Close Quarters Situation in a Traffic Separation Scheme - Case Study

A recent close quarter situation that occurred in the early hours of a spring morning in the southwest bound lane of the Dover Strait traffic separation scheme highlighted several areas of concern in the bridge team operations on one of the vessels involved. In clear visibility with a north easterly force 5 wind and slight seas an 85,000 GRT cruise vessel was en route from northern France to a port on the east coast of the United Kingdom, necessitating the vessel proceeding along the course of the northeast bound traffic lane prior to crossing the southwest bound lane of the traffic separation scheme to the north of the MPC buoy.

The actions of the cruise vessel as she crossed the traffic lane resulted in a 59,000 GRT car carrier that was proceeding in the southwest bound lane of the TSS taking a round turn to starboard in order to avoid a close quarters situation. Looking at the actions of the watchkeepers and the master on the crossing vessel several lessons can be learned.

Whilst the cruise vessel was proceeding in the northeast bound lane the trial function on the Automatic Radar Plotting Aid (APRA) was utilised several times to see the results of the planned alteration of course to port across the other traffic lane on the closest point of approach (CPA) and time to closest point of approach (TCPA) in relation to two vessels proceeding in the southwest bound lane. However, the second officer and the master were unfamiliar with this function on their radar and did not enter any time delay for the proposed course alteration. Neither were aware that the CPA/TCPA information displayed for the selected target vessel was for their present course and speed, not what would be expected post course alteration.

The plan was to pass astern of a 39,000 GRT container vessel and ahead of the car carrier, these two southwest bound vessels were less than 3 nautical miles apart. Due to the unfamiliarity of the master and the watchkeeping officers with the trial manoeuvre function on their APRA, the information which they based their alteration of course to port was flawed. In addition, due to the fact that nearly 1700 passengers were onboard, and in line with company procedures, the rate of turn to port was slow, with a minimum 3 nautical mile radius in order to ensure no sudden angle of heel developed, thus protecting passenger safety and comfort.

Whilst approaching the crossing point the speed on the cruise vessel had also been increased from 91 to 98 revolutions per minute (RPM) in order to minimise the time the vessel was crossing the other traffic lane. However, the slow rate of turn and the higher speed resulted in the vessel proceeding against the direction of traffic flow until she was half way across the other lane and her intentions were not clear to other vessels observing visually or by radar.

The cruise vessel's plan was to pass astern of the container vessel and ahead of the car carrier, however, as the vessel passed the container vessel her CPA to the car carrier was less than 0.1 nautical miles in 4.4 minutes whilst the cruise vessel was still altering course to port with no more than 10° helm. After the deep sea pilot on the car carrier had attempted to call the cruise vessel and then spoke to the vessel traffic service (VTS) on VHF radio to try to determine the intentions of the cruise vessel, an exchange took place between the two vessels and the VTS on the VHF during which the navigating officer on the cruise vessel stated “yes, we are clear, I am passing you at zero (pause) zero four CPA”. With the cruise vessel 1.16 nautical miles away, with a CPA of 0.13 nautical miles in only 2.9 minutes, the pilot on the car carrier ordered hard a starboard on the wheel and the vessel did a full turn through 360° which resulted in a CPA of 1 nautical mile between the two vessels.

Analysis of the events leading up to the close quarters situation highlight several areas of concern from which lessons can be learned, these are discussed below:

1. The actions and intentions of the cruise vessel as she crossed the southwest bound traffic lane were not entirely apparent to the bridge team on the car carrier. Although the former vessel was altering course to port this was not readily apparent to the other vessel even when she was only 1 nautical mile away, hence the justified action of the car carrier's pilot in ordering hard a starboard in order to avoid the rapidly developing close quarters situation. The slow alteration of course to port by the cruise vessel was not readily apparent to other vessels, contrary to the requirement of Rule 5(b) of the Collision Regulations which states that “Any alteration of course and/or speed to avoid collision shall, if the circumstances of the case admit, be large enough to be readily apparent to another vessel observing visually or by radar; a succession of small alterations of course and/or speed should be avoided”. An ARPA by its nature requires several minutes tracking of a target on a steady course and speed in order to build an accurate picture of what a target is doing, therefore small alterations of course or speed may not be readily apparent and may lead to inaccurate target data being displayed. Officers must remember that bold alterations of course and/or speed are needed in good time to ensure that observing vessels are well aware of the vessels intentions.

2. The track of the crossing vessel shows her crossing the traffic lane at such a shallow angle that she is almost heading against the general direction of traffic flow until she is half way across the lane, at which point she altered to port such that she crossed the remainder of the lane in accordance with the requirements of Rule 10 of the Collision Regulations. Therefore her crossing manoeuvre did not initially comply with the requirement in Rule 10 that a vessel “shall cross on a heading as nearly as practicable at right angles to the general direction of traffic flow”.

3. The master and the two relatively inexperienced deck officers on the bridge of the cruise vessel were not familiar with the trial function on their ARPA, neither using a time delay for the planned manoeuvre to take affect, or appreciating that the target data displayed on the screen was for the real time situation, not the situation that post the planned manoeuvre. Deck officers must be familiar with the trial manoeuvre function on their ARPA and practice its use whilst on passage to appreciate its function and limitations. Attempting to learn and use the function whilst in a stressful navigational situation will most likely lead to mistakes being made in its utilisation.

4. The need for passenger safety and comfort on cruise vessels is naturally of importance, and the company procedure in this case stipulating the minimum radius of turn is understandable so as to limit angles of heel. However, in this situation, a crossing manoeuvre of a busy traffic lane, the limiting rate of turn is evidently impractical as it does not allow the vessel to comply with the requirement to cross the traffic lane at right angles to the general direction of traffic flow, or make manoeuvres that are readily apparent to other vessels that are observing visually or by radar. In this situation a reduction of speed should have been made to enable the vessel to manoeuvre as required by the Collision Regulations, whilst ensuring the comfort and safety of passengers.