

NAVY SAFEGUARDS MARINE LIFE DURING SHOCK TRIAL

EXECUTING ENVIRONMENTALLY SOUND TESTS AT SEA

Before a new United States Navy ship is declared sea-worthy, it must endure more than just a bottle of champagne across its bow.

Every Navy ship is subjected to a thorough and demanding series of tests that determine whether it can withstand the unforgiving punishment wrought by sea combat. The USS WINSTON S. CHURCHILL (DDG 81) is no exception. The third ship in the new Flight IIA series of AEGIS guided missile destroyers, the CHURCHILL was subjected to a shock trial comprised of three detonations off the coast of Florida from May to June of 2001.

The CHURCHILL, which is homeported in Norfolk, Virginia, is assigned to Destroyer Squadron 28. CHURCHILL has the distinction of being the only active U.S. warship to be named after a foreign national, as well as the only one among whose ranks serves an officer from Britain's Royal Navy permanently on board. The British officer's presence represents a salute both to the ship's moniker and to the strengthening of the bond between the two Atlantic allies.

Shock trials are conducted on ships that are either the first of a new class to be built or have undergone significant upgrades and modifications (as is the case with the CHURCHILL).

The shock trial essentially involves the detonation of 10,000 pounds of plastic

bonded explosives (PBX) explosive charges - equivalent to seven tons of trinitrotoluene (TNT) - near the ship, along with a detailed analysis and evaluation of the effects. Shock trials also test how Sailors will hold up under trauma of a detonation. To date, no Sailor has ever been injured during a shock trial.

As part of the May-June shock trials, the CHURCHILL underwent three explosions. Almost three years before the first explosion, however, the Navy started extensive research in order to minimize the shock and effect on marine mammals.

"No one in the Navy ever intentionally goes out to injure, kill or harass a marine animal", said Lyn Carroll, environmental engineer with the Program Executive Office for Theater Surface Combatants. "At the same time, we are in the business of ensuring the defense of the country."

In studying the physical, biological and socioeconomic environments of three potential shock trial sites, the Navy prepared an Environmental Impact Statement (EIS) that fully examined any potential alternatives to the testing, as well as potential impact on the surrounding environment.

Through the EIS, the Navy determined that an area off the coast of Florida would be the best place to conduct the tests, as it would minimize impact on

both the environment and marine fauna. Also, the area was close in proximity to CHURCHILL's homeport, and the nearby naval base could provide an adequate number of ships to support the trials. The trials were conducted in late spring because Northern Right Whales, which reside off the southeastern U.S. coast during the winter months, migrate northward to their summer feeding grounds off New England and in the Bay of Fundy during that time period.

"We developed an extensive mitigation and monitoring program that focused on marine mammals and turtles," said William Sloger, environmental engineer for Southern Division, Naval Facilities Engineering Command (NAVFAC).

Aspects of the environment considered in the analysis included air quality, water quality, commercial fishing and shipping, recreational use of the proposed test area, and lasting impact on the environment. In addition, the terms of the National Oceanic and Atmospheric Administration (NOAA) Fisheries Letter of Authorization were closely followed.

"We went to great lengths to ensure that the Navy was fully compliant with the highest standards of environmental stewardship," said CDR Michael T. Franken, commanding officer of the CHURCHILL. "This was important not only in terms of protecting a fragile ecosystem in the area of our shock test,



but also for all future at-sea tests in which damage to marine life is possible if proper precautions are not enacted.”

The area selected for the trials underwent extensive aerial surveys two days prior to each detonation and was found to have low marine mammal and turtle populations. On the day of each detonation, aerial surveys, shipboard monitoring and passive acoustic monitoring were conducted. If any marine animals were sighted and/or detected within two nautical miles of the charge, detonation was delayed.

Carroll was on the bridge of the CHURCHILL for the third detonation. She admits she was a bit nervous.

“It’s scary because you don’t know what’s going to happen,” she said, adding that, due to her expectations, the blast was somewhat anticlimactic.

“It was like a sharp crack,” she said. “The ocean kind of bubbles up and the water sprays out.”

Immediately following each detonation, the testing area was monitored for any signs of injured or dead marine animals. For the following two to seven days, aerial monitoring took place for a minimum of three hours each day, down current from the detonation sight.

Carroll said neither dead nor injured animals were found.

“That shows that we took the issue of mitigation seriously, devised a thorough plan and executed that plan as stated in our Environmental Impact Statement,” she said.

The Marine Animal Recovery Team (MART), made up of a veterinarian, a marine mammal behaviorist specialist and a sea turtle expert, assisted the aerial and shipboard monitoring teams. The MART then remained in the area, down current from the detonation point, for 48 hours after each detonation and for seven days following the last detonation.

“The AEGIS Shipbuilding Program Office was very supportive of mitigation efforts from the start, and they set the tone for the level of support extended to the mitigation team from the rest of the shock trial team,” said Janet Clarke, Mitigation Team Leader from Science Applications International Corporation. “There were occasions during the test when environmental conditions caused test delays, and the program office stood behind the decisions made by the mitigation director and lead scientist completely.”

“I think that the ship shock test demonstrated that large scale Navy testing can be done in an environmentally sound manner when reasonable environmental mitigation is included and planned for from the start,” Clarke continued.

Such dedication may seem extreme, but the results cannot be contested.

“The Navy was willing to allow environmental considerations to steer where the shock trial might occur,” Sloger said. “I think that shows the Navy’s commitment to protect the environment.”

“The Navy has led the way in many aspects of protecting our oceans, from environmentally friendly paints to oil-water separators. Any adverse impacts associated with DDG 81’s shock test would affect our good name in the maritime arena,” Franken said.

“Much work has been done to establish the Navy’s high standard of ensuring that we execute our mission without marring our oceans,” he continued. “This ship and its crew were not about to threaten our reputation as model environmental stewards.”

“I consider the test a success and am happy to have been part of it.”

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