

Test Limitations – OT Examples

Background for Maritime Air Defense Example

This example is for the hypothetical Sea Shark missile (ship-launched, anti-air, semi-active radar homing missile, supported by the hypothetical Neptune Combat System (NCS)). Critical operational issues (COIs) for Sea Shark and its supporting combat systems include:

- Area Air Defense Capability – Can Sea Shark, supported by the NCS, provide air defense for other ships within the Aircraft Carrier Strike Group?
- Own Ship Air Defense Capability – Can Sea Shark, supported by the NCS, provide own ship defense against air threats while also conducting Area Defense?
- Availability – Can Sea Shark, after a representative shipboard storage time in the vertical launch cell, provide the required launch availability?
- Reliability – Can Sea Shark, after a representative shipboard storage time in the vertical launch cell, provide the required in-flight reliability?

3.4.4 Test Limitations

Quantities of Sea Shark missiles will be limited, possibly precluding re-engagement of surviving simulated threats. In some scenarios, threats/surrogates might survive initial engagement, thus requiring deployment of a second Sea Shark. The test plan does not provide enough Sea Shark missiles to support a second launch. This is a departure from operational realism. At most, the test unit will conduct a simulated Sea Shark missile launch against surviving surrogates.

Planned mitigation includes:

- Once the M&S is validated with the initial IOT&E results, conduct simulation using the available Office of Naval Intelligence digital models for the threats and simulated Sea Shark missile re-engagement of surviving threats. This would provide an early prediction of how Sea Shark and the NCS could respond against surviving Anti-Ship Cruise Missiles (ASCM) threats.
- Follow-on OT&E (FOT&E) will be scheduled at the earliest opportunity when production Sea Sharks are available to support OT addressing re-engagement of simulated threats that survive initial engagement.

Current test range target launch and control capability will limit the number of simultaneous targets in flight and thus, the size of simulated ASCM raids. Sea Shark is required to defend against multiple simultaneous threats, but the test range is unable to launch and track multiple simultaneous threat systems.

Mitigation efforts include the following:

Test Limitations – OT Examples

- Once the Sea Shark and NCS M&S capability is validated by initial IOT&E results, simulated engagements will be conducted against threat large ASCM raids to predict results for interim fleet tactics development.
- The Navy will upgrade the test range facilities to support multiple simultaneous engagements prior to the first FOT&E.

Missiles will not have representative shipboard magazine storage times by the time of operational testing. Missiles must be fielded and in representative storage magazines for one year before steady-state availability and reliability levels will be known.

Mitigation efforts include the following:

- The reliability growth curve will estimate system reliability after fielding. The growth curve will be adjusted as needed based on results of IOT&E and accelerated life testing of guidance, fuze, and propulsion components.
- Availability and reliability of Sea Shark missiles with representative magazine storage times will be evaluated during the first FOT&E.

3.4.4.1 Cybersecurity Test Limitations

Both the CVPA and AA will be conducted in-port, as the testing will necessarily decertify the platform. Ship's crew will be executing mission threads using simulation data sources to support mission effects data collection during the AA.

If crew safety or equipment damage concerns preclude the evaluation of any systems (e.g., industrial control systems such as PLCs) while onboard the ship, independent laboratory testing of these systems will be performed. This data will be included in the CVPA report and cyber exploitations based on the findings will be white-carded in the AA.