



## Aegis Ballistic Missile Defense

### Mission

The Missile Defense Agency's (MDA's) Aegis Ballistic Missile Defense (Aegis BMD) element of the Ballistic Missile Defense System (BMDS) will, as part of its Initial Defensive Operations, concurrently provide: 1) long range surveillance and track (LRS&T) external sensor capability to the Ground Based Midcourse Defense (GMD) element and the BMDS against Intercontinental Ballistic Missiles (ICBM), 2) hit to kill capability to intercept and destroy short and medium range ballistic missiles in the 2004-2006 timeframe, 3) utilizing technology insertion efforts to expand the Aegis BMD Battlespace to intercept and destroy intermediate range ballistic missiles in the Block 2006 timeframe. Additionally, Aegis BMD will expand the battlespace further by addressing the capability to intercept ballistic missiles lower outside of earth's atmosphere (exoatmospheric). The Aegis BMD LRS&T capability will be provided via modification to 15 Aegis equipped destroyers while the engagement capability in Block 2004 will be provided via modification to three Aegis BMD cruisers. All will retain their multi-mission warfare capability in addition to the ballistic missile.



### Program Description

The Aegis BMD element of the BMDS builds upon the existing sea-based U. S. Navy Aegis Weapons System (AWS) and the Standard Missile (SM) infrastructure currently deployed on both TICONDEROGA class cruisers and ARLEIGH BURKE class destroyers.

Aegis BMD capability is developed in two-year blocks that build, verify, and offer specific capabilities with each successive two-year block providing increased capabilities to counter ballistic missiles. The Aegis BMD system development and testing will be integrated with the BMDS Testbed and BMDS architecture while fully supporting the MDA's evolutionary, capability-based block acquisition strategy.

The Aegis BMD Block 2004 develops the first Aegis BMD system that is certified for tactical deployment. Using a BMD-modified AWS and an SM-3 guided missile, the Block 2004 system will defeat unitary (attached) and separating (unattached) targets with Aegis BMD-configured Cruisers and SM-3 guided missiles. Additionally, the Aegis BMD Block 2004 capability will provide a long-range surveillance and track capability of ICBM's from Aegis Destroyers and Cruisers.

The Aegis BMD Block 2006 will evolve from the Block 2004 Aegis weapon system with the focused development on improved prototype radar discrimination. Block 2008 develops the Aegis BMD weapon system with fully integrated advanced radar discrimination. The Block 2010 system is currently expected to add Ballistic Missile Defense capabilities to the Navy Open Architecture system using an evolutionary acquisition strategy and will result in ever increasing capabilities against ballistic missile threats.

The U. S. Japan Cooperative Research program is a part of our security alliance with our allies and complements the incremental capability approach. This program performs research on key components benefiting both the U.S. and Japan. It will continue in accordance with the U. S. Department of Defense/Japan Defense Agency Memorandum of

Agreement signed in 1999 to conduct cooperative research in BMD. The focus of research is on four components of the SM-3 guided missile: sensor, advanced kinetic warhead, second stage propulsion, and lightweight nosecone.

### **Aegis BMD Flight Testing**

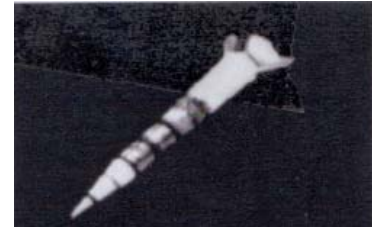
The test program for Aegis BMD has focused on the philosophy of “test a little, learn a lot” since its inception in the early 1990’s with the TERRIER Lightweight Exo-Atmospheric Projectile (LEAP) Project. TERRIER LEAP included four flight tests between 1992 and 1995, and was successful in demonstrating that LEAP technology could be integrated into a sea-based tactical missile for exoatmospheric ballistic missile defense.



*TTV-3 Launch*

The lessons learned from TERRIER LEAP evolved into the Aegis LEAP Intercept (ALI) Flight Demonstration Project (FDP), the goal of which was to utilize the Aegis Weapons System and Standard Missile 3 (SM-3) to hit a ballistic missile in the exoatmosphere. The ALI test objectives were achieved with two successful descent phase intercepts of a ballistic missile during Flight Mission 2 (FM-2) and FM-3 in January 2002 and June 2002 respectively firing an SM-3 from the USS LAKE ERIE.

The transition of ALI to an Aegis BMD capability commenced with FM-4 in November of 2002 with USS LAKE ERIE, executing the first successful ascent phase intercept of a short range ballistic missile (SRBM) by the Aegis BMD element. Seven months later, FM-5 was executed; however due to an anomaly with the Kinetic Warheads (KW) Solid Divert and Attitude Control System (SDACS) an intercept was not achieved; however a significant amount of engineering data was obtained in support of secondary objectives and was incorporated in the subsequent flight test, FM-6. FM-6, which occurred in December of 2003, resulted in the fourth successful intercept in the last five attempts by the Aegis BMD element, and significantly in this test, successfully utilized external cues by other sensors and achieved a lethal aimpoint shift against the ballistic missile, hitting the warhead to achieve total destruction. Aegis BMD flight testing will continue for Block 2004, with FM-7 scheduled for 2005. As Aegis BMD plans for FM-7, concurrently Aegis BMD will focus on its Long Range Surveillance and Track (LRS&T) mission to GMD and the BMDS to achieve the BMDS’s Initial Defensive Operations in 2004. As an integral external sensor to GMD and the BMDS in this timeframe, Aegis BMD will participate in GMD’s scheduled flight tests, exercising time critical tracking of ICBM-class targets.



*KW Seeker Track*

In addition to flight testing, the Aegis BMD element conducts critical experiments in order to gain additional data that reduces program risk and costs. For the Critical Experiment series, Aegis BMD collects data using test beds, early engineering prototypes, and calibrated flight test instrumentation to reduce risk for the evolving radar, seeker, missile, and ship systems designs.