

U.S. Navy and Air Force Hit Virtual Bull's Eye

The Atlantic Fleet cruiser, USS Ticonderoga (CG 47), homeported in Pascagoula, Miss., successfully demonstrated the Navy's newest weapons system trainer while underway Nov. 14, 2002, in the Gulf of Mexico. The ship's test comes on the heels of successful trials the day before by the U.S. Air Force's 46th Test Wing, based at Eglin Air Force Base in Florida, which dropped eighteen, 500-pound, non-exploding bombs from an A-10 aircraft. The Virtual At Sea Training system, or "VAST," allows warfighters to hone their live-fire combat skills while operating at sea.



USS Ticonderoga (CG 47)

Ticonderoga's crew successfully engaged a computer-simulated target with explosive and nonexplosive ordnance shot from the ship's MK 45, 5-inch/54-caliber gun. While the rounds hit nothing but water — the demonstration was right on target. Initial indications suggest that the VAST system was able to successfully "score" precisely where the ordnance rounds actually landed — a significant milestone in ensuring effective at sea combat training. VAST is actually comprised of a system by which the ship's crew or "spotter" sees a realistic presentation, for example, a landmass with the topography of a "real world" target, which corresponds to an area actually located over open ocean. During training exercises, the operator fires at the simulation of what they might expect to see in combat, while the ordnance actually lands within an array of buoys in the water. Exercise evaluators, monitoring the target practice on a computer screen, could be either onboard a ship or somewhere ashore.

Developed by the Office of Naval Research and tested by the U.S. Atlantic Fleet, this virtual reality training is one example of the Navy's efforts to keep its Sailors combat ready as weapons systems become increasingly advanced. In addition to programmable targets, VAST has another distinct advantage: It is portable. Ships can take the at-sea trainer — including the firing range — with them wherever they go. The portable "range" is made up of several buoys that form the target area. These buoys are actually placed into the water by the ship conducting the training, in this case by the crew of the Ticonderoga.

Once the ship positions at the proper distance from the buoy field, it engages and shoots at the virtual target. The actual ordnance then falls into this buoy field, which in turn triangulates the point of impact. The IMPASS (Integrated Maritime Acoustic Scoring And Simulator) buoy system is equipped with Global Positioning System (GPS) sensors that enable the accurate triangulation of the rounds. For these initial demonstration trials, one computer provides feedback on accuracy while a second computer is used within the ship to help with the training. In the future, a satellite uplink will potentially allow over-the-horizon operations.

As communications and satellite technology has advanced, the

natural evolutionary development of weapons systems has advanced along with it. VAST is a logical next step in leveraging that technology to better train the crews of ships and aircraft that will ultimately deploy these weapons in battle.

The Air Force's 46th Test Wing used other existing systems to measure the effectiveness and accuracy of the VAST buoys during the exercise. The older systems have initially validated the emerging technol-

ogy. "While the results are preliminary, the data looks promising. We're encouraged by the capability this system brings to our testing efforts and to our pilots. It's exciting to think that we'll be able to use this portable system and convert these wide open spaces to valuable testing areas," said Col. Dennis F. Sager, of Seattle, Wash., who is the commanding officer of the 46th Test Wing.

Another key advantage of VAST is its training versatility. Rather than continuously firing on a static, predictable bombing range, the presentation viewed by the warfighter can be manipulated to more closely resemble the type of terrain or target, which operators face in battle.

As the system develops, planners hope to incorporate models closely resembling geographic areas of interest. While Navy officials are initially encouraged by these preliminary results, more testing is planned. Provided the concept continues to prove successful over the next six-month evaluation period, the Navy plans to invest in as many as 10 additional systems by the end of FY03. There are currently three in the Navy's inventory being tested.

Finally, VAST offers savings in time, logistical considerations and money when compared to live-fire ranges. Navy ships, for example, must typically travel hundreds of miles to practice Naval Gun Fire Support using live-fire ranges. This system shaves days off transiting to and from these ranges. These savings can then allow more time for crews to focus on other critical prerequisites to deploying, including other necessary training, as well as equipment maintenance and repair.

While it offers distinct advantages over other training options, VAST is designed to supplement the available ranges used by the Navy, including ranges still required for coordinated battle group training. These types of innovations will continue to enhance the way Sailors train and prepare for combat.

"This is exciting new technology and we're encouraged with the results of joint Navy and Air Forces testing," said Adm. Robert J. Natter, Commander, U.S. Atlantic Fleet. "VAST also provides tremendous flexibility in that we can train effectively wherever there is sufficient ocean space.

VAST's initial testing results are positive and we see clear potential for joint Navy, Marine Corps and Air Force use of this system. Ultimately, VAST will help us further enhance the combat readiness of our ships and aircraft." □