The Navigator Aries [2023] SGCA 20

Bow cushion effects and the narrow channels rule

In The Navigator Aries the Singapore Court of Appeal apportions liability in a narrow-channel collision, caused by the bow cushion effect.

The Navigator Aries: facts

On 28 June 2015 Navigator Aries, a laden LPG tanker, was travelling along the Surabaya Strait heading towards its northern entrance. Leo Perdana on the other hand, was traveling inbound from the Strait's entrance. The vessels were thus on reciprocal courses within the Strait, with the weather good and visibility about six miles. The Strait was marked by lateral buoys, with northbound vessels (in this instance, Navigator Aries) to keep the buoys on their starboard side and southbound vessels (Leo Perdana) to keep the buoys on their port side. Within the buoyed channel was a dredged channel, with dredging works undertaken to deepen and broaden the buoyed channel. The dredging works were completed shortly before the collision.

The collision occurred at 23.17:51 (local time) after the vessels, both under compulsory pilotage, reached an agreement that they should pass each other port-to-port. Pursuant to the agreement, the pilots of both vessels ordered a series of course adjustments to starboard. On Leo Perdana, four course orders were given with the first order (of 220°) given at 23.14:40 taking half a minute to achieve (from a heading of 217.4°) and the second order (of 222°) taking almost a minute to achieve (from a heading of 219.2°). The last two orders (of 223° from a heading of 219°, and of 225° from a heading of 221.2°) were not achieved at all, with the 223° order given even before the 222° order could be achieved.

The bow cushion effect

From this chain of events, the court found that Leo Perdana was not achieving its ordered headings in a timely manner, and that Leo Perdana must have faced resistance on its starboard side, given that there was no defect with Leo Perdana's steering gear and machinery.

The court held that Leo Perdana's pilot should have appreciated that the vessel was encountering some form of hydrodynamic resistance and made the appropriate helm and speed orders. This is so because the bow cushion effect (also known as the "bank effect") had begun to operate on Leo Perdana as early as 23.14, three minutes before the collision. The court agreed with the trial judge's holding that the collision's immediate cause was the port sheer by Leo Perdana, which in turn was caused by the bow cushion effect. The court also accepted that the bow cushion effect can be described as a phenomenon occurring to a vessel when passing a submerged bank or shoal, where a sudden change in water flow around the hull generates an uneven pressure field causing the vessel to sheer unexpectedly and violently away from the underwater slope it is passing. The evidence suggested that the sheer can happen quickly and the forces may be such that they cannot be counteracted by use of the rudder.

The midships order

At 23.16:40 Leo Perdana's pilot gave a "midships" rudder order. This entailed taking off the starboard helm, such that Leo Perdana's rudder would be adjusted to a neutral position in line with her centre line, with no turning effect on the vessel. The court held that the midships order removed the rudder's ability to counteract the hydrodynamic forces, enabling the hydrodynamic forces to overwhelm Leo Perdana's rudder and then leading it to an irreversible and uncontrollable sheer to port. Leo Perdana's pilot ordered that the engine be stopped at 23.17:20, some 25 seconds after it encountered the port sheer. This was almost three minutes after he ought to have realised that Leo Perdana was experiencing the bow cushion effect.

The legal significance of the midships order was that:

(a) It substantially contributed to the port sheer, which resulted in both vessels being brought closer together in what was already a close-quarters situation. Therefore, Leo Perdana was in breach of rules 8(a), 8(c) and8(d) of the 1972 COLREGs which (in summary) required it to take steps to avoid a collision in ample time and to pass at a safe distance.

(b) However, the midships order did not amount to an intervening event. The causative fault of the collision remained Navigator Aries' breach of rule 9(a) which reduced the navigable sea room available to Leo Perdana. Therefore the midships

order merely allowed for Navigator Aries to have her liability reduced according to the principles of comparative fault. It did not absolve Navigator Aries of all fault.

Compliance with rule 9(a) of the 1972 COLREGs

The court noted that the old rule25(a) of the 1960 Collision Regulations divides a channel into a dual carriageway with vessels having to navigate on the "lane" to their starboard side (the "Lane Requirement"). Rule 9(a), on the other hand, appears to require vessels to keep instead "as near to the outer limit" which lies to her starboard side as is practicable, and not merely in the correct lane (the "Limit Requirement").

The court also took the opportunity to examine the proper interpretation of rule 9(a) of the COLREGs. The court said that rule 9(a) embodies the Limit Requirement for four reasons:

(a) The plain wording of rule 9(a) clearly and unambiguously supports the Limit Requirement. This is in keeping with the interpretation of (among others) Marsden and Gault1 which says that: "[t]he court will decline to construct an imaginary centre line by making precise measurements of the channel and hold a vessel on the correct side of the line free from blame".

(b) The Limit Requirement better promotes safe navigation by requiring vessels to keep as near as to the limit on their starboard as is safe, thus mandating that vessels achieve the widest clearance possible. This is in contrast to the Lane Requirement where compliance can be achieved by a vessel simply staying slightly off the centre line of the mid-channel, coming away to their own side only when necessary to do so in order for an oncoming vessel to pass.

(c) The Limit Requirement better accommodates the diversity of localised concerns and the changing conditions of narrow channels. It removes some of the arbitrariness in dividing a channel into two lanes as such division is difficult to achieve given the distribution of hazards, the effect of current, bathymetric conditions and so forth in a channel.

(d) The Limit Requirement is more accommodative of alternative passing arrangements. Starboard-to-starboard passings, for example, would be categorically impermissible under the Lane Requirement as, by definition, at least one vessel would be in her wrong water.

Navigator Aries argued that Leo Perdana should have gone further starboard because: (a) Leo Perdana had in fact passed further starboard without incident following the collision; (b) Leo Perdana's master did not appear concerned with the vessel proceeding at full ahead; and (c) Leo Perdana was not a vessel constrained by its draft.

The court rejected Navigator Aries' argument for the following reasons:

(a) Leo Perdana was further starboard after the collision only because Navigator Aries was on fire after the collision and Navigator Aries had indicated that she was carrying dangerous cargo. Nothing in the evidence said that Leo Perdana could have navigated these shallow waters (with an under keel clearance of 1 m) under normal conditions, even when transiting at commercial speeds.

(b) In his evidence at trial, Leo Perdana's master only agreed to proceeding at full speed further starboard because the pilot was the local expert in the waters and had better knowledge of the prevailing currents and the depth of the water. The master testified that he himself would have preferred to navigate at half ahead given his concerns of the existence of shallow patches on both sides of the channel.

(c) Even a vessel not constrained by its draft would only be required to go as far as is safe and practicable. How far this extends would vary according to a vessel's draft. Put another way, Leo Perdana could justifiably remain in the dredged channel; it would not be required to alter its course further to starboard based on its draft.

The apportionment

The court apportioned liability 50:50, disagreeing with the trial judge's 70:30 apportionment in favour of Leo Perdana. In doing so the court relied on the decision of the English Admiralty Court in The Pelopidas,2 a case concerning a collision also caused by an unexpected sheer.

On appeal, Navigator Aries did not dispute that it had breached rule 9(a). This was because, despite the passing agreement, its course over ground would not allow it to achieve the agreed port-to-port passing. This was due to its failure to make the required course alterations. This breach limited the navigable sea room available to Leo Perdana in a narrow channel. This

breach was further compounded by Navigator Aries allowing a long period of time to elapse before reacting to Leo Perdana's port sheer, a finding of the trial judge that Navigator Aries did not appeal against.

The court considered the facts in The Pelopidas, which involved a collision at night caused by an unexpected sheer. The collision there also occurred within a buoyed dredged channel near the port of Buenos Aires with both vessels under pilotage. Liability was apportioned 60:40 in favour of Concord. The court drew two distinguishing features in this case from The Pelopidas:

(a) That Navigator Aries and Leo Perdana were prepared to perform an agreed port-to-port passing. This is in contrast to The Pelopidas where no passing agreement was reached between the vessels.

(b) The circumstances surrounding the sheer in each case were of a different complexion. In The Pelopidas it was observed that a sheer induced by hydrodynamic interation was "all too common in [that] part of the world". In contrast, there was nothing to suggest that Navigator Aries should have expected Leo Perdana to experience a sheer.

Conclusion

This case is the latest instalment of judgments to shed light on the application of the narrow channels rule of the 1972 COLREGs, coming as it is on the heels of The Ever Smart,3 The Nordlake and The Seaeagle4 and Kulemesin v HKSAR.5 It is also the latest in a series of judgments concerning collisions in congested waters, which includes The Mount Apo and The Hanjin Ras Laffan,6 The Dream Star7 and The Wilforce.8

Perhaps the greatest lesson to be drawn here is that the resolution of ship -collision disputes remains a complex business in that it requires: (i) a detailed examination of the facts drawn from the various charts, data and recorders and the oral evidence of seafarers; (ii) an examination of the 1972 COLREGs (and any navigation rules peculiar to the location of the collision); and (iii) the expert opinions of experts well-versed with the navigation of the merchant fleet. The immediate dispute is resolved by taking into account its peculiar facts but also ensuring that decisions gel with the law in other jurisdictions, given the international nature of navigation at sea.

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1 Andrew Tettenborn and John Kimbell QC, Marsden and Gault on Collisions at Sea (Sweet & Maxwell, 15th Edition, 2021) at para 7-226.

2 The Pelopidas and TRSL Concord [1999] 2 Lloyd's Rep 675.

3 Nautical Challenge Ltd v Evergreen Marine (UK) Ltd (The Alexandra 1 and Ever Smart) [2021] 1 Lloyd's Rep 299.

4 [2016] 1 Lloyd's Rep 656.

5 [2013] 2 Lloyd's Rep 367.

6 [2019] 2 Lloyd's Rep 287.

7 [2017] 2 Lloyd's Rep 538.

8 [2022] 1 Lloyd's Rep 660.