Towed Array Mishaps
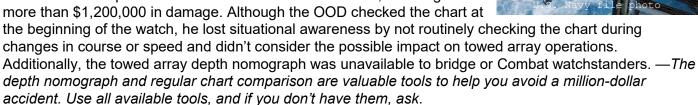
Towed arrays are vital tools in U.S. Navy ships' underwater detection and decoy inventory. The Navy has averaged one towed array mishap per year over the last decade, which doesn't sound like much, but besides hurting the ship's warfighting readiness, those 10 mishaps cost us more than $5,600,000. (*Destroying or losing one isn't like dropping a wrench over the side; it's more like dropping a high-performance sports car).* Most of the mishaps were preventable with effective ORM and by following procedures and orders. As you read about these missteps of your fellow techs and watchstanders, consider your experience using towed arrays and how you can work as a team to ensure the "fish" returns to the ship in the same condition you deployed it.

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- Use the Tools. While the ship's Multi-Function Towed Array (MFTA) was deployed, the Officer of the Deck (OOD) slowed the ship's speed to match the course and speed of the aircraft carrier. As the ship slowed, the MFTA cable drooped and the MFTA contacted the bottom, resulting in more than $1,200,000 in damage. Although the OOD checked the chart at the beginning of the watch, he lost situational awareness by not routinely checking the chart during changes in course or speed and didn't consider the possible impact on towed array operations. Additionally, the towed array depth nomograph was unavailable to bridge or Combat watchstanders. —*The depth nomograph and regular chart comparison are valuable tools to help you avoid a million-dollar accident. Use all available tools, and if you don't have them, ask.*

- I'm Sure the Other One Will Be Fine. The ship's "Nixie" towed array was to be streamed to conduct a quarterly maintenance check. While paying out the cable, the supervisor reported the length of the deployed cable in 100-foot increments. After completing the maintenance check, the team recovered the port Nixie and found it damaged with sand in the nose. The supervisor chose to stream the starboard Nixie before inspecting the port Nixie further. He obtained the OOD's permission to stream the starboard Nixie, and while he informed the OOD of the damage to the port one, there was no discussion about whether they should continue with the starboard Nixie stream. The damage to the port Nixie exceeded $11,580. By pure luck they didn't damage the starboard one. —*Multiple procedural omissions and poor communication (or no communication) led to this costly mishap. Here is the rundown: 1) Key members of the evolution, including the bridge team, weren't present for the pre-brief; 2) The Commanding Officer's (CO) standing and night orders had detailed speed and depth requirements for deploying Nixie, but the bridge team didn't follow any of them; 3) Communication between the bridge, Combat, and the Nixie stream room station was established, but the Nixie supervisor received no answer when he asked the bridge if there was sufficient water depth and speed to stream Nixie; he continued anyway. 4) The unit's squadron assigned the ship to an area that was too shallow for towed array operations, even though that's what the squadron sent them to do. The safety management system is a "system" of checks and balances that, if completed as intended, will reduce the risk of a mishap. If we don't use those checks and balances, we're just depending on luck.*

- What's Next? While conducting Surface Warfare Advanced Tactical Training (SWATT), the ship's MFTA contacted the sea floor. The bridge, Combat Information Center (CIC) and SONAR watchstanders did not recognize the decreasing water depth during the transit to a follow-on event. The ship had just completed a live-fire exercise and was retrieving the array when it hit bottom. The crew estimated the MFTA's depth to be 100 feet deeper than the actual water depth before it contacted the bottom. —*The bridge and CIC teams lost situational awareness of the MFTA operations because they were focused on the follow-on*

event and processing shipping contacts. This mishap is a textbook example of why someone on the team (usually the OOD) should keep the big picture. Looking ahead is important, but not at the expense of what you're doing now.

- <u>Slippery Slope</u>. The ship deployed an MFTA for an assessed training event. After deploying the first section of the array, personnel noted that the cable was slipping approximately one to two inches per minute. Still, they continued to deploy the MFTA without communicating the issue up the chain of command. When the slippage increased to over 18 inches per minute, the supervisor decided to retrieve the array. During retrieval, the winch presented a fault code. After initiating actions to reset the code (in which he did not follow the casualty response procedures), the cable winch began to spin freely out of control, despite efforts to stop it. One Sailor was injured while evacuating the space and the MFTA was lost, costing more than $5,000,000. —*In another example of poor communication coupled with a lack of risk management, the crew missed opportunities to avoid this mishap. The streaming system had a history of an encoder fault, but neither that fact nor procedures for responding to the fault were discussed in the mission brief.*

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- <u>I Wonder if this Part is Important</u>. In preparation for a Nixie deployment, all involved personnel were on station while the supervisor held a safety brief and tested the winch. The supervisor verified the littoral fiber optic tow cable was connected and, the report says, "attempted to turn the locking mechanism" to ensure it was locked. As a handler guided the towed body out of the transom door, the towed body separated from the cable and fell into the ocean, a $160,000 loss. —*Something as critical as the locking mechanism should be verified more stringently than "attempted to turn" it. While the Nixie team followed the steps, the self-locking "B" nut was never connected to the tow cable, a costly oversight in your taxpayer dollars and warfighting readiness. Take the time to make critical checks before deploying a towed array, no matter how many times you've done it before. It'll save money, time, operational readiness and that awkward call to the bridge.*

Key Takeaways

1. **Towed array ops are a team sport**. In each of the incidents described, there was a lost opportunity for someone to help break the error chain, either with forceful backup or by simply following the CO's orders or Maintenance Requirement Cards (MRC). The streaming team, CIC and the bridge should communicate effectively as a team, especially when multiple operations happen simultaneously. Everyone involved in towed array operations should have more than a basic familiarity with them. That's also where the CO's standing and night orders come in. They're not just some paperwork to initial after skimming through them once. Read them! Know them!

2. **Check and re-check**. The most qualified team in the world won't help if equipment isn't maintained or connected correctly. If there's a problem with the system, say something; and in the meantime, plan for mitigation measures if the equipment "acts up." Follow the procedures and MRCs to the letter. It doesn't hurt to have someone double-check too. As we said in takeaway #1, you're a team.

3. **There are no "routine" operations**. Every evolution, every underway watch and every maintenance project is unique, however small it may be. Before every watch or operation, arm yourself with the information you need to succeed and not let your guard down. Whether it's your first towed array evolution or your 100th, treat each event with the respect and attention it deserves. It is the best way to ensure a truly "uneventful" watch/evolution.

And remember, "Let's be careful out there."