

Threat Representation – Special Test or Certification Requirements Example

Example 1 – Sea Shark

1.3.6 Special Test or Certification Requirements

Anti-Ship Cruise Missiles (ASCMs) are the primary threat to Naval Surface Ships. Critical attributes of ASCMs include speed, altitude profile, maneuverability, radar cross section, size and shape, infra-red (IR) signature, passive homing capability, countermeasures, and radar emissions. In planning for IOT&E, the ship-launched Sea Shark missile must intercept several ASCM threats, including the most prevalent ASCM, which has a cruise speed of 1.5 Mach and, upon achieving radar lock on its ship target, accelerates to 2.0 Mach, and maintain that speed while homing on the target until ship impact. The threat also has the ability to descend from a 50-foot cruise altitude to 25 feet.

The available aerial threat surrogate has a relatively constant speed of 1.2 Mach and can be flown no lower than 50 feet. Accordingly, the adequacy of the IOT&E for the Sea Shark missile will hinge on the development of a new threat surrogate that more closely matches the anticipated threat in altitude, speed, and radar emissions. The altitude and speed capabilities will demonstrate Sea Shark's kinematic capability to intercept the threat. Radar emission capability will allow the electronic support capability of Sea Shark's combat system to detect and identify the threat during the engagement time-line. The evaluation will also leverage missile flight test results from developmental testing to validate an end-to-end simulation model of threat and Sea Shark engagements. In addition to developing a high fidelity threat surrogate for IOT&E, the Navy will develop the capability to launch multiple simultaneous threat surrogates to support the first FOT&E.

Example 2 - Dakota

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A simulator/stimulator for Band IV infrared Man-Portable Air Defense Systems (MANPADs) is needed to participate with other Real Time Casualty Assessment (RTCA) instrumentation during IOT&E. This simulator/stimulator will have the visual signature of an actual MANPADS, will require the gunner to employ appropriate target tracking within range before simulated launch, will emit appropriate missile launch signatures, will adjudicate the engagement outcome, and will transmit the engagement outcome to the RTCA instrumentation integrator. As a battlefield entity, the simulator/stimulator will be vulnerable to engagement from the Dakota helicopter and if adjudicated as killed by Dakota weapons systems, will be inactivated until appropriately restored.

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Example 3 – F-35 Joint Strike Fighter

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Early certification and release of software loads and capability to OT&E is necessary to enable early assessment of system capabilities by OT pilots and maintenance personnel, to afford the opportunity for operationally representative training prior to OT periods, to facilitate test data collection planning, and to reduce risk by maximizing the effectiveness of integrated test. Coordination in this regard must include software safe-for-flight certification for employment by OT pilots in pre-fleet-release mission systems software loads on OT&E aircraft and supporting systems.

Example 4 – Generic Air-to-Air Missile (GAAM)

1.3.6 Special Test or Certification Requirements

The Modern Stealthy Fighter Target (MSFT) is required to represent modern low signature fighters. The MSFT is required to achieve the radar and infrared signatures of low signature fighters as described in the System Threat Assessment Report dated XXXX. Additionally, the MSFT will be required to carry full Digital Radio Frequency Memory (DRFM) electronic attack capability and emulate modern threat Active Electronic Steering Array (AESA) radars. MSFT will be able to fly throughout the entire threat envelope, including high-g maneuvers. MSFT must also be able to carry internally all necessary range instrumentation, including lethality assessment hardware.