



**UNITED STATES COAST GUARD**  
U.S. Department of Homeland Security

**MARINE SAFETY ALERT**

***Inspections and Compliance Directorate***

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Safety Alert 04-97

**WOOD AND FIBERGLASS VESSELS MAKE POOR RADAR TARGETS**

SMALL VESSEL OPERATORS SHOULD NOT ASSUME LARGE VESSELS SEE THEM ON RADAR OR KNOW WHAT THEY'RE ACTUALLY DOING. Courtesy of [MSO Portland, ME.](#)

A 60' eastern rigged trawler and a 770' tanker collided in the Gulf of Maine on Sept. 5, 1996. The trawler suffered heavy damage in the incident. Only the evasive action taken by the tanker at the last minute prevented the loss of the trawler and possibly the lives of the two fishermen involved.

While many factors contributed to this collision, Coast Guard investigators believe that commercial fishermen, and boaters of all kinds, routinely overestimate the collision avoidance capabilities of large ships and do not typically recognize what they need to do in order to reduce the risk of being involved in a collision.

For example, in this case most of the 1000+ ships that transit the Gulf of Maine each year use advanced collision avoidance computer systems that work off a ships' radar. These computers can automatically or manually acquire and track radar targets and will sound an alarm to the vessel's deck officer if a risk of collision is calculated. These systems are usually very accurate and are relied upon by mariners worldwide to avoid collisions at sea. Unfortunately, in order for these systems to operate effectively they must detect and track radar targets continuously over a period of time. Vessels that provide intermittent or weak (poor) radar signatures significantly hinder the ability of the computers to accurately calculate true vessel movement. This can lead to cases where a vessel being tracked by the computer may be maneuvering quite differently than what is indicated by the computer data. Because of this small vessel operators should be wary that, just because a ship is large and apparently sophisticated, there is no guarantee that the ship is fully aware of your vessel's movements.

All small boat operators can significantly reduce the risk of having a collision with other vessels by ensuring that their boat provides the biggest, strongest, most visible and continuous radar signatures possible. By improving the ability of your vessel to be seen by radar you significantly increase the possibility that your vessel will be clearly detected at the earliest opportunity and that any collision avoidance computer that tracks your vessel will do so as accurately as possible.

Operators of small vessels are cautioned that wood and fiberglass are particularly poor radar reflecting materials and produce weak radar signatures. Vessels constructed of wood and fiberglass can significantly improve their radar signatures and increase their radar visibility by ensuring that flat metal surfaces or radar reflectors are provided on the vessel's exterior. These devices should be located in unobstructed areas on the vessel as high above the waterline as possible. Radar reflectors are also required equipment for all Federally documented commercial fishing vessels of non-metallic construction that operate outside of the Boundary Line or with more than 16 individuals onboard as per [46 Code Of Federal Regulations 28.235](#) unless the vessel is fitted with gear that provides a radar signature from a distance of 6 miles.

Equally important in reducing the risk of collision is making sure your vessel complies with all navigational lighting requirements. Besides being required by law, navigation lights (often referred to as running lights) provide the best opportunity for mariners to visually verify or quickly assess the heading of another vessel. If

the navigation lights are incorrect or, in some cases, missing altogether, a deck officer cannot easily determine another vessel's heading. Further, the use of bright deck lights should be avoided. While the bright lights themselves might improve the chance of being seen by other vessels, the lights can obscure a vessel's navigation lights. Deck watch officers might also confuse the use of bright lights with active stationary fishing and will assume a vessel is not moving. Both of these situations can cause confusion and increase the possibility of collision.

Small vessel operators are also reminded that one of the best collision avoidance tools at sea is the proper and early use of a VHF radio. Remember, when calling another vessel via VHF, clearly give a description of your vessel, its position and movement as well as an approximate description, position and movement of the vessel you're calling. Additionally, when hailing a ship it is best to avoid the use of local terminology and slang because a ship's officer might be unfamiliar with a specific locality. The use of vague terms such as "calling the ship on my bow" should also be avoided because the range of a VHF radio can be significant and calls such as these can cause a great deal of confusion, especially if there are other vessels in the vicinity.

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