

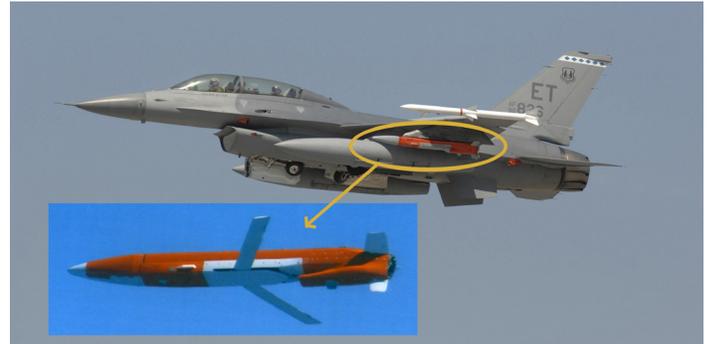
Miniature Air-Launched Decoy (MALD) and MALD-Jammer (MALD-J)

Executive Summary

- Miniature Air Launched Decoy – Jammer (MALD-J) is operationally effective with limitations and operationally suitable in specific environments as detailed in DOT&E’s March 2015 classified IOT&E report. Not all operational environments could be assessed. The Air Force Operational Test and Evaluation Center completed mission level simulation testing, but certain operational elements were not included because of limitations in the Digital Integrated Air Defense System (DIADS).
- The Program Office completed open air testing for MALD-J (and MALD) with a software upgrade to address problems identified in GPS-degraded or denied environments.
- Suitability data show that the Air Force’s corrective actions have improved the materiel reliability for MALD-J (and MALD).

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 airborne stand-in jammer for electronic attack with the ability to loiter on station.
- MALD-J will jam specific Early Warning/Ground Control Intercept/Acquisition radars while retaining the capabilities of the MALD.
- MALD-J will stimulate and degrade an enemy’s integrated air defense system.
- The F-16 C/D and B-52H are the lead aircraft to employ MALD and MALD-J.



Mission

- Combatant Commanders will use MALD and MALD-J to improve battlespace access for airborne strike forces by deceiving, distracting, or saturating enemy radar operators and Integrated Air Defense Systems.
- Combatant Commanders will use the MALD to allow an airborne strike force to accomplish its mission by deceiving 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 specific enemy radars and air defense systems to degrade or deny detection of friendly aircraft or munitions.

Major Contractor

Raytheon Missile Systems – Tucson, Arizona

Activity

- In October 2013, the Air Force Operational Test and Evaluation Center completed full mission-level simulation testing using the DIADS.
- The 28th Test and Evaluation Squadron conducted a Force Development Evaluation (FDE), in conjunction with a MALD-J Reliability Assessment Program mission, to address problems identified in FY14. DOT&E observed this evaluation and used the FDE as an operational test.
- On October 24, 2015, during U.S. Air Forces Central Command characterization testing, MALD-J aborted its mission because of large values in the Geometric Dilution of Precision (GDOP) of GPS satellites used in navigation. The navigation system did not update the satellites to be used in the calculation of GDOP prior to launch.
- The FDE test included the launch of six MALD-J vehicles and one MALD vehicle with the software upgrade, which includes barometric aiding in the GPS Aided Inertial Navigation System (GAINS).
- In March 2015, DOT&E submitted an IOT&E report.
- In March 2015, the Program Office completed the Critical Design Review for the obsolescence upgrade to the GAINS, designating it GAINS2.
- All MALD-J (and MALD) testing was conducted in accordance with a DOT&E approved test plan.

Assessment

- The March 2015 IOT&E report concluded MALD-J is operationally effective with limitations and operationally

FY15 AIR FORCE PROGRAMS

suitable in specific environments. Not all operational environments could be assessed because of simulation limitations of DIADS.

- The problem of the MALD-J aborting due to the navigation system not updating satellites in the GDOP calculation prior to launch will be corrected in software build nine.
- Barometric aiding improved vertical navigational accuracy (and stability) in a GPS-degraded or denied environment. No improvement in horizontal navigational accuracy was observed.
- A combination of MALD and MALD-J data were used to show a materiel reliability of 86 ± 2 percent. Corrective actions have improved the materiel reliability of MALD-J (and MALD). Since no failures in the MALD-J payload have occurred to date, and the other systems are otherwise essentially identical, combining these data is appropriate.
- Mission planning test events determined B-52 aircrews planning a full load of 16 MALD-J may exceed the time required to support a 72-hour Air Tasking Order planning cycle.
 - The mission planning times from the IOT&E mission-planning events were: one MALD-J was 40 minutes, which is well under the 7-hour requirement to plan a single MALD-J; a fully-loaded F-16 (4-MALD-Js)

was an average of 2 hours and 15 minutes; and a fully-loaded B-52 (16 MALD-Js) was an average of over 11 hours. The time to mission plan a full load B-52 is assessed as excessive and potentially unable to support a 72-hour Air Tasking Order planning cycle.

- In FY16, the Air Force intends to conduct mission planning events to demonstrate improved mission planning time performance.

Recommendations

- Status of Previous Recommendations. The Air Force satisfactorily addressed one of two FY14 recommendations. However, they still need to improve mission-planning capabilities for the MALD-J program to reduce the time needed to plan a full load of MALD-J vehicles.
- FY15 Recommendations. The Air Force should:
 1. Incorporate additional operational elements into the mission-level simulation in DIADS.
 2. Improve horizontal navigational accuracy of the MALD-J (and MALD) vehicle.
 3. Test the GAINS2 obsolescence upgrade to confirm equivalent or improved performance compared to the GAINS.