

MK 48 Mods

The Fleet baseline torpedo Advanced Capability (ADCAP) is designated the Mk 48 Mod 5. A 1995 upgrade, designated Mk 48 Mod 6, features an improved Guidance and Control section and a Torpedo Propulsion Upgrade. Development of a follow-on hardware change to the Mod 6 ADCAP, called the Advanced Common Torpedo Development Vehicle, has been delayed for several years. It will be incorporated into the next-generation torpedo, the Common Broadband Advanced Sonar System (CBASS), planned for FY05.

Three software builds are currently under oversight. Block Upgrade III is the final tactical software upgrade to the Mod 5. Block IV was designed to extend Block III capabilities and apply them to the Mod 6 weapon. The more sophisticated CBASS software is planned to follow Block IV. In lieu of future Block Upgrades, the program plans to employ a series of Advanced Processor Builds (APBs) to both the Mod 6 and Mod 7 weapons, as a more flexible means of introducing software changes.

The Mod 6 ADCAP, intended to address open issues from previous Operational Test and Evaluation (OT&E), was tested in 1995 and reported in the 1996 report. DOT&E assessed the Mod 6 ADCAP to be both operationally effective and suitable. Although the reliability was marginally below threshold, DOT&E identified the Mod 6 ADCAP as producing a total performance much better against the expected threat than the Mod 5 ADCAP.

Follow-on Test and Evaluation (FOT&E) on the Block IV software was completed in FY00. DOT&E determined that Block IV was not operationally effective because it did not provide the shallow water performance improvements originally promised.

TEST & EVALUATION ACTIVITY

In May 2002, the Navy conducted a Verification of Correction of Deficiencies (VCD) to address deficiencies identified in the Block IV FOT&E. A sink exercise (SINKEX) was conducted against ex-OKINAWA (LPH 3) in June 2002. Numerous ADCAP torpedo exercises were performed. These included four Prospective Commanding Officer exercises, one of which was conducted jointly with the Royal Australian Navy.

TEST & EVALUATION ASSESSMENT

The Block IV VCD testing consisted of a small number of torpedo firings at shallow water sites near Maui, Hawaii. While the program is under oversight, the VCD is an internal Navy activity and was not subject to DOT&E approval. The VCD was intended to focus entirely on technical issues affecting torpedo performance, rather than overall operational effectiveness. Given the small sample size and limited test conditions, the VCD (at Maui) was inconclusive. Neither the technical nor operational level performance provided conclusive evidence that the original deficiency had been corrected. In addition, the fact that the test was not conducted at the same site as the FY00 Operational Test, raised concerns regarding the impact of acoustic



Advanced Capability torpedo being loaded on a submarine.

NAVY PROGRAMS

conditions on the validity of the VCD results. More shots for the VCD are planned for the Southern California exercise area.

During the June SINKEK, a submarine sank ex-*OKINAWA* with a single Mk 48 Mod 5 ADCAP. Although safety considerations severely limited the realism of the engagement, the test was an impressive demonstration of the lethality of a modern heavyweight torpedo.

Torpedo reliability, as described in previous Annual Reports, remains a concern. These failures highlight the overall problem of ADCAP reliability, which continues to run in cycles. In addition to the issues discussed above, work force reductions at the weapon's depots may also threaten the fleet's ability to process weapons quickly and accurately.

As cited in previous reports, performance questions remain unresolved due to inadequate T&E resources and funding. For open-ocean shallow water exercises, the tested torpedo's internal monitoring equipment is the only source of data, resulting in post-run analysis biases and errors. Development of an inexpensive mobile test range, or other independent instrumentation, is necessary to alleviate shallow water testing shortfalls. As a more permanent solution, given the high priority of the diesel submarine threat, an instrumented shallow water test range would help hasten maturation of littoral Anti-Surface Warfare (ASW) tactics and improvement in shallow water ASW torpedoes. The cumbersome nature of open ocean torpedo firings, coupled with seasonal marine mammal habitat restrictions at Cape Cod, Massachusetts, has significantly lengthened development cycle times. Congressional funding support for a viable instrumented shallow water test range is strongly recommended.

DOT&E supports the flexibility of the APB approach, but will continue to insist upon complete and rigorous testing of all upgrades.

Side-by-side test and evaluation of ADCAP software variants, although on the surface more expensive, might be more cost-effective in the larger scheme because less time might be lost if side-by-side test and evaluation were performed. Right now, disagreements between operational testers and developers are attributable to results taken in arguably different and difficult-to-reconcile environmental and tactical conditions. Side-by-side testing would narrow that gulf, and is DOT&E's expectation for future OT&E.