Submarines' launch capabilities critical to strike warfare

By ROBERT A. HAMILTON
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THE DESIGNATION "TORPEDO TUBE" might have to be reconsidered on modern submarines.

Navy sources estimate about half of the submarine-launched missiles during the war on Iraq have been delivered via those tubes, matching the number that have been fired from vertical launch tubes, which have been on submarines since 1985.

Aside from exercises, there have been no reported instances of a submarine firing a live torpedo against a target since World War II. For that reason, some fire control technicians have taken to referring to the torpedo tubes as simply "horizontal launch tubes."

Whatever you call them, the vertical and horizontal missile launch capabilities on a modern submarine have made them critical to strike warfare.

The Tomahawk can fly more than 1,000 miles inland and deliver a warhead with a half-ton of high explosive. Despite reports of a few missiles that went awry and landed in neighboring countries, Navy sources said overall those strays represented fewer than 1 percent of the launches, an exceptionally high rate of accuracy.

No matter what type of missile is to be fired, the fire control technicians, or FTs, run through a checklist.

For vertical launch, the FT confirms that the launch capsule is armed, the booster is armed, the interlocks are all closed and the hatch is open.

For horizontal tube launches, the torpedomen must remove a white nosecone with red writing and stripes and the admonition, "Remove before launch," before loading it. Beneath the cover is a black fabric nosecone diaphragm, with the body of the missile in a stainless steel housing that will be left behind at the launch. There is a last-minute review to make sure ballistics are set properly, the weapon is ready, the tube is flooded and the outer door is open.

A series of keys must be turned for each tube — redundancies at each step preclude either an accidental launch or a launch by a single crewman. The executive officer must confirm the right mission has been loaded into the right missile, and the captain gives the final "fire" order.

For a vertical launch, wires send electrical charges to blow up two explosive bolts that hold the missile in place, and to set off a gas generation system that boosts the missile out of the tube and into the air. Before it can begin falling back, the rocket booster lights off and lifts it to cruise altitude, where the booster falls away and its turbo jet engine takes over.

For a horizontal launch, a torpedoman connects a data cable from the tube door to the back of the torpedo, closes the inner hatch and hangs a small sign on the door, "Warshot loaded."

When the order to launch is received, high-pressure air is forced into a reservoir of water, which surges into the torpedo tube behind the weapon and pushes it out of the tube.

As it exits, a lanyard attached to the back of the missile serves two purposes: it yanks it into a vertical position, and pulls a switch that ignites the rocket booster underwater. The water in front of the submarine glows eerily as it is lit by the fire of the propellant burning.

As the missile breaches the surface, a protective sheath peels away at low altitude, and at cruise altitude the booster falls away and the ramjet motor takes over.

Both types of launches shake the entire submarine and fill sailors' ears with the clank of metal-against-metal as the missile exits at several times the force of gravity. It is, submariners agree, something that you cannot replicate outside of combat.

"I've seen videos, but it doesn't really capture what we saw and felt tonight," said Electronics Technician 2nd Class Peter J. Koester on the first night that the Groton-based USS Providence fired in the Red Sea. "There's something different about being here live."

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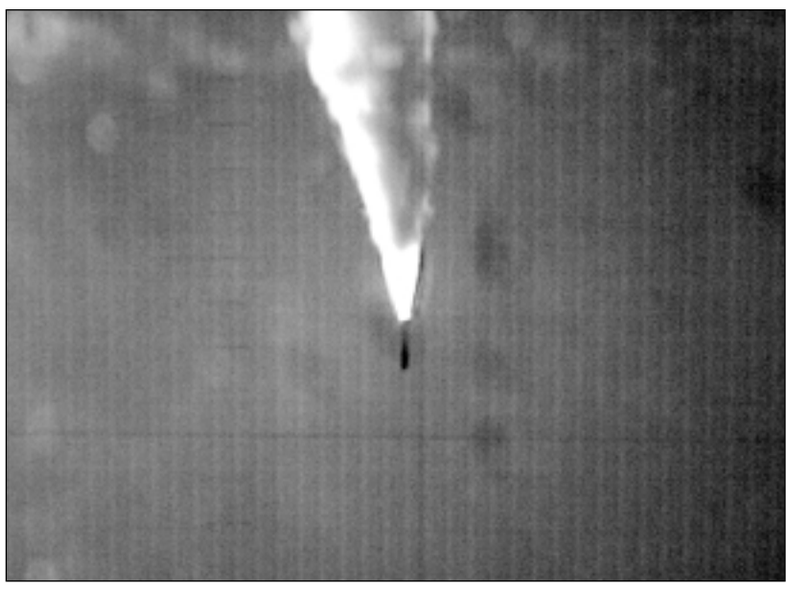

Above, Members of the USS Providence crew watch a Tomahawk cruise missile launch against Iraq on a closed circuit television system in the crew's dining area during operations in the Red Sea March 21.

Left, a just-launched Tomahawk appears on a monitor in the control room during a strike by the USS Providence against Iraq March 22.

TIM COOK / The Day

Crew prep includes developing mindset

MSSN Joe Mitchell cleans out and dismantles his bunk in the torpedo room aboard the USS Providence during operations in the Red Sea March. 20. Mitchell's bunk had to be dismantled because it would have been in the way during a missile strike against Iraq.

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AS THE DAY APPROACHED FOR THE Groton-based USS Providence to fire its missiles into Iraq, Lt. Eric Svensson said he wasn't worried that anyone involved — from the men loading the tube to the fire control technician charged with pushing the button — would have second thoughts.

"With all the practice we've been doing, any feelings like that would have manifested themselves already," Svensson said. "We're in the Navy, we're serving our country, and our people have faith in our government and we're sure we're doing the right thing."

And on "game day," the unofficial name for the start of the war, there was no equivocation. The men of the Providence did their job without comment.

The military keeps the men on its ships so estranged from the damage that the missiles will cause that firing seems almost an academic exercise for many of the men.

The submarine gets a missile-planning package in software code that is loaded directly into the Tomahawks. There's nothing to identify what it will hit; the ship loses contact with the missile once it leaves the tube, so it doesn't know if it landed on target; if there is any battle damage assessment, only a couple of officers on the submarine will likely see it, often months later and only in a photograph.

Still, most of the men of the Providence gave a lot of thought to how they were going to feel about launching missiles before the order came.

Storekeeper 1st Class Daniel D. King Sr. said he was troubled by the fact that the U.S. position has flip-flopped so many times on the Middle East — Hussein was once our ally in the region, and now our enemy. But he also signed up to enforce the policy of the U.S. government.

"I wish I didn't have to do it," King said. "But if I don't do it, who the hell is going to do it?"

And, he said, it was clear that sanctions and the threat of war were not accomplishing anything.

"This is my third deployment when we've come screaming over here ready to launch weapons," King said. "Nobody wants to see anybody get hurt unnecessarily, but I'd like to stop coming over here to launch and leaving without doing anything."

The Fire Control Technicians, known as FTs for their Navy rate, have been weighing the question for a lot longer than other members of the crew, and seem less likely to equivocate.

"It's probably less of a big deal for the FT division than it is for the rest of the boat," Fire Control Technician 2nd Class Kevin Bojanowski said. "This is what we think about all the time, it's what we train for, and it's what we do well."