

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

Executive Summary

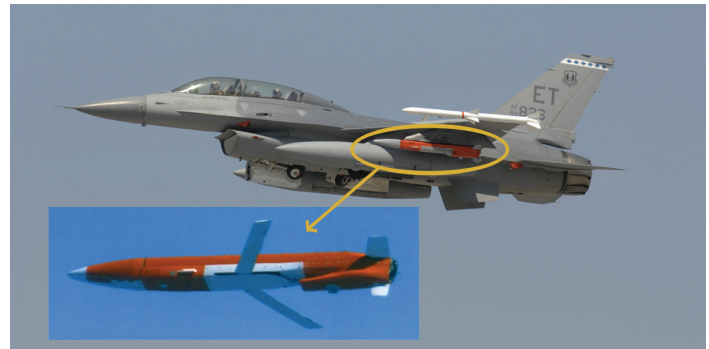
- The Nevada Test and Training Range (NTTR) does not have sufficient resources to support all Miniature Air Launched Decoy (MALD) and Miniature Air Launched Decoy – Jammer (MALD-J) test requirements.
- The Air Force MALD/MALD-J Concept of Operations (CONOPS) states that the vehicles are limited and expendable, and not meant to be used during exercises or training. To ensure aircrew weapon system proficiency and adequate combat readiness, the CONOPS needs to enable F-16 and B-52 aircrews to plan and launch vehicles during training exercises to ensure aircrew weapon system proficiency.

MALD

- Test results from the May 2010 modeling and simulation portion of IOT&E included algorithm and data errors that must be resolved to support a valid assessment of MALD in a complex threat environment with many MALDs versus numerous threat radars.
- In July 2010, following two MALD mission-critical failures during the final phase of IOT&E, the Air Force decertified MALD for operational test and the program office convened a failure review board (FRB) to investigate the events, determine the root cause(s), and define the necessary corrective actions.

MALD-J

- The MALD-J program achieved a successful Milestone B decision in May 2010. In May 2010, DOT&E approved the AFOTEC MALD-J Operational Assessment test plan. In April 2010, DOT&E approved the MALD-J Milestone B Test and Evaluation Master Plan (TEMP).
- In 3QFY10, the Air Force began the engineering, manufacture and development (EMD) phase, which will include the Air Force Operational Test and Evaluation Command (AFOTEC) Operational Assessment.
- Due to the commonalities of the two vehicles, the MALD-J EMD test program is dependent upon the resolution of the MALD operational test failures. This will likely delay the completion of the MALD-J EMD, Operational Assessment, and Milestone C decision.
- MALD-J modeling and simulation will require a more complex threat system modeling environment than MALD to enable an adequate assessment of jammer effectiveness in a complex threat setting with many MALD-Js versus numerous threat radars.



System

- MALD is a small, low-cost, expendable, air-launched vehicle that replicates how fighter, attack, and bomber aircraft appear 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 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 an airborne strike force to accomplish its mission by forcing enemy radars and air defense systems to treat MALD as a viable target.
- Combatant Commanders will use the MALD-J to allow an airborne strike force to accomplish its mission by jamming enemy radars and air defense systems to degrade or deny detection of friendly aircraft or munitions.
- MALD and MALD-J-equipped forces should have improved battlespace access for airborne strike forces by deceiving, distracting, or saturating enemy radar operators and Integrated Air Defense Systems.

Major Contractor

Raytheon Missile Systems – Tucson, Arizona

Activity

MALD

- AFOTEC began MALD IOT&E in June 2009 to support an FY11 full-rate production (FRP) decision. Reliability and performance flight tests were conducted at Eglin AFB, Florida overwater ranges and at the NTTR.
- In July 2010, during the final free-flight portion of IOT&E, two MALD vehicles terminated flight prematurely. The Air Force subsequently decertified MALD for IOT&E and the program office convened an FRB to investigate the events, determine the root cause(s), and define the corrective actions.
- In May 2010, AFOTEC conducted a modeling and simulation assessment of MALD in a complex, many-on-many threat environment (e.g., many MALDs versus multiple threat radar systems) at the Simulation and Analysis Facility (SIMAF), Wright-Patterson AFB, Ohio.
- In May 2010, the program office evaluated MALD in a GPS jamming environment in conjunction with the Air Force Weapon System Evaluation Program (WSEP) conducted at the Utah Test and Training Range (UTTR).
- AFOTEC conducted the IOT&E in accordance with the DOT&E-approved TEMP and test plan.

MALD-J

- During 2QFY10, the Air Force completed MALD-J technology development and a critical design review (CDR).
- In April 2010, DOT&E approved the MALD-J Milestone B TEMP.
- The MALD-J program achieved a successful Milestone B decision in May 2010.
- In May 2010, DOT&E approved the AFOTEC MALD-J Operational Assessment test plan. The AFOTEC Operational Assessment will occur in coordination with the EMD phase.
- In 3QFY10, the Air Force began the EMD phase with a free-flight test conducted at Eglin AFB overwater ranges and a captive-carry flight test at the NTTR using a Sabreliner aircraft configured with a hard-wired MALD-J test vehicle.
- In June 2010, the Air Force identified requirements for the MALD-J Increment II in a draft update to the MALD-J Capability Development Document (CDD).
- The Air Force conducted MALD-J testing in accordance with the DOT&E-approved TEMP and test plans.

Assessment

- The Air Force's primary open-air electronic warfare range, the NTTR, does not have sufficient resources to support all of MALD's test requirements. Scheduling two IOT&E missions added eight months to the IOT&E schedule because of limited range availability, while data processing and transfer to the user slowed timely test evaluation and reporting. In addition, the NTTR availability schedule does not have test

time for MALD-J IOT&E until the summer of FY12, leaving insufficient time for AFOTEC to complete analysis and reporting to support achieving Initial Operational Capability in FY12.

- The Air Force MALD/MALD-J Concept of Operations (CONOPS) states that the vehicles are limited and expendable, and not meant to be used during exercises or training. As a result of post-mission debriefs and experience from observing other MALD test events, the Air Force should strongly consider altering its MALD/MALD-J CONOPS to enable F-16 and B-52 aircrews to employ vehicles during training exercises to ensure adequate weapon system proficiency and combat readiness.

MALD

- The program office FRB convened in response to the July 2010 MALD failures should result in a thorough investigation and define the necessary corrective actions. Depending on the failure modes identified, some developmental testing will likely be required prior to completing the IOT&E. The scope of the remaining IOT&E is to be determined and will be coordinated among the program office, AFOTEC, and DOT&E.
- Test results from the IOT&E modeling and simulation events at SIMAF included algorithm and data errors that must be resolved to support a valid assessment of MALD in a many-on-many threat environment.

MALD-J

- Due to the commonalities of the two vehicles, the MALD-J EMD test program is dependent upon the results of the MALD FRB to resume EMD free-flight testing. This will likely delay the completion of the MALD-J EMD, Operational Assessment, and Milestone C decision.
- MALD-J modeling and simulation will require a more complex threat system modeling environment than MALD to enable an adequate assessment of close-in jammer effectiveness in a complex threat setting with many MALD-Js versus numerous threat radars.
- MALD-J Increment II will require detailed threat system antenna patterns incorporated into modeling and simulation to support MALD-J Increment II OT&E. Any delay in this antenna pattern development will negatively affect the ability to conduct MALD-J Increment II OT&E.

Recommendations

- Status of Previous Recommendations. The Air Force satisfactorily addressed one of the three FY09 recommendations. The remaining recommendations concerning development of an integrated MALD/MALD-J CONOPS and increasing the test priority and Air Force Precedence Code of MALD-J require continued attention.

AIR FORCE PROGRAMS

- FY10 Recommendations. In addition to addressing the remaining FY09 recommendations, the Air Force should:
 1. Provide sufficient resources to the NTTR to enable personnel to process and distribute test data in a timely manner.
 2. Revise the CONOPS to include a training requirement for aircrews to plan and launch MALD and/or MALD-J systems during training exercises to ensure the full capability can be employed during combat.
 3. Fix algorithm and data errors in the SIMAF simulation to allow a valid assessment of MALD in a many-on-many environment.
 4. Improve the modeling and simulation capability in support of MALD-J to enable an adequate assessment of close-in jammer effectiveness in a many-on-many complex threat environment.
 5. Expand electronic warfare test capabilities at other test ranges to more adequately support electronic warfare testing and training.

AIR FORCE PROGRAMS