

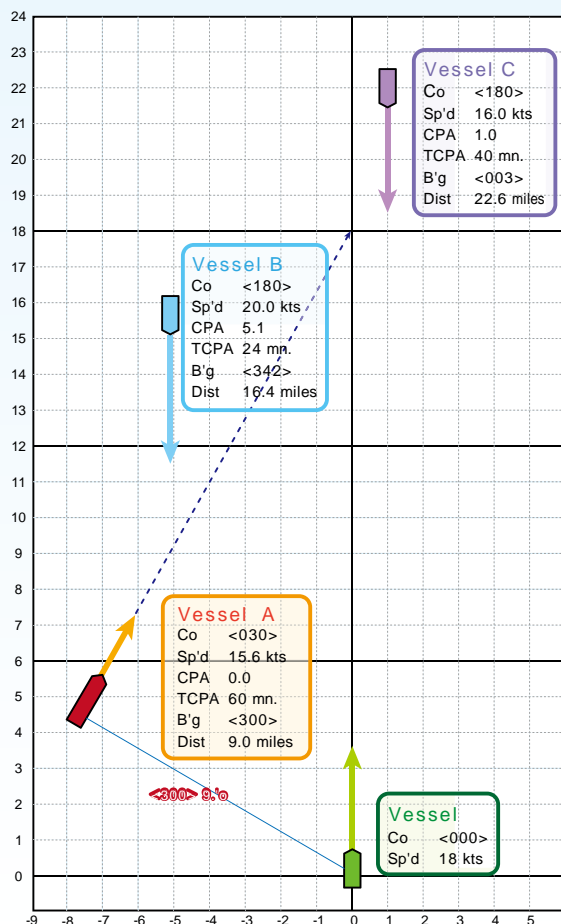
Vessel avoidance (question)

Information as shown in drawing at left obtained with ARPA.
 Other vessels A and C evaluated as problematic.
 (captain's standing orders instructed as CPA 1.5 nautical miles or more)

This relationship with other vessels occurs comparatively frequently in the approaches to Osaka Bay, approaches to Tokyo Bay, approaches to Ise Bay, and the Malacca Straits.
 Often in Watch Level 1 sea areas.

Question

What navigation measures are applicable to the vessel?
 To the other vessel?
 What action should the vessel take?



Vessel avoidance (answer)

Answer

Navigation measures of vessel crossing course of Vessel A. Vessel is burdened vessel.
 After 20 minutes, while turning to starboard, other vessel is requested to turn behind vessel.
 Although wish to turn to port as passing vessel, do not turn to port without communication on VHF etc. to determine mutual intentions.

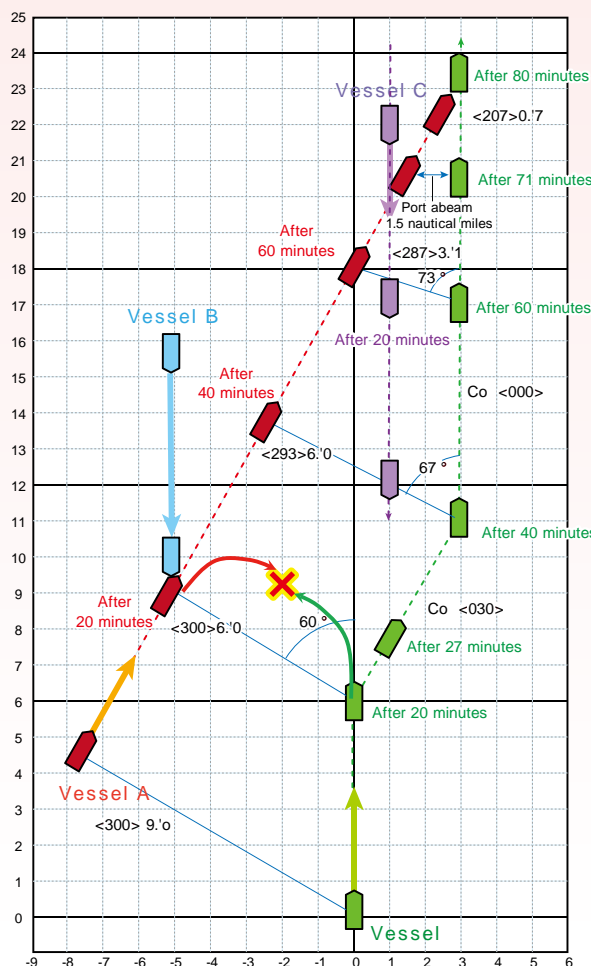
As shown on the left, the vessel is on a parallel course to the other vessel when Vessel A is at a distance of 6 nautical miles.
 When approximately 1 nautical mile further ahead, it returns to its original course, and while monitoring the change in direction, crosses ahead of the other vessel.
 Even after the vessel travels 3 nautical miles to starboard, the other vessel is eventually seen at 1.5 nautical miles on the port beam after 71 minutes.
 The vessel then crosses the course of the other vessel 0.7 nautical miles ahead of it.
 The other vessel is still too close at this distance, and the situation is therefore checked after 60 minutes, and if necessary, another turn to starboard initiated, and the CPA must be expanded (CPA set as 1 nautical mile or more).

Contact Vessel A and Vessel B on VHF to mutually determine intentions before turning to port to go behind Vessel A.

Vessel C crosses ahead, and passes port-to-port. When commencing a starboard turn after 20 minutes, the distance to Vessel C is still 11 nautical miles. The course of Vessel C is therefore crossed after 27 minutes.

On the other hand, Vessel A is required to maintain position relative to Vessel B. Since Vessel B is travelling at 20kts, it may be advisable to delay a starboard turn to cross ahead of Vessel B.

When a number of vessels are passing, predict the relative positions after 30 minutes, 60 minutes, and 90 minutes, and prepare a plan to determine which side each vessel will pass on.

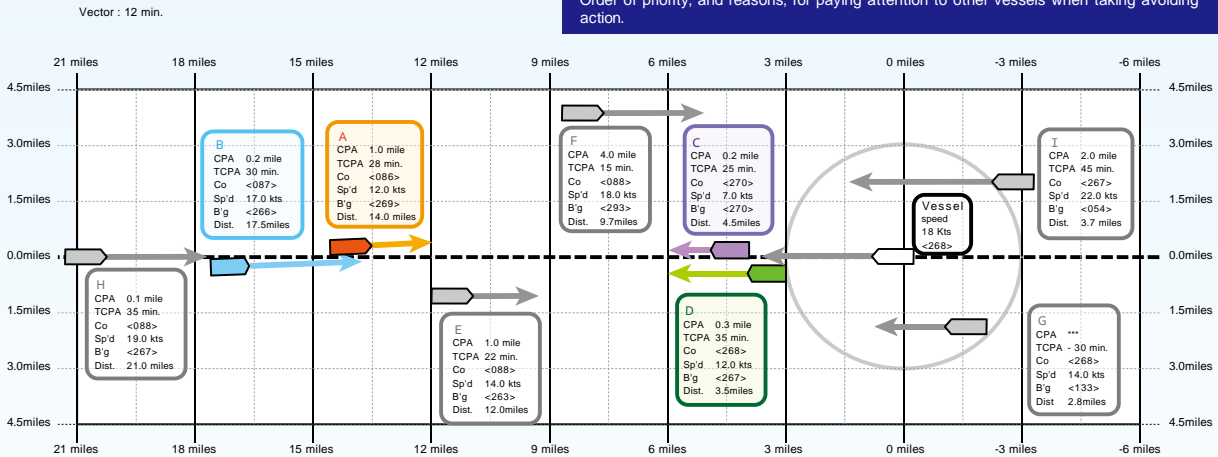


Appendix - 6 Navigator Education - Navigation Questions and Answers

Radar and ARPA Information (Question)

Vessels on opposing and same courses may approach each other in 25 - 30 minutes at a distance of 1 nautical mile under these conditions. Avoiding action is therefore necessary. What avoiding action should be taken?

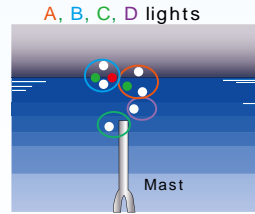
Order of priority, and reasons, for paying attention to other vessels when taking avoiding action.



Underway at night in Bay of Bengal, Indian Ocean (between Pu RONDO and Dondra Head) Co<268> Speed 18kts

TCPA for other vessels noted is less than 25 - 30 minutes, with CPA a maximum of 1 nautical mile (vessels noted above by colors).

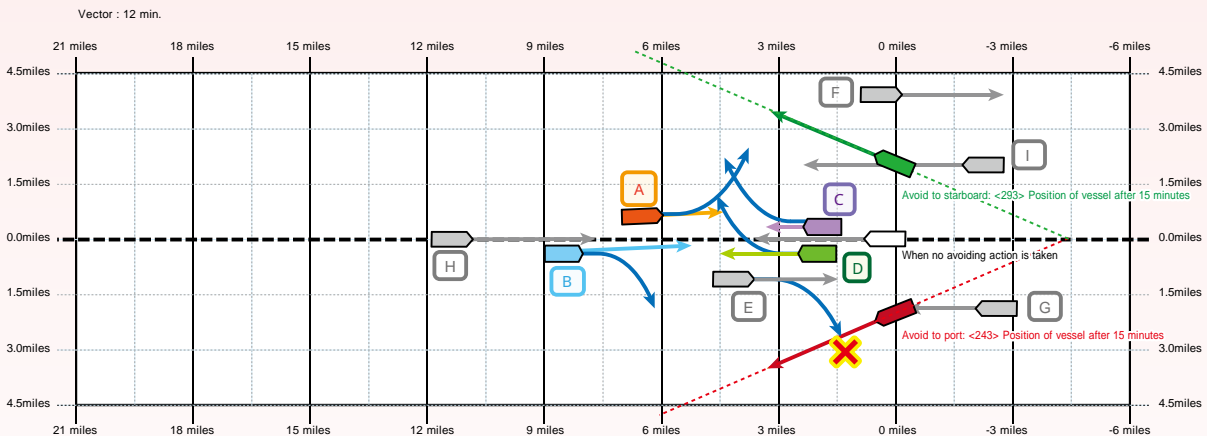
- Vessel A** Almost dead ahead (slightly to starboard). CPA at 14.0 nautical miles is 1.0 nautical miles. TCPA in 28 minutes. Displaying green navigation light.
- Vessel B** Port 2°, CPA at 17.5 nautical miles is 0.2 nautical miles. If following ARPA information, pass on port side in 0.2 nautical miles after 30 minutes. Port and starboard navigation lights can be distinguished, however the red light appears slightly stronger.
- Vessel C** Vessel on same course. Speed 7kts. Gradually opening to starboard. Distance 4.5 nautical miles.
- Vessel D** Vessel on same course. 1 2° to port, 12kts. Course parallel to your vessel.
- Other vessels involved shown in black.**
- Vessel E** Vessel on opposing course. Parallel at 5° to port. CPA 1.0 nautical mile. TCPA 22 minutes. Co<088> Speed 14kts.
- Vessel G** Vessel on opposing course. Parallel at 25° to starboard. CPA 4.0 nautical miles. TCPA 15 minutes. Co<088> Speed 18kts.
- Vessel F** Vessel on same course. 2.8 nautical miles astern. Passed to port 30 minutes ago at 1.7 nautical miles.
- Vessel H** Vessel on same course. Starboard astern <054> Distance 4.0 nautical miles. Passing at Co<267> Speed 22kts. CPA 2.0 nautical miles, TCPA 50minutes.



Appendix - 7 Navigator Education - Navigation Questions and Answers

Radar and ARPA Information (answer)

After 15 minutes



Underway in Bay of Bengal, Indian Ocean (between Pu RONDO and Dondra Head)

Answer

Turn to starboard towards Vessel F. Ensure that course is not ahead of Vessel F. Always ensure that heading does not cross stern of Vessel F. Diagram above shows relative positions of the vessels after 15 minutes. Changed from original course of <268> to <293>. 4.5 nautical miles travelled in 15 minutes. Vessel is therefore 1.9 nautical miles to starboard from original course, and all vessels except Vessel F are visible to port. $\sin 24^\circ \times 4.5$ nautical miles = 1.90 nautical miles. Commencing avoiding action after 15 minutes is too late (cannot pass Vessels I and A) => Only solution is to turn hard to starboard. A 25° turn to port moves vessel 1.90 nautical miles from original course, permitting crossing 4.5 nautical miles ahead of Vessel E, however Vessels E and D are in opposing directions, and if an attempt is made to pass Vessel G following astern port-to-port there is a considerable possibility of a turn to starboard. In this case, unless there is a further turn to port to approximately <190>, Vessel E may not be able to pass safely. This will also result in dangerous positioning of the two vessels. It is also possible to avoid vessels B and D by turning to starboard.

- Other vessels to be aware of.
- 1 Vessel I After crossing at a point 2 nautical miles ahead.
 - 2 Vessel A Possibility of turn to port to avoid Vessel C.
 - 3 Vessel C Possibility of turn to starboard to avoid Vessel A.
 - 4 Vessel D Possibility of turn to starboard to avoid Vessel B.

An example of taking cautious avoiding action in advance

Points

Predict the relative to positions of the vessels after 15 minutes (use the ARPA simulation function if available). In this case, Vessels A and C follow the rules for vessels in opposing directions, and Vessel C will therefore possibly turn to starboard. Because of its position relative to Vessels D and B it is apparent that there is a possibility of turning to starboard. In this case, one possibility is to follow up on Vessel F, and turn further to starboard. Crossing will occur 2 nautical miles ahead of Vessel I. Communicate by VHF beforehand the intended avoiding action (turn to starboard), and the intention to cross 2 nautical miles ahead of Vessel I. Avoid causing any unease on the part of Vessel F. The best option is to cross the course of Vessel I if possible and return to the original course after Vessel I passes on your port side. Without Vessel E present, an early turn to port is possible, however since Vessel G is crossed in all aspects, a wide turn to port while maintaining a safe distance is desirable (to avoid the possibility of collision even in the case of the next vessel in the opposing direction).