



STELLAR NINJA FACTSHEET Flight Test Standard Missile-21 (FTM-21)

Need for Ballistic Missile Defense

Today, the U.S. and allies face an ever growing number and sophisticated ballistic missile threats around the world. Wider access to advanced technology has expanded the number of countries with sufficient military potential to obtain such weapons, including ones with the potential for weapons of mass destruction as the warhead.

“The threat continues to grow as our potential adversaries are acquiring a greater number of ballistic missiles, increasing their range and making them more complex, survivable, reliable, and accurate. The missile defense mission is becoming more challenging as potential adversaries incorporate BMD countermeasures. . . North Korea is developing a road-mobile ICBM and an intermediate-range ballistic missile (IRBM) capable of reaching Guam, the Aleutian Islands, and potentially Hawaii. Iran also has steadily increased its ballistic missile force, deploying next generation short- and medium-range ballistic missiles (SRBM and MRBMs) with increasing accuracy and new submunitions payloads. Iran has publicly demonstrated the ability to launch simultaneous salvos of multiple rockets and missiles . . . “

Vice Admiral J.D. Syring, USN
Director, Missile Defense Agency

Testimony before House Armed Services Committee
The Strategic Forces Subcommittee
May 8, 2013

Aegis BMD and SM-3 Block IB

The focus of the second generation Aegis BMD Combat System is centered on the global trends in the development, deployment and proliferation of ballistic missiles. This upgraded Aegis BMD system provides the capability to engage increasingly longer range and more sophisticated ballistic missiles launched in larger raid sizes. A series of intercept firings are being conducted to validate the *operational effectiveness and suitability* of Aegis BMD 4.0 Variant Combat System and the Standard Missile-3 (SM-3) Block IB guided missile.

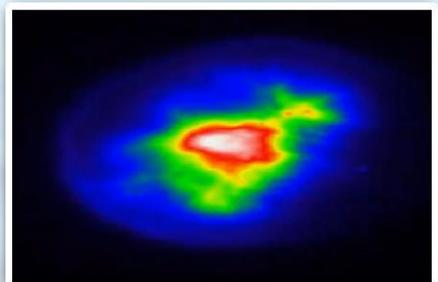
On May 9, 2012 Aegis BMD 4.0 Variant and SM-3 Block IB guided missile achieved the first successful intercept of a unitary ballistic missile target (FTM-16 Event 2a), verifying the proper performance of all the system upgrades. Seven weeks later, the second generation Aegis BMD system moved on to Combined Development Testing / Operational Testing (DT/OT) with FTM-18 conducted on June 26, 2012. The system successfully identified and intercepted the lethal object of a separating ballistic missile target in a debris environment. Continuing Combined DT/OT on May 15, 2013, FTM-19 increased the challenge to the discrimination capability of the ship’s Ballistic Missile Signal Processor (BSP) and the missile’s two-color infrared seeker. This test event used a production representative missile configuration and incorporated operational upgrades from previous tests to successfully intercept a complex separating ballistic missile target.



USS LAKE ERIE



SM-3 Block IB Firing



SM-3 Block IB Intercept



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The primary objective of FTM-21 is to demonstrate a SM-3 Blk IB missile using salvo size 2 firing policy against a complex, separating ballistic missile target. Test participants include an Aegis BMD cruiser and Aegis BMD laboratory at the Space and Naval Warfare Center (SPAWAR).

Continuing Aegis BMD's approach of operationally representative, no notice testing, FTM-21 begins as the Aegis BMD ship receives operational intelligence that hostile forces are making preparations to take aggressive action against a friendly nation or deployed forces. The ship's mission is to protect a defended area from ballistic missile attacks. The ship's crew uses this intelligence information with the Aegis BMD Mission Planner to determine an acceptable ship patrol area (Ship Operating Area) along with recommended search sectors for the Aegis AN/SPY-1B(V) radar. The timing of the threat target launch is not revealed to any of the participants.

The target is launched from the Pacific Missile Range Facility (PMRF), Barking Sands, Kauai, Hawaii. The SPY-1 radar searches and detects the target as it enters a radar search sector. Shortly after the target is detected and declared engageable by the weapon system, a fire control solution is calculated and the ship's crew fires a salvo of two SM-3 Block IB missiles. The system tracks the SM-3 missiles throughout the remainder of their flights, while also transmitting track data to the Aegis BMD laboratory at SPAWAR.

The target follows a ballistic trajectory. During the flight, the weapons system and SM-3 will discriminate multiple objects to determine if they are lethal or non-lethal. Through uplinked guidance

commands, the weapon system positions the SM-3 missiles so that the lethal object of the target is in the center of the missile seekers' fields of view.

The SM-3 Block IB Kinetic Warheads (KW) perform divert maneuvers to approach and destroy the threat object of the target. Additional refinement of the intercept calculations are made by the KWs and final intercept divert maneuvers are conducted. The KWs impact the target, destroying it with the kinetic energy of impact.

Acquisition Strategy

As directed in 2002, missile defense development, operations and support required non-standard approaches to both acquisition and requirements generation; and also that BMDS elements enter DoD Milestone C with Initial Operational Test & Evaluation (IOT&E) executed for full rate production decision. Building on the successes of FTMs 16E 2a, 18 and 19, Aegis BMD is conducting DOT&E's IOT&E guidance for follow-on production decisions for the SM-3 Block IB guided missile. IOT&E entails dedicated operational testing of production representative test articles and uses operational scenarios. FTM-21 is an IOT&E flight test for Aegis BMD.

Deployment

Two Pacific Fleet Aegis BMD cruisers, *USS LAKE ERIE* (CG-70) and *USS SHILOH* (CG-67), have the second generation Aegis BMD Weapon System installed. Two Atlantic Fleet destroyers, *USS CARNEY* (DDG-64) and *USS DONALD COOK* (DDG-75), have also been upgraded and *USS McFAUL* (DDG-74) and *USS PORTER* (DDG-78) are being upgraded to this Aegis BMD configuration.