



**LOCKHEED MARTIN**   
*We never forget who we're working for®*

**Aegis Ballistic Missile Defense**  
At Sea, On Patrol



# Aegis Ballistic Missile Defense

## **The threat is real**

Ballistic and cruise missiles present a significant threat to U.S. and allied forces overseas as well as to the United States and its territories. More than 35 countries have ballistic missile systems, and the threat continues to increase with the proliferation of missile technology. The U.S. Missile Defense Agency (MDA) is developing a Ballistic Missile Defense System (BMDS) to provide an integrated, layered defense against ballistic missiles of all ranges, in all regions of the world and in all phases of flight.

## **Aegis BMD**

Aegis Ballistic Missile Defense (BMD) is a proven capability in the defense against ballistic missiles using the mobility of Aegis-equipped cruisers and destroyers to intercept targets during the midcourse and terminal phases of flight, as well as to provide surveillance support to other elements of the BMDS. Aegis BMD is being developed by the MDA in cooperation with the U.S. Navy. The Aegis BMD arm of the nation's BMDS uses hit-to-kill technology to intercept and destroy short- and medium-range ballistic missiles. Additionally, Aegis BMD ships provide Long Range Surveillance and Tracking (LRS&T)

of intercontinental ballistic missiles, and work with other BMDS elements to provide advance warning for the defense of the nation, deployed forces, and allies. As of October 2012, 26 Aegis BMD ships – 22 in the U.S. Navy and four in the Japanese Maritime Self-Defense Force – have the certified capability to engage ballistic missiles and perform LRS&T missions. The selection of Aegis BMD as a key contributor to the Obama administration's "phased, adaptive approach" to missile defense in Europe speaks to the confidence in the Aegis system. Aegis BMD-capable ships will help defend against ballistic missile threats worldwide – and extended coverage will be realized with the additional of the Aegis Ashore configuration.

## **Global, mobile, and linked**

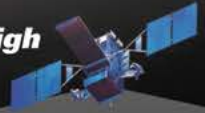
In the future, more than 100 forward deployed Aegis-equipped ships, representing six countries, may be tasked with moving up close to the enemy and providing early detection and threat observation during the boost and ascent phases of flight. This critical early data is then relayed to other sea-, land- or space-based assets in the BMDS network to complete the mission. Aegis BMD's mobility provides flexibility to track and destroy threat missiles from strategic locations, with the freedom to move about as dictated by the threat.

## Certified and deployed

Aegis BMD is the first element of the BMDS to be formally certified for deployment. Aegis BMD continues to conduct a series of increasingly more realistic and complex flight tests to verify the full range of capability.



**SBIRS High**



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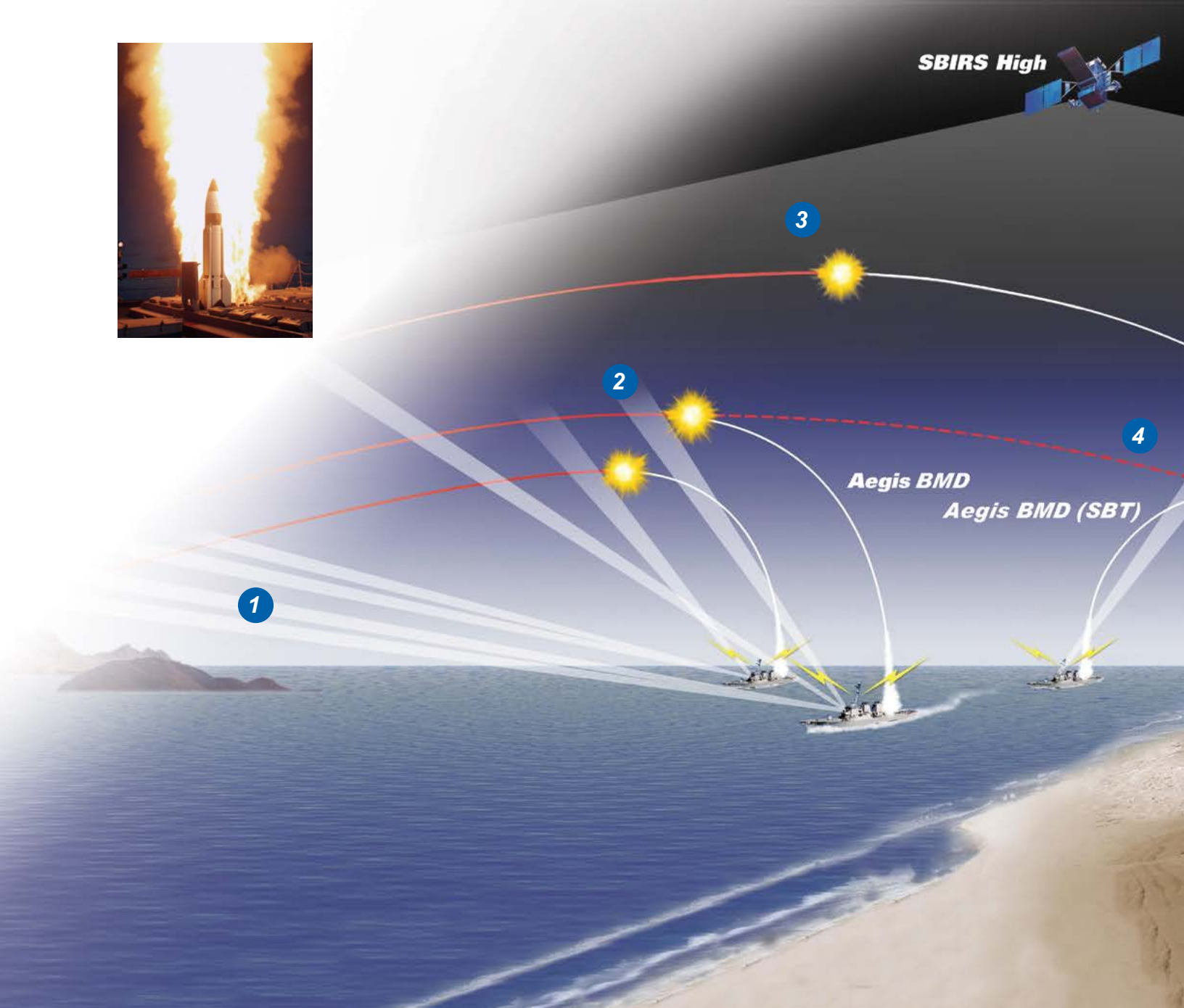
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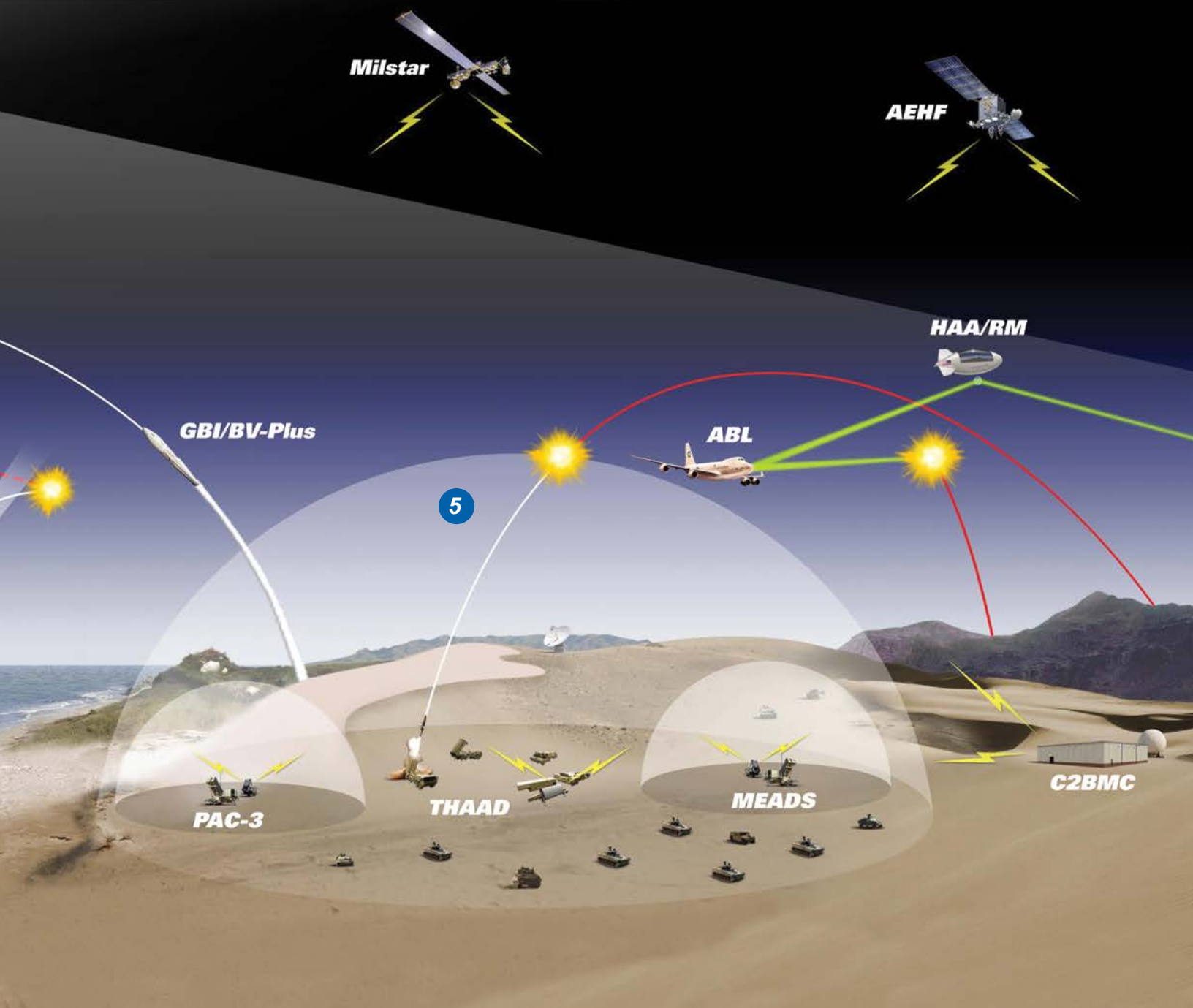
**Aegis BMD**

**Aegis BMD (SBT)**



# At sea, on patrol

- 1 Forward deployed Aegis ships are able to detect and track ballistic missile targets during the boost and ascent phase of flight for early intercept or cueing to other shooters.
- 2 The Aegis Weapon System guides the interceptor and uplinks target track information for terminal homing.
- 3 Defense against ballistic missiles in the midcourse phase of flight can be enhanced by using existing Aegis sea-based assets to complement land-based missile defense assets.
- 4 Aegis sea-based terminal defense provides a mobile defense against short range endoatmospheric ballistic missile threats and asymmetric threats.
- 5 The Aegis Weapon System's long-range surveillance and tracking capability provides robust and accurate cueing to other elements of the BMDS, including PAC-3, THAAD and MEADS.



## We deliver!

In February 2008, Aegis BMD was assigned a unique, one-time challenge: Destroy an errant U.S. satellite before it crashed to earth with a deadly cargo of hydrazine fuel. Lockheed Martin engineers – along with the government, associated laboratories and industry partners – designed, developed, modeled, tested, and deployed a modified system to detect, track and engage the satellite. In less than 45 days, the engineering was completed, sailors on three ships were trained, and the modified Aegis BMD system successfully destroyed the satellite. “The capability that can be drawn out of a well-engineered system was beyond our wildest dreams 30 years ago. . . even a year or two ago, nobody would have thought we would be asked to go shoot down a satellite,” said Scott Perry, director of strategic planning, communication and alignment for the MDA’s Aegis BMD program.

This ability to adapt to real-world challenges shows the operational flexibility and adaptability of the Aegis system. It has been continually improved since its inception, making today’s systems among the most modern, modular, and open architecture compliant combat systems in the U.S. Navy today. Aegis – through intelligent, deliberate evolution – has remained not only tactically viable, but has emerged solidly as a strategic



*FTM-13 targets as seen by the kill vehicles prior to impact. During this test in November 2007, USS Lake Erie simultaneously engaged two ballistic missiles above the atmosphere.*

national asset – protecting the United States and its allies from complex air and missile threats. The government and industry continue to invest in technology upgrades in order to keep pace with the evolving threat, a process which has ensured superior performance for nearly 30 years.

Some recent highlights include:

- Guided Missile Cruiser USS Lake Erie – with the new Aegis Ballistic Missile Signal Processor (BSP) – successfully detected, tracked and guided simulated Standard (SM-3) missiles to intercept ballistic missile targets launched from the Pacific Missile Range Facility in Kauai. Key upgrades included the Aegis BSP allow the system to effectively handle the increasingly complex ballistic missile threats expected over the coming decade.
- JS Myoko, Japan’s third destroyer equipped with Aegis BMD system, successfully guided a Standard

Missile (SM)-3 Block IA missile to intercept and destroy a medium range ballistic missile target outside the Earth’s atmosphere.

- USS Hopper (DDG-70) intercepted a ballistic missile target in exo-atmosphere. During the live fire test USS Lake Erie and USS O’Kane conducted important testing events to validate Aegis BMD 4.0.1 elements as part of the Aegis philosophy to “build a little, test a little, learn a lot.”
- The “next generation” Aegis BMD system – Aegis BMD 4.0.1 with the Aegis Ballistic Missile Signal Processor (BSP) was installed in USS Lake Erie (CG 70) for testing, qualification, and was certified in 2012.
- U.S. Navy certifies newest upgrade to the system – Aegis BMD 3.6.1. Aegis BMD has added the capability to defeat short-range ballistic missiles as they re-enter the atmosphere in their final (terminal) stage of flight.

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