

Departmental investigation
into the
grounding of
the Singaporean bulk carrier
SEA CRANE
on Tiparra Reef, Spencer Gulf
on 2 December 1995



Report No 87



**Transport and
Regional Development**

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investigation into the grounding of
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Summary

Shortly after 0900 on Saturday, 2 December 1995, the Singapore registered bulk carrier Sea Crane, while bound for the port of Wallaroo to load a part cargo of barley, grounded off Tiparra Reef in the Spencer Gulf, South Australia. The water ballast in the upper wing tanks was dumped and the vessel refloated after about 1½ hours under its own power. Inspection by divers on 3 December revealed that only minor damage had been sustained, the hull plating not having been penetrated.

Originally the vessel had orders to load at Portland and Geelong, in Victoria, and the Master obtained the necessary navigation charts at the previous voyage discharge port of Yokkaichi, Japan. However, after sailing from Japan the Master received a change of orders, initially directing him to load at Ardrossan and Port Giles in South Australia, but this was then changed to Wallaroo and Port Giles. Although the Master requested that the necessary navigation charts be supplied at the Gladstone anchorage, Queensland, where the vessel was to take on bunkers, he did not receive them.

To assist him in navigating from Cape Nelson, Victoria, to Wallaroo, the Master constructed a chart on a celestial navigation plotting chart, taking details from the small scale chart Aus 4709, “Southern Ocean - Australia South Coast”. However, this chart did not show details of lights and shoals within Spencer Gulf.

Sources of Information

Sea Crane - Master, Mate, Second and Third Mates, chart, log book and datalog.

Skippers of fishing vessels Blue Fin and Invader

Australian Volunteer Coast Guard, Wallaroo

COSCO (Singapore) Pte Ltd

Patrick Sleigh Shipping Agencies Pty Ltd, Adelaide and Gladstone

Five Star Shipping Agency, Sydney

Information was also provided by:

Boat Books, Sydney and Brisbane

TNT Air Couriers, Sydney, Canberra, Gladstone.

Acknowledgement

Portions of charts Aus 4709, Aus 344 and Aus 777 reproduced by permission of the Hydrographic Office, RAN.

Portion of chart Aus 4709 showing Spencer Gulf.



Narrative

General

Sea Crane is a 46,040 tonnes deadweight, five hold, geared bulk carrier, having an overall length of 189.94 m, a beam of 32.2 m and a summer load draught of 11.89 m. The vessel is powered by a Hitachi B&W six cylinder diesel engine, developing 6179 kw and driving a single, fixed propeller, providing a loaded speed of 13.3 knots.

Launched as New League on 26 November 1985 at the Imabari Shipyard, Marugame, Japan, the vessel was delivered to Sun Shipping Corporation of Manila on 14 February 1985. The vessel was bought by the China Ocean Shipping Company (Singapore) Pte, Ltd. (COSCO Singapore) in 1994, renamed Sea Crane, manned by a crew from the Peoples' Republic of China and employed in world-wide trading.

The incident

On 12 November 1995, Sea Crane was at the port of Yokkaichi, Japan, to discharge coal loaded at Tanjung Bara, Indonesia. During the evening the Master received orders for the next voyage, which were to load a grain cargo of barley at the Australian ports of Portland and Geelong, in Victoria, for Dammam, Saudi Arabia. Not having the necessary charts for the proposed voyage on board, the Master requested a total of 17 Australian and 24 British charts through the local agent. These charts were placed on board before the vessel's departure for Portland on 14 November.

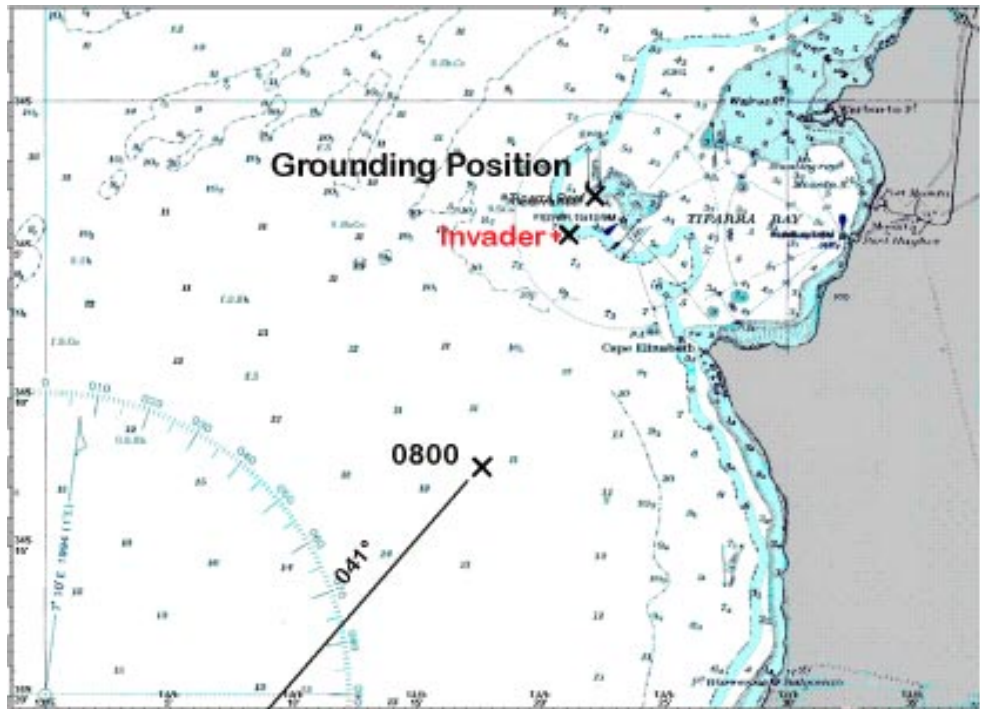
On Friday, 17 November, the Master received a telex message from the charterer, changing the loading ports from Portland and Geelong to the South Australian ports of Ardrossan and Port Giles, both located in the Gulf of St Vincent, on the east coast of the Yorke Peninsula. Not having the necessary charts, the Master telexed the owner on 18 November, advising he needed four charts, providing coverage of the Investigator Strait, the Gulf of St Vincent and Port Giles, and requested that they fax him the relevant sections of the charts. He also advised the charterer that, because of the change of orders, the vessel required additional bunkers.

On Monday, 20 November, the Master received instructions from the charterer to divert to Gladstone, Queensland for bunkers. Later the

charts in Gladstone, as they had to be obtained through Sydney. Following receipt of this information, the Master telexed the owner's agent in Sydney at 0700Z (1800 AEDLST), advising them of the ETA at both Gladstone and Wallaroo, and requesting that eight listed charts be delivered "on arrival". He also telexed the owner, advising them that the charterer had cancelled the order for charts, that there was no time to order charts through Gladstone and that the necessary charts had been requested through the owner's agent in Sydney for delivery at Wallaroo.

Sea Crane anchored off the Gladstone sea buoy at 0930 AEST on Sunday 26 November. The only chart the Master had on board which covered the Gladstone approaches was chart Aus 426, on a scale of 1:1,000,000 and so he obtained the latitude and longitude of the anchorage position from the agent. The vessel sailed again, after

Portion of chart Aus344 showing positions of Sea Crane.



completion of bunkering, at 1330 on the same day, with appropriate chart coverage only as far as Cape Martin, South Australia, in Longitude 140° East.

The only chart on board covering the section of the voyage between Cape Martin and Wallaroo was chart Aus 4709, “Australia South Coast”, on a scale of 1:3,500,000. Picking off the latitude and longitude of the various salient points and plotting them on celestial navigation plotting charts, the Master constructed two larger scale charts, one from Cape Martin to Kangaroo Island and the other from Kangaroo Island to Wallaroo, to assist in the navigation of the ship. However, chart Aus 4709 does not show any navigational aids or reefs within Spencer Gulf.

In planning the last sections of the voyage, from Cape Nelson in Victoria, the Master prepared his plan according to the areas of clear water as indicated on chart Aus 4709. He layed off a course of 300° to a position 21 miles 262° from Cape Du Couedic, the south-west point of Kangaroo Island, then a course due north (000°), passing equal distances off South Neptune and Gambier Islands, to a position 7 miles 120° from Thistle Island. From this latter point he layed off a course directly to the latitude and longitude of the anchorage off Wallaroo, obtained from the local agent.

From Gladstone the voyage progressed well, without incident and Sea Crane arrived off Kangaroo Island during the evening of Friday 1, December. As was his custom, the Master visited the bridge frequently during the 8-12 watch, keeping a general eye on the Third Mate. At 2220, course was altered to 000°, to take the vessel up the west coast of Kangaroo Island, towards Spencer Gulf.

At midnight, the Second Mate took over the watch, at which time Cape Borda, the north-west point of Kangaroo Island, was just abaft

the starboard beam. The Second Mate plotted the ship's position every half hour, initially using radar bearings and distances of South Neptune Island, then from 0130, radar distances of South and North Neptune Islands and Thistle Island. Satisfied that all was well, the Master went to bed at about 0130.

When, at 0230, Sea Crane was in a position 6.5 miles south-east of Thistle Island, the Second Mate altered course to 041° , the course line drawn on the chart to take the vessel directly to the anchorage off Wallaroo. He continued to plot the vessel's position at half-hourly intervals until 0330 and was relieved by the Mate at 0400.

The Mate plotted the ship's position at 0530, when Corny Point was bearing 145° at a distance of 17.8 miles. Sunrise that morning was at 0602. When the crew turned-to on deck, they raised the four cranes and opened the hold hatches, in readiness for arrival at Wallaroo.

The Master went to the bridge at 0700, to check progress before going for breakfast. At this time Wardang Island, as indicated by the radar, was just forward of the starboard beam at a distance of about 15 miles, leaving the vessel 38 miles to go to the anchorage.

The Third Mate arrived on the bridge, to take over the watch, at about 0750, followed shortly afterwards by the Master. The Mate handed over the watch to the Third Mate, plotted the ship's position at 0800, and left the bridge. The Master gave instructions for the engineers to start changing over from heavy fuel to diesel, in preparation for going to stand-by and engine manoeuvring. He also called Wallaroo Port Control on VHF channel 16, to give advice of his ETA at the Pilot Station, but received no response.

Monitoring the radar, the Third Mate identified a stationary target ahead which, when it was seen visually, at a distance of between six and seven miles, was thought to be an oil production structure. A number of small fishing boats were also seen in the vicinity of the structure. The Master altered course to 020°, to pass three miles to seaward of the structure and at 0830, put the engine on stand-by. At this time he again called Wallaroo Port Control on VHF channel 16, and again he received no response.

Manoeuvring to avoid some small fishing boats, the Master altered course to 030°, as a result of which Sea Crane passed within 1¼ miles of the structure, which was seen to be a light beacon. Immediately after the structure had passed abeam to starboard, Sea Crane ran hard aground on Tiparra Reef, in a position with the beacon bearing 123° at a distance of 1.16 miles. The Master immediately stopped the engine, the time being recorded by the data logger as 0903.

The charter fishing boat Blue Fin had cleared from Port Hughes at about 0845 and had headed due west towards Tiparra Reef beacon. On the way out those on board were able to see a vessel headed up the coast and quite close in, much closer than normal, and at first thought it to be a sailing vessel. As the vessel closed the beacon they were able to see its raised cranes and thought it must be going to do some work on the beacon. However, the vessel did not stop and the fishermen realised that it would run up on the reef. As the vessel grounded, the top of its bulbous bow, which had been at water level, rose out of the water by as much as three or four metres. Passing right under the bow of the vessel, the skipper of Blue Fin noted the depth of water as being 5.6 m. As he did not hear any calls on the VHF radio, the skipper called the Volunteer Coast Guard station at Wallaroo and reported the grounding.

The fishing boat Invader was fishing at anchor in a position with Tiparra Reef beacon bearing 068° at a distance of 2.44 miles. The deckhand drew the skipper's attention to a vessel approaching from the south, and his initial impression also was that it was a large sail boat. As the vessel drew closer, they could see that it was a cargo vessel and expected it to make a large alteration of course to port before reaching them. However, the vessel maintained course and passed within half a mile inshore of Invader. The vessel then appeared to be shaping to pass between two small squid boats, when the skipper of Invader realised that the vessel had run up on the reef. The skipper then weighed anchor, moved over to the grounded vessel and, using his electronic equipment, sounded around. He then contacted the Volunteer Coast Guard station and stood by to be of such assistance as possible.

After stopping the engine, the Master took a quick look over the side and was surprised at the shallowness of the water, the seabed being clearly visible. Initially he put the engine to slow ahead for a brief period, but then built up to half astern, running the engine at that speed for six minutes. However, Sea Crane did not move.

The Master then gave instructions to the crew to open the upper wing ballast tank dump valves. The arrival draught for Wallaroo had been calculated as being 4.8m forward and 6.6m aft. As the upper wing ballast tanks contained approximately 6000 tonnes of ballast water, by releasing this he anticipated that Sea Crane would float free. He also gave instructions for the soundings of all tanks and for the water depth around the ship to be checked. Soundings of the double bottom and peak tanks indicated that no tanks had been breached.

Wallaroo Port Office is not normally manned over the weekend and, despite a vessel being due that morning, the Volunteer Coast Guard operator had to contact a Port Office representative at home, at 0912,

to advise him of the grounding. The representative arrived at the Port Office at 0920 and proceeded to notify the Harbour Master, the State Authority and the ship's agent.

VHF radio communications between Wallaroo Port Office and Sea Crane proved difficult, the Master having great difficulty understanding the persons operating the Port Office radio. However, he was able to understand the woman Volunteer Coast Guard operator and so communications were conducted through her. At 1000, the Master was asked if he required tug assistance, but he considered that the deballasting operation should be sufficient to refloat the vessel and so declined assistance for the time being.

Concurrent with the release of ballast water, the Master continued his efforts to refloat Sea Crane by using the engine astern and, at 1037, the vessel began to move astern off the reef. The Harbour Master advised the Master that he should proceed four miles to seaward, to the west, before heading for Wallaroo anchorage. However, the skipper of Invader became concerned that Sea Crane was in fact heading back towards the reef and, through the Volunteer Coast Guard operator, the Master was instructed to follow Invader, which would guide him clear of the reef.

Invader duly led Sea Crane clear of the western extremity of the reef and then gave the Master the course to steer to Wallaroo anchorage. The Master, however, chose to remain on a northerly course until due west of Wallaroo before altering course to the east, bringing Sea Crane to anchor, off the Sea Buoy at 1248.

On Sunday, 3 December, an underwater survey of the vessel's hull was conducted by divers of Adelaide Commercial Divers Pty Ltd, a surveyor of the Australian Maritime Safety Authority observing the dive TV monitor and assisting in directing the divers. The survey

revealed some deep scraping and a number of indentations, of up to 80mm deep, in the forward, starboard area, but no hull penetrations.

On 4 December, the vessel was attended by a non-exclusive surveyor, on behalf of the classification society, and was cleared to load the intended cargo.



Photograph: Arthur Smith

Tiparra Reef



Photograph: Arthur Smith

Sea Crane dumping ballast 2 December 1995

Comment and Analysis

The main factor behind the grounding of Sea Crane on Tiparra Reef was the absence on board the ship of appropriate navigation charts for Spencer Gulf and for the approaches to Wallaroo in particular.

Not only is it sound common sense and a requirement of basic seamanship practice to have adequate and up-to-date charts for the safe conduct of a voyage, it is a requirement under Regulation 20, Chapter V of the Safety of Life at Sea (SOLAS) Convention. It is, therefore, incumbent upon both the owner and the master of a ship to ensure that the ship is supplied with the necessary charts for the voyage in hand.

In all, there were two changes in loading ports. Having obtained the necessary charts for the proposed voyage to Portland and Geelong, the Master was at sea when the loading ports were changed, first to Ardrossan and Port Giles (17 November) and then, (21 November) to Wallaroo and Port Giles. Such changes in orders are commonplace in the shipping industry and, where this results in a vessel not having the required up-to-date charts on board, masters are reliant upon assistance from management ashore in procuring the necessary charts. Sea Crane's Master sought assistance to obtain the required charts from a number of sources, initially from the owner and the charterer, and then from their agents.

The charterer responded promptly to the request for charts, passing instructions to its principle agent in Adelaide for them to be provided to the ship at Gladstone. This was duly followed up and charts were despatched from Sydney on 22 November for delivery at Gladstone on 23 November. However, the charterer then instructed its agent to

cancel this order, as “the owner is arranging the supply of charts”, but did not advise the Master directly. As a result of this lack of communication, the Master was not aware until the afternoon of 24 November that his request for the supply of charts at Gladstone was not being met.

When, on 24 November, the Master requested the charterer’s Gladstone agent to supply the charts for Wallaroo, the agent was not only constrained by the fact that it was a Friday afternoon and so deemed too late to obtain the charts, but also by the cancellation of the original order by his principal. However, even had the charterer not cancelled the original order, or had the Gladstone agent delivered the charts regardless of the cancellation order, those charts did not include charts for Spencer Gulf and Wallaroo.

The owner also acted promptly, passing the Master’s initial request of 22 November, for four charts, to the owner’s principal agent in Sydney and faxing the requested portions of charts. However, their instructions were for delivery at the first load port (Ardrossan), not Gladstone. In so doing, the owner effectively required the Master to navigate waters for which he did not have charts in order to obtain those very charts. It is difficult to accept that an experienced ship owner did not fully appreciate the importance, for safe navigation, for the charts to be placed on board before the ship arrived.

Even though a ship may be trading world wide, it appears to be quite a common cost-cutting measure for it not to be supplied with a folio of world wide charts. This puts a greater responsibility upon the owner to ensure that the ship is supplied with the necessary charts before it proceeds into an area for which it did not already have charts.

The Master’s telex of Friday, 24 November to the owner’s Sydney agent, requesting additional charts for Wallaroo, was received after business hours and remained unnoticed until the Monday morning

(27 November). Any ambiguity in the Master's request for the delivery of the Spencer Gulf and Wallaroo charts "on arrival" therefore became immaterial.

The change of orders instructing the Master to load at Wallaroo and Port Giles were received by him on Tuesday 21 November 1995. This provided ample time in which to arrange the supply of the necessary charts at Gladstone, but valuable time was lost by the Master first telexing the owner to find out if he could order the additional charts through the charterer's Gladstone agent. However, even had the Master gone directly to the Gladstone agent, the charterer's cancellation of the order for charts would have meant that his request would not have been met.

Shipping usually involves a number of agencies looking after the different interested parties. This incident highlights the difficulties and uncertainties that can be created where multiple agencies are involved and there is a lack of co-ordination between the principals. It is considered that it would have been appropriate in the circumstances for the owner to seek the co-operation of the charterer for arranging the supply of all the necessary additional charts, occasioned by the changes of loading ports, through the charterer's Gladstone agent. Prompt action in this respect should have ensured the delivery of all charts to Sea Crane off Gladstone on 26 November and the safe arrival of the ship at Wallaroo.

There was both a safety imperative and a legal requirement for the ship to have the appropriate charts for the voyage from Gladstone to Wallaroo. As the necessary charts were not provided at Gladstone, there were a number of ports between Gladstone and the Victoria/South Australia border from where the owner could have arranged for the charts to be delivered to the ship, either by launch or by helicopter. The Master, for his part, would have been fully justified in insisting

that he call off one of the ports en route for the charts to be delivered on board in such a manner, and also in refusing to proceed beyond Portland, the last port for which he had adequate charts, until they had been delivered to him. In fact, he should have done so.

In the event, the Master decided to construct a larger scale chart from the small scale chart Aus 4709, using a celestial navigation plotting chart for the purpose. Whereas he had requested portions of the chart for Investigator Strait be faxed to him, he did not make a similar request for portions of chart Aus 344 or Aus 777, covering the approaches to Wallaroo. Although these would not have been suitable for navigation purposes, had he done so, he would have been made aware of Tiparra Reef.

The Master had on board both Volume K of the Admiralty List of Lights and Volume 13 of the Admiralty Sailing Directions “Australia Pilot Volume I”, to assist him in the construction of his chart. However, only those lights depicted on chart Aus 4709 were marked on the Master’s chart and the course line from the position south-east of Thistle Island to Wallaroo passed through the position of Tiparra Reef, indicating that these two volumes had not been used to full advantage.

The lights and beacons for Wallaroo are listed on page 67 of Volume K, lights numbered 1973 to 1978. These are followed by Tiparra Reef light, number 1982. Tiparra Reef is described on pages 85 and 96 of the Australia Pilot Volume I and, although the description could be somewhat misleading, had the position been plotted and a safe passing distance been allowed for when laying off the course, the incident may well have been avoided.

Availability of navigation charts

In correspondence, the owner commented on the lack of availability of charts in Australian ports at weekends and suggested that an emergency chart supply system be put in place.

Generally, local chart suppliers stock only those charts covering the local area or state. Charts for other states' waters have to be ordered from the main chart agencies located in Brisbane, Sydney, Melbourne and Perth. All these agencies are open on Saturday mornings, some also on Saturday afternoons and can process orders for charts during those times. Delivery depends upon flight schedules and availability of shipping agency personnel to collect the charts when they arrive at the local airport.

In this instance, had the Master's request for the Wallaroo charts been passed expeditiously to the Sydney chart agency, it was possible for that agency to place the charts aboard the Saturday morning flight to Gladstone, or failing that, the evening flight to Rockhampton.

Aids to navigation

Sea Crane is equipped with a JRC JFE-570S echo sounder and recorder, which was fully functional at the time of the incident. However, the echo sounder had not been used to check water depths during the transit of the Spencer Gulf and was not running at the time of the grounding.

In the absence of a chart to show the water depths, the use and careful monitoring of the echo sounder for indications of shoaling water would have been good seamanship practice. The presence of small fishing craft, particularly around a structure, can indicate the

presence of a shoal or reef, however this was either not appreciated, or not heeded.

Had the echo sounder been running and monitored, the Master would have been alerted to decreasing water depth when still four miles from Tiparra Reef beacon. At that distance the water depth decreases to below 10 fathoms (18.3 m) and continues to decrease steadily to a depth of 6 fathoms (11 m) over a distance of 2.5 miles.

Conclusions

These conclusions identify the factors contributing to the incident and should not be taken as apportioning either blame or liability.

The main contributing factors to the grounding of Sea Crane on Tiparra Reef are considered to be:

1. The Master was not provided with the necessary navigation charts for the safe conduct of the voyage beyond Cape Martin, eastern South Australia and for the approach to Wallaroo in particular.
2. The lack of co-ordination between the owner and the charterer, resulting in charts not being provided at Gladstone on 26 November 1995.
3. The apparent lack of appreciation by the owner of the importance for the charts to be supplied to the ship before it arrived in South Australian waters and, therefore, the fact that the owner did not arrange for the ship to divert to another port en route for this purpose.
4. The Master accepted the non-delivery of the charts and did not request the owner to arrange their delivery at another port en route.
5. In compiling his own chart, the Master did not utilise all the relevant information available to him in the Admiralty publications.
6. Having observed a structure and a number of fishing craft in proximity to it, the Master did not maintain a sufficiently safe passing distance.

7. The echo sounder was not used to check the depth of water and the trend of the seabed, particularly while approaching the structure.

Submissions

Under sub-regulation 16(3) of the Navigation (Marine Casualty) Regulations, if a report, or part of a report, relates to a person's affairs to a material extent, the Inspector must, if it is reasonable to do so, give that person a copy of the report or the relevant part of the report. Sub-regulation 16(4) provides that such a person may provide written comments or information relating to the report.

A copy of the final draft of the report was sent to both the Master and COSCO (Singapore) Pte Ltd.

Relevant sections of the report were sent to the skippers of the fishing vessels Blue Fin and Invader, also to the operator of the Wallaroo Volunteer Coast Guard Station.

No submissions on the draft report were received by the Inspector.

The Neptune Islands to Shoalwater Point directions, section 4.12, direct a vessel NNE, to a point SE of Waterhouse Point, on the SE extremity of Thistle Island, thence NE to a point SE of Shoalwater Point. However, the text details the route as passing NE of both Wedge Island and Tiparra Reef, whereas in fact the track lies to the NW of both.

The direction “NE of Wedge Island” should be immediately obvious as being in error, but without the proper charts, the error in the direction “NE of Tiparra Reef” is not so obvious.

The Neptune Islands to Point Riley directions, section 4.87, direct a vessel first ENE, thence NNE between the Yorke Peninsula, to a point WNW of Tiparra Reef and thence to a point WNW of Riley Point.

Tiparra Reef is described in section 4.12 as “a bank of sand 2½ miles in extent, with depths of less than 5 m over it. A light (white house on piles, white lantern) is exhibited from a drying ledge on the SW end of the reef.” and in section 4.113 as “a bank of sand 2½ miles in extent, lies in the middle of Tiparra Bay and divides the entrance into two parts”.

The latter information should warn the mariner that the directions in the Shoalwater route to pass NE of Tiparra Reef are in error. However, the sand bank known as Tiparra Reef in fact lies off the middle of the bay, 3.7 miles seaward of a line joining the two headlands (Cape Elizabeth and Warburton Point), although passage to the east of the bank, being of less than 10 metres in depth, is not recommendable to large vessels. Also, the beacon structure is located on the south side of the bank, at about mid-length; the five-metre depth contour extends 1.25 miles westward of the beacon and the 10-metre depth contour two miles westward.

The errors in the Neptune Islands to Shoalwater Point directions, section 4.12, and the perceived inaccuracies in the description of Tiparra Reef and location of the beacon were raised with the Hydrographer, RAN. The Hydrographer, RAN has forwarded the Inspector's correspondence to the Hydrographic Office, Taunton, England, the publisher of the book, for what ever action is considered appropriate.