fulfill the MALD decoy mission.
- The Air Force plans to procure the second lot (150 of 1,500) production MALD in FY09 to support Initial Operational Capability in 2011.
- The F-16 C/D and B-52 are the lead aircraft to employ MALD and MALD-J.

Mission

- Combatant Commanders will use the MALD to allow a strike force to accomplish its mission by forcing enemy radars



and air defense systems to treat MALD as a viable target. MALD-equipped forces should have improved battlespace access for airborne strike forces by deceiving, distracting, or saturating enemy radar operators and Integrated Air Defense Systems.

- Airborne strike leaders will use MALD-J to degrade or deny enemy early warning and acquisition radar detection of friendly aircraft or munitions.

Prime Contractors

- Raytheon Missile Systems, Tucson, Arizona
- Raytheon Space and Airborne Systems, El Segundo, California
- Raytheon Electronic Warfare Systems, Goleta, California

Activity

MALD

- The Air Force completed the MALD mission planning concept of employment for both the F-16 and B-52.
- DOT&E approved the AFOTEC MALD operational test concept in February 2009 and MALD operational test plan in April 2009.
- AFOTEC began MALD IOT&E in June 2009. Testing included evaluation of navigation accuracy in a denied-GPS environment using hardware-in-the-loop tests at the Guided Weapons Evaluation Facility at Eglin AFB, Florida; reliability and performance flight tests conducted at Eglin AFB over water ranges and at the Nevada Test and Training Range (NTTR); and a modeling and simulation assessment of MALD in a complex, multiple threat environment at the Simulation and Analysis Facility at Wright-Patterson AFB, Ohio.

- The Air Force began a MALD reliability assessment program in FY09 that will randomly select MALD vehicles from Lot 1 to fly test missions in order to confirm reliability and availability.

MALD-J

- MALD-J continued Technology Development of the jammer payload with associated jammer mission updates to the Joint Mission Planning Software to support a Milestone B decision in FY10.
- MALD-J technology development included system interoperability tests in the Joint Preflight Integration of Munitions and Electronic Systems anechoic chamber at Eglin AFB; ground pole tests at China Lake Echo Range, California, to characterize effects of two MALD-Js operating

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in close proximity; and captive carry flight tests using a Sabliner at Eglin AFB and NTTR for payload development.

- The Air Force drafted a MALD-J CDD and MALD-J Milestone B TEMP anticipating completion of both documents in FY10.

Assessment

- The Air Force's primary open-air electronic warfare range, the NTTR, is extremely limited in overland flight profiles available for MALD and MALD-J, and does not authorize simultaneous flights of more than two MALD or MALD-J vehicles. These limitations challenge the Air Force's ability to adequately assess MALD and MALD-J in a realistic open-air mission environment and will require greater use of modeling and simulation to characterize the impact on the protected forces.
- MALD testing and performance are progressing. Air Force development of modeling and simulation is also progressing with an AFOTEC modeling and simulation plan to assess MALD in a many-on-many (multiple decoy versus multiple threat system) scenario as part of the IOT&E.
- MALD-J modeling and simulation will require more complex threat system models than MALD to enable jammer effectiveness modeling and support many-on-many simulation in the jamming environment.
- Modeling and simulation will require a proactive and disciplined verification, validation, and accreditation process for both MALD and MALD-J.
- The draft MALD-J CDD states the reason for developing an unmanned stand-in jammer is to protect friendly combat air forces by gaining battlespace access. In support of this purpose, the Air Force has made significant progress in

developing measures to characterize the MALD-J impact on the protected force.

- MALD and MALD-J are designed to work in concert with coalition forces as part of the Airborne Electronic Attack system-of-systems architecture. To ensure successful operations, the Air Force must develop a clear concept of operations and employment for integrated MALD and MALD-J operations to ensure mission planning for both systems can be coordinated with the mission planning of the protected forces. This clear concept of operations and employment must also address battlespace compatibility between MALD and MALD-J and the protected forces.

Recommendations

- Status of Previous Recommendations. The Air Force satisfactorily addressed one of the three FY08 recommendations. The remaining two recommendations are being adequately managed.
- FY09 Recommendations. The Air Force should:
 1. Develop an integrated MALD and MALD-J concept of operations and concept of employment for mission planning that clearly describes how both weapon systems will be synchronized with the protected forces. Both products should address battlespace compatibility.
 2. Continue to develop a Key Performance Parameter or Key System Attribute to characterize the MALD-J's effect on the protected forces.
 3. Increase test priority by increasing the Air Force Precedence Code for MALD-J (currently 2-06) to support the joint requirement to provide stand-in jamming capability by the end of FY12.