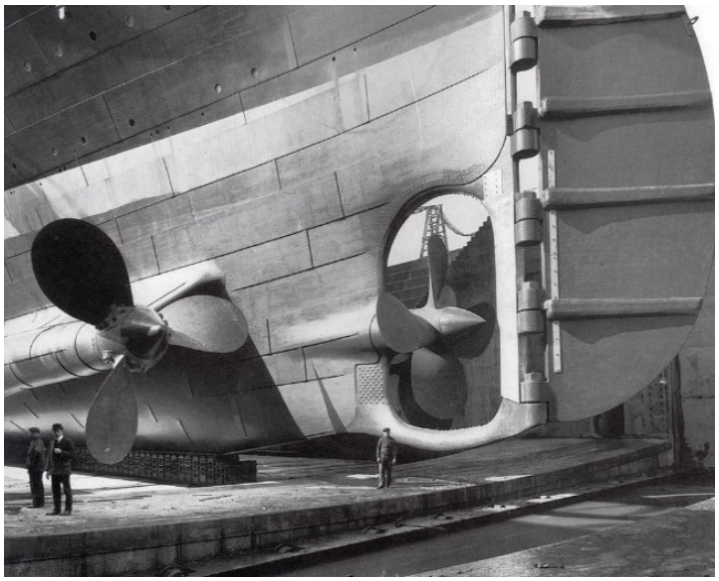
A QUIET SEA

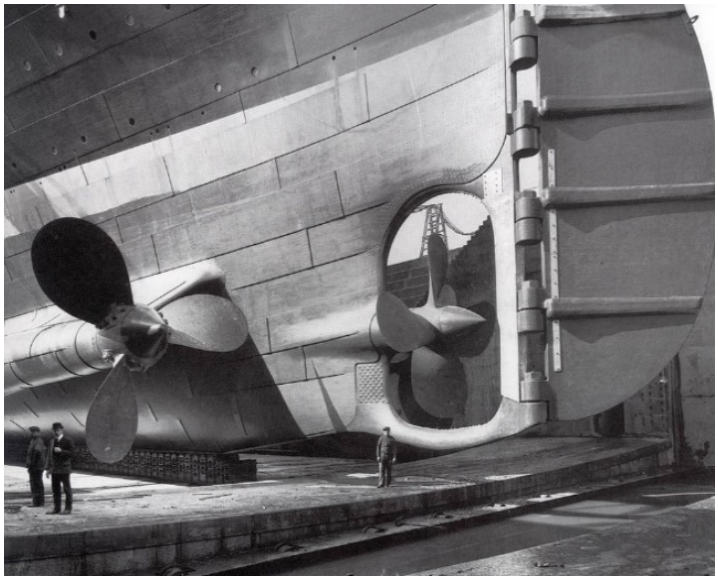
RMS TITANIC



MANEUVERABILITY

TITANIC TURNING CHARACTERISTICS

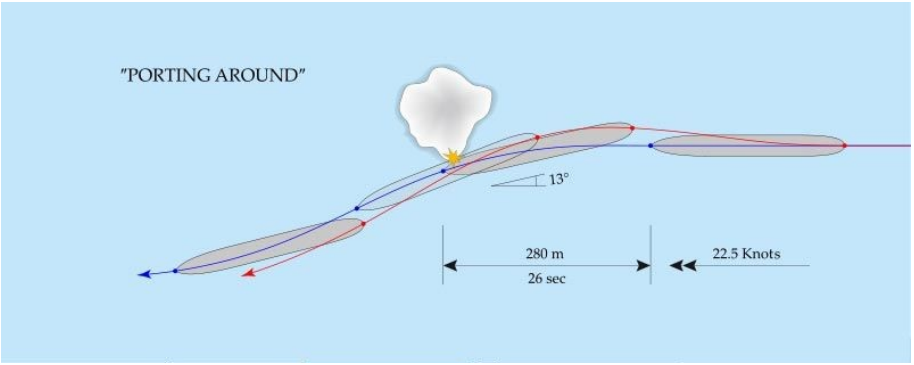
Immediately following the loss of RMS Titanic, boards of inquiry were instituted in America and Britain. Opinions on numerous subjects by overzealous investigators, resulted in hasty and impractical propositions. One such item was how quickly could Titanic turn to avoid the iceberg? Their hurried investigation determined that Titanic had insufficient rudder area and inadequate maneuverability to avoid the collision. These early inquiries overlooked certain design features of Titanic and did not fully consider that ships were getting bigger and the skills to handle them had to change. Provided with triple screws, however, Titanic and her sisters were the only large transatlantic liners that had a propeller on the centerline, positioning the rudder in line with the thrust of the propeller; a good place for a rudder to be.



Triple screws of Olympic

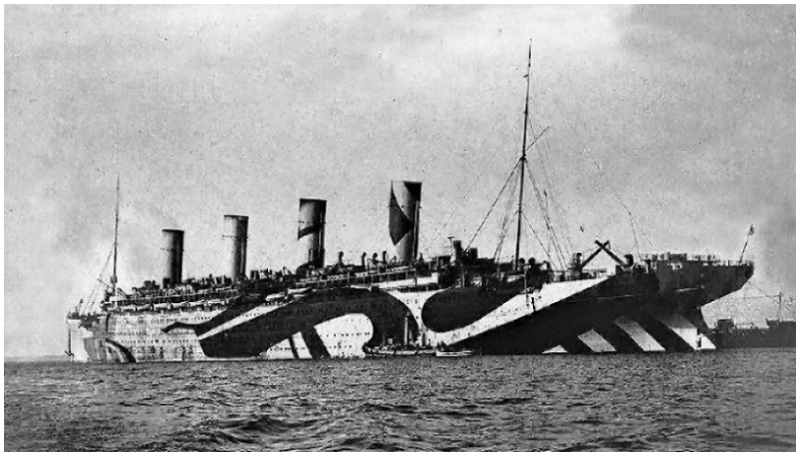
It was later estimated through tests conducted with sister ship Olympic, that the iceberg was first seen when about 500 yards ahead and that in 466 yards, Titanic would have turned about 22.5 degrees to port after shifting the rudder. For those familiar with the Manhattan Bridge in New York, that is about the distance between the bridge towers, 1480'. Subtract that the bow was 100 + feet forward of the lookout station, that gives somewhat under 1400' from the ship's stem to the iceberg, not a lot of room to quickly turn a 900' ship traveling at 38 feet per second, or about 36 seconds to the iceberg. Consider the reaction time of the bridge crew and quartermaster to turn the wheel after the warning bell was rung and for the engine gang to comply with the order from the bridge to reverse engines, and that 38 feet per second is eating up the distance between Titanic and the iceberg pretty quickly.

Even if the officer in charge could stop the ship, it was no small task to reverse the engines, and, requiring a mechanical ballet of sorts, it was by no means instantaneous. The non-reversible turbine-driven center propeller, supplied by exhaust steam from the reciprocating engines, was only used when bound for sea where higher speed was required. Otherwise, when maneuvering in close quarters, only the reversible reciprocating engine-driven wing propellers were used, the turbine engine being cut out. On the night of the collision, when the engine telegraphs ordered full astern, a system of large valves, called change-over valves, redirected the reciprocating engines' exhaust steam from the turbine engine to the condensers, eliminating power to the turbine. But first the reciprocating engines had to be slowed down to be able to cut out the center turbine propellor. The sudden, unexpected order of full astern on a quiet Sunday night in open waters at about the change of the watch, with a crew not precisely at their stations to execute such an order, took time. At first glance, then, if the engines could be quickly reversed, the center propeller was left to windmill, depriving the rudder of its thrust, and not effectively turning the ship. A Quiet Sea will examine the times required from the first ice warning, through the sequence needed to reverse the wing propellers. We surmise that it is possible that all three engines were working ahead, as evidenced by the fact that Titanic was able to clear her stern while putting her rudder to starboard, or 'porting round' the iceberg. Only after the iceberg was passed, was it possible for the machinery to stop the ship. After a cursory inspection of the ship, the engines were briefly put half ahead, then stopped for good.



Titanic 'Porting Round' iceberg

But to further throw some light on maneuverability: While Olympic was serving as a troopship in WW1, a submarine was sighted at the break of a misty dawn, and the crew rushed to man Olympic's guns. Rather than wait for his guns to bear and fire, the Master decided to change course and ram the U-boat. The submarine received a glancing blow as she turned to parallel Olympic's course. The U-boat then executed a crash dive alongside the big liner as the crew looked down at the submarine. The U-103 was drawn into the liner's port propeller, where the blades pierced the submarine's hull. With their submarine mortally damaged, most of the submarine's crew were able to escape their iron coffin; they were saved by an American ship in the convoy.



Her/His Majesty's Troopship (HMT) Olympic

An example of this class of ship working in close quarters: While carrying a small number of passengers on her last commercial voyage before conversion to a troopship, Olympic was approaching Ireland when she sighted the mined and disabled battleship HMS Audacious. Olympic rushed to render assistance to the stricken warship. Skillfully maneuvering his big liner to pass a heavy hawser (aided by a destroyer) to Audacious, Captain Haddock tried several times to tow the disabled warship, but each time the tow line parted. Unable to do more, and in dangerous waters that put his ship and passengers at grave risk, Olympic lowered her boats and safely evacuated the remainder of the dreadnought's crew. These wartime incidents illustrate that this class of liner was nimbler than the investigating boards had surmised after the loss of Titanic.

Photo Credits: Wiki Commons

Porting Round image credit: Samuel Halpern, Titanicology

Sources: Garzke & Woodward, Society of Naval Architects and Marine Engineers

John Edwards, Ocean Liners Magazine