

Standard Missile-6 (SM-6)

Executive Summary

- Standard Missile (SM)-6 Block I (BLK I) has attained Full Operational Capability. The Navy declared Initial Operational Capability for SM-6 BLK IA in 1QFY20.
- The Navy completed modeling and simulation (M&S) runs for the record of SM-6 BLK IA. DOT&E will publish the SM-6 BLK IA FOT&E report in FY20.
- The Navy is leveraging inherent capabilities in the SM-6 missile to evolve the overall SM-6 mission set. The Navy's SM-6 Future Capabilities Demonstration (FCD) project executes these mission expansions under the overall management of the SM-6 program.

System

- SM-6 BLK I and BLK IA are the latest evolution of the SM family of fleet air defense missiles.
- The Navy employs the SM-6 from Aegis-equipped cruisers and destroyers (i.e., *Ticonderoga*-class cruisers and *Arleigh Burke*-class destroyers).
- The SM-6 seeker and terminal guidance electronics derive from technology developed in the Advanced Medium-Range Air-to-Air Missile program.
- SM-6 retains the legacy SM semi-active radar homing capability.
- SM-6 receives midcourse flight control from the Aegis Weapon System (AWS) via the ship's radar; terminal flight control is autonomous via the missile's active seeker or supported by the AWS via the ship's illuminator.
- The Navy intends SM-6 BLK IA to provide improved performance against advanced threats.
- SM-6 Dual I capability is fielded and provides Sea-Based Terminal Ballistic Missile Defense (BMD) capability against short-range ballistic missiles.
- The Navy upgraded the SM-6 to add an anti-surface capability but it has not yet operationally tested that capability.

Mission

- The Joint Force Commander/Strike Group Commander may employ naval units equipped with the SM-6:



- For air defense against fixed-/rotary-winged targets and anti-ship missiles operating at altitudes ranging from very high to sea-skimming.
- To provide extended-range capability against surface targets as part of the FCD.
- To provide extended range over-the-horizon capability against at-sea and overland threats as part of the Navy Integrated Fire Control – Counter Air From the Sea operational concept.
- The Joint Force Commander/Strike Group Commander will use SM-6 Dual I to provide Sea-Based Terminal capability against short- and medium-range ballistic missiles in their terminal phase of flight, against anti-ship cruise missiles, and against all types of aircraft.

Major Contractor

Raytheon Missile Systems – Tucson, Arizona

Activity

- The Navy conducted SM-6 BLK IA M&S FOT&E in FY19 in accordance with the DOT&E-approved test plans.
- In FY19, the Navy continued land-based and at-sea developmental testing of the SM-6 BLK I and BLK IA FCD.

Assessment

- As reported in the FY18 DOT&E SM-6 BLK I FOT&E Report, the SM-6 remains effective and suitable with the exception of the classified deficiency identified in the FY13 IOT&E Report. The SM-6 BLK I satisfactorily demonstrated

FY19 NAVY PROGRAMS

compatibility with AWS Baseline 9 Integrated Fire Control capability.

- The Navy is not planning operational testing or lethality assessments for SM-6 BLK I and BLK IA FCD. The FCD represent significant warfighting improvements for Aegis destroyers and cruisers. DOT&E, with the Navy's concurrence, actively participated in the planning and execution of the FY19 and planned future developmental test events, and will report, as appropriate, on these warfighting enhancements.
- Data analysis is underway on the completed SM-6 BLK IA live fire and M&S FOT&E events. DOT&E will report on SM-6 BLK IA FOT&E in FY20.

Recommendations

The Navy should:

1. Continue to improve software based on results investigating the classified performance deficiency discovered during IOT&E, perform corrective actions, and verify corrective actions with flight tests. This includes correcting the two new problems identified during FY17 SM-6 BLK I Verification of Corrected Deficiency tests.
2. Plan FOT&E testing and lethality assessments for SM-6 BLK I and BLK IA FCD.