



Naval Safety Center

LESSONS LEARNED



LL 21-22

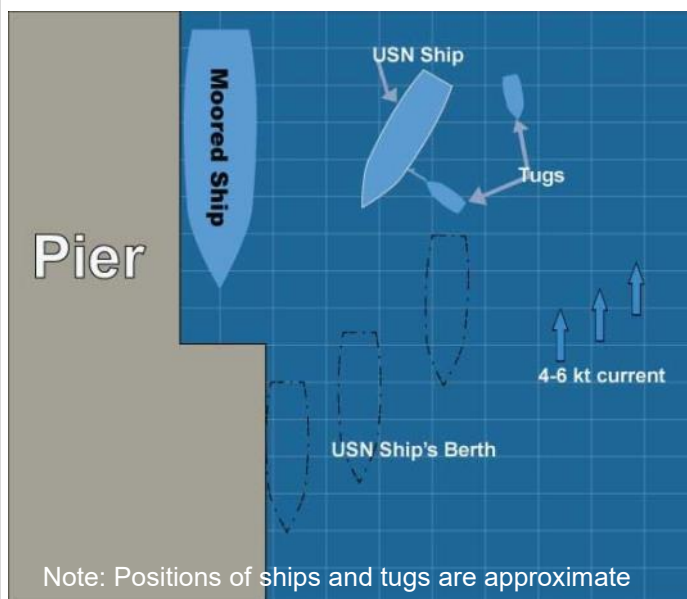
AFLOAT TUG-RELATED MISHAPS

In shiphandling operations, tugs can be a lifesaver. They can change your pivot point to your advantage, act as a bow thruster, and control a ship's movement in tight mooring situations, but this added benefit has its challenges too. Being at least once removed from direct communications with the assisting tugs adds to the complexity of the evolution, requiring bridge crews to closely coordinate with the pilot (*but the experienced ship drivers out there already know that*). This lesson provides two vignettes that emphasize the unique challenges that tugs can present and offer some things to consider. We hope they will help our future commanding officers understand the dynamics of tug use and set those leaders up for success.



Cast Off The Tugs...No Wait!

- Summary. A ship was getting underway from the pier with a moored cargo ship approximately 300 feet behind it. As the tugs were pulling the ship from its mooring, the commanding officer ordered to cast off the tugs (*sooner than practical*). The ship was in a heavy, on-setting current (4-6 knots). The ship's engine plant configuration was insufficient to generate the needed power to prevent it from drifting backward and striking the moored cargo ship. Both ships sustained minor damage. No injuries were reported from either vessel.
- A missed opportunity during planning. The crew conducted a chart review and navigation brief before getting underway, during which they discussed the heavy current and tug placement. They did not, however, have a clear plan for the timing or location for releasing the tugs. — *Given the 4-6 knot current off the bow, close coordination with the tugs and establishing positive control of the ship in the current before releasing them could have helped this ship maintain its heading.*

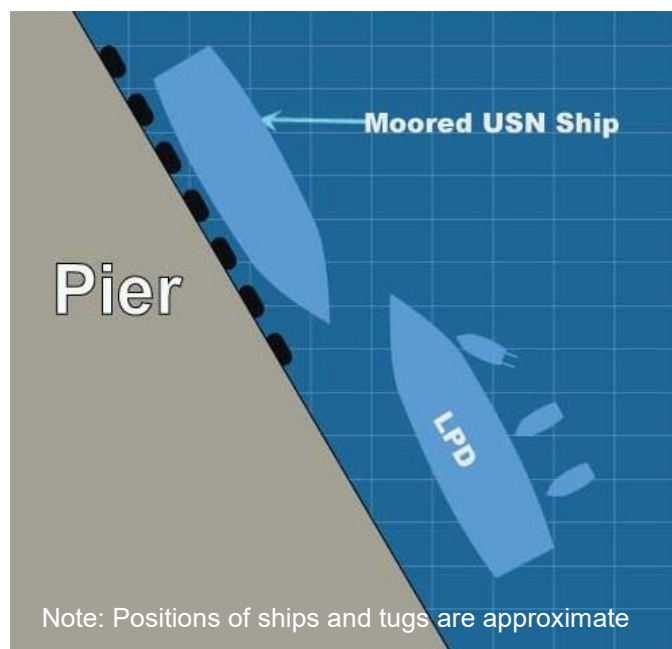


- The engine plant status. Compounding the effects of the current, was the engine plant status. The main diesel engines were online, but not the gas turbines, which would have offered more power to counter the strong current. Once free of the tugs, the ship was rapidly set onto the moored ship by the heavy current off the port bow. — *Due to the engine plant configuration, the ship lacked enough power to counter the current in the limited space available to react.*

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Tight Quarters

- Summary. In this near-miss, the ship had barely enough room to moor ahead of another vessel at a pier. The commanding officer (CO), executive officer (XO), and navigator knew that mooring at this particular pier would be a “tight fit,” but they did not assess the pier length based on applicable technical manuals. The manuals would require more room than was available. The conning officer (CONN) did not discuss the tight pier space in the inbound navigation brief.
- The approach. The ship picked up the harbor pilot to begin an inbound transit to the pier. The CONN ordered all engines stop and rudder amidships as the harbor pilot ordered tugs to make up forward, amidships, and aft, and rotate the ship nearly 180 degrees and back into the basin, as briefed. After turning the vessel, the pilot backed the ship with 0.5 to 0.7 knots of sternway. As the ship’s bow passed the other ship’s bow, the harbor pilot began to slow the sternway with the tugs (*so far, so good*).
- The Mooring and Language Barrier. As the ship began to make the pier landing laterally, the pilot began issuing increasingly faster commands to the tugs in another language, so the CO and Officer of the Deck (OOD) could not supervise the precise commands the pilot was issuing. They could only tell which tug the pilot was talking to due to his use of the tugs’ names. The ship began to make slight headway as it approached the pier. The CO noted the forward movement, but he still could not understand what directions the pilot was giving the tugs due to the language barrier. As the ship continued to move forward toward the bow of the moored ship, the pilot began frantically yelling into his radio. The CO issued “all engines back full” to the CONN. The CONN ordered “all engines back full,” and the collision alarm was sounded. Shortly after, the CONN ordered “all stop” to prevent over-correcting, and the OOD ordered “over all lines.” — *While it was a nice save by the CONN, this near-miss could have been avoided with a better understanding of what the tugs were doing.*
- Communications. At the navigation brief, the CONN briefed that primary communication would be the 18MC while at the bridge wing helm station, with HYDRA as secondary. During the mooring, the 18MC was deemed not loud enough, and the CONN shifted to HYDRA. Unfortunately, the forward and aft laser range stations also used HYDRA and were “stepping on” the CONN’s communications with the Helm and Lee Helm. Several reports from the CONN, Helm, and laser range stations were missed throughout the mooring.
- Communication Breakdown. Complicating the mooring evolution, one of the tugs lost its global positioning system inputs, reported the issue to the pilot, and continued to push the ship forward. When the pilot noticed the forward movement, he gave a vague order to “stop moving” to the forward tug, while at the same time, the amidships tug also saw the forward movement and began backing full. — *There was no backup communication system established, such as whistle signals, which would have also kept the bridge team aware of the tugs movements (helping to overcome the language barrier).*



AFLOAT TUG -RELATED MISHAPS



Key Takeaways / Lessons Learned

Tugs are commonplace in Navy shiphandling operations, yet we still see near-misses and mishaps related to their use (*and sometimes non-use*). This lesson learned serves as a refresher for bridge team personnel involved in the planning and use of tugs so every evolution can go as smoothly as the doldrums.

- 1. Everyone should know the plan.** If at all possible, the pilot should be present on the bridge when the CONN, OOD, CO, etc., are discussing the plan for getting the ship to or from the pier to include how they will employ the tugs. If the pilot isn't there, brief him when he arrives and make sure the tugs know the plan too. There should be no surprises to the tug operators or the ship's crew and everyone should know of the planned tug release point. If team members don't know the plan, they can't provide the quality forceful backup that leadership expects.
- 2. Good communication is vital.** Making sure the tug has good comms with the bridge and pilot should be part of the discussions on the bridge before taking in lines. Know who will be communicating directly with the tug(s) and how that communication will occur, (e.g., VHF radio, whistle signals), and make sure all tugs have good comms checks before getting underway. Language barriers with the pilot make the situation even more challenging, so perhaps sound signals or agreed upon standard commands may be the best option in those cases. Keep it simple.
- 3. Train and discuss the dynamics of using tugs.** The junior officer at the CONN, when getting underway, will be in command someday (*hopefully*). Incorporate the use of tugs in their training and professional development; discuss the dynamics such as a change in pivot point and effective use of tugs. Practice the use of tugs and also losing tugs in the simulator.
- 4. Know before you let go.** 1) Make sure you have rudder and throttle control before releasing the tugs (*actually before leaving the pier. Crews have forgotten this step; see LL 21-17 Shipboard Steering Casualties*). 2) Make sure your ship is positioned to hold course in the prevailing conditions.
- 5. Check Previous Port Visit Reports.** As part of your port planning, remember to check out the port visit reports section in the Navy Lessons Learned Information System (NLLIS). It offers a collection of easily searchable reports with specific information or by selecting the country and port. You will likely find good gouge on navigation hazards, tides and currents, pier space, and pilots and tugs. There you can learn from those who've experienced and learned about the port before you.
- 6. Don't forget the Contract Quality Feedback Report.** These required reports are your chance to document the quality of contractor support during your port visit, including the pilot and tugs. This report isn't just a SUPPO report, so make sure you weigh in on harbor pilot and tug support too. The next ship using that port will appreciate it.

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

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