Contents

View from the centre of River Torrens' bridge
(NOTE: This is a composition photograph the background has been added)

Summary

The 182 m long, Australian flag bulk carrier River Torrens arrived off the Port of Newcastle, New South Wales, at 2100 on 31 May 1995, loaded with about 27,000 tonnes of wheat from South Australian ports. At 2107, a licensed pilot for the port boarded the ship to take the vessel to no. 3 berth, the Western Basin Grain Terminal. The night was fine, partly cloudy, with a light north-easterly wind and a swell of about 1.6 m at the harbour entrance.

The vessel's bridge passed the outer end of the Southern Breakwater at 2123. The vessel was to the south of the transit of the main leading lights and turning to port, although full starboard rudder had been applied. The vessel's speed at the time was estimated to be 8 to 9 knots. As soon as the vessel was in the lee of the Southern Breakwater, the vessel's speed was reduced to half ahead and then, after about a minute, to slow ahead.

River Torrens steadied as it approached no. 2 buoy and, as the vessel then began to swing to starboard, full port rudder was applied to counter the swing and avoid no. 2 buoy. However, the propeller and rudder came into contact with the steeply shelving channel bank 80 m east of no. 2 buoy. Although the rudder was kept hard to port and one of the waiting tugs pushed hard on the starboard bow, the vessel continued across the channel.

The Pilot ordered the anchors to be let go, but before they could be released the vessel grounded on the northern side of the channel at 2127, about 10 minutes before high-water.

After initial attempts to refloat the vessel, both tugs were positioned at the ship's stern to tow the vessel off the bank. Using the ship's engine and tug power, the ship was refloated at 2147 and resumed passage for the grain berth.

An inspection of the ship showed all propeller blades were damaged, the lower half of the spade rudder was bent to an angle of about 30 degrees from the vertical and some damage to the main engine crankshaft was evident. Forward, there were some superficial scrape marks to the bottom paint work.

On 4 June, River Torrens entered dry dock where further assessment of the damage was made and repairs to the vessel began.

Sources of Information

Master and crew of River Torrens

Newcastle Pilot Service

Master of tug, Iron Cove

Master of tug, Walana

Newcastle Harbour Master

ASP Ship Management

Acknowledgment

Portion of charts Aus 207, Aus 208, reproduced by permission of the Hydrographic Office, RAN.

Note:

Times, unless otherwise stated, are given in Australian Eastern Standard Time (AEST).

Narrative

River Torrens

River Torrens is an Australian bulk carrier of 31,921 tonnes summer deadweight at a draught of 11.021 m. It was built in 1977 at the New South Wales Government Engineering Undertaking, Newcastle and launched as Selwyn Range. In 1985 the vessel was lengthened, fitted with a self-discharging tower at the forward end of the main deck, and the ship's name was changed.

The vessel has three holds and five hatches. It is 181.79 m in length, has a beam of 24.87 m and a moulded depth of 14.48 m. The bridge and accommodation are located at the after end of the ship and the distance between the bridge and the bow of the ship is 141 m.

River Torrens is powered by a B&W, six cylinder diesel engine producing 8,532 kW, driving a single shaft and a six bladed, 'right handed' propeller giving a sea speed of 14.5 knots.

The ship operates with an unmanned machinery space (UMS) although engineers are routinely present in the engine control room during port manoeuvres, when the engine is under direct bridge control.

River Torrens is owned by ANL Limited and crewed by 18 Australian nationals, with berths for an additional three trainees. The ship operates with two crews working about eight weeks on, eight weeks off.

The self-discharging tower limits visibility from the centre line (the steering position) and all other parts of the bridge. Conning the ship into Newcastle is therefore normally conducted from the port side of the wheelhouse, or the port bridge wing. From either, visibility is effectively obstructed from dead ahead to about 11° on the starboard bow, effectively cutting out any point of reference in that arc and affecting the perspective of those on the bridge.

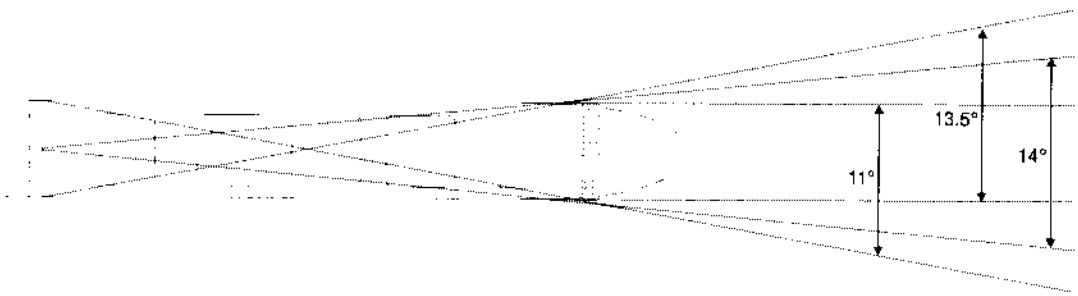


Diagram showing arcs of obscured vision

Port entry – Newcastle

In May 1995, River Torrens loaded wheat in Wallaroo and Adelaide for Newcastle. The ship arrived off Newcastle on the evening of 31 May at a draught of 10.78 m forward and 11.11 m aft, with a displacement of about 40,200 tonnes. 'End of passage' was rung at 2100, with Nobby's Head light bearing 302° by 2.85 miles. Both steering motors were running, ready for harbour manoeuvring, engine speed was reduced to half ahead and then, at 2101, to slow ahead.

The Pilot boarded at 2107, to take the ship to no. 3 berth in the Western Basin Wheat Terminal. The bridge team consisted of the Master, the Mate, an intergrated Rating (IR) as Helmsman, a trainee rating observing the Helmsman and a cadet who left the bridge soon after the Pilot boarded. The Master stationed himself on the port side of the wheelhouse, or on the port bridge wing, to ensure that the Pilot's orders were correctly relayed to the Helmsman. The Mate stood by the starboard radar, next to the engine room telegraphs (between 2 m and 3 m from the centre-line of the ship and about 3 m from the bridge front), to control the engine movements as instructed by the Pilot and to maintain the bridge movement book.

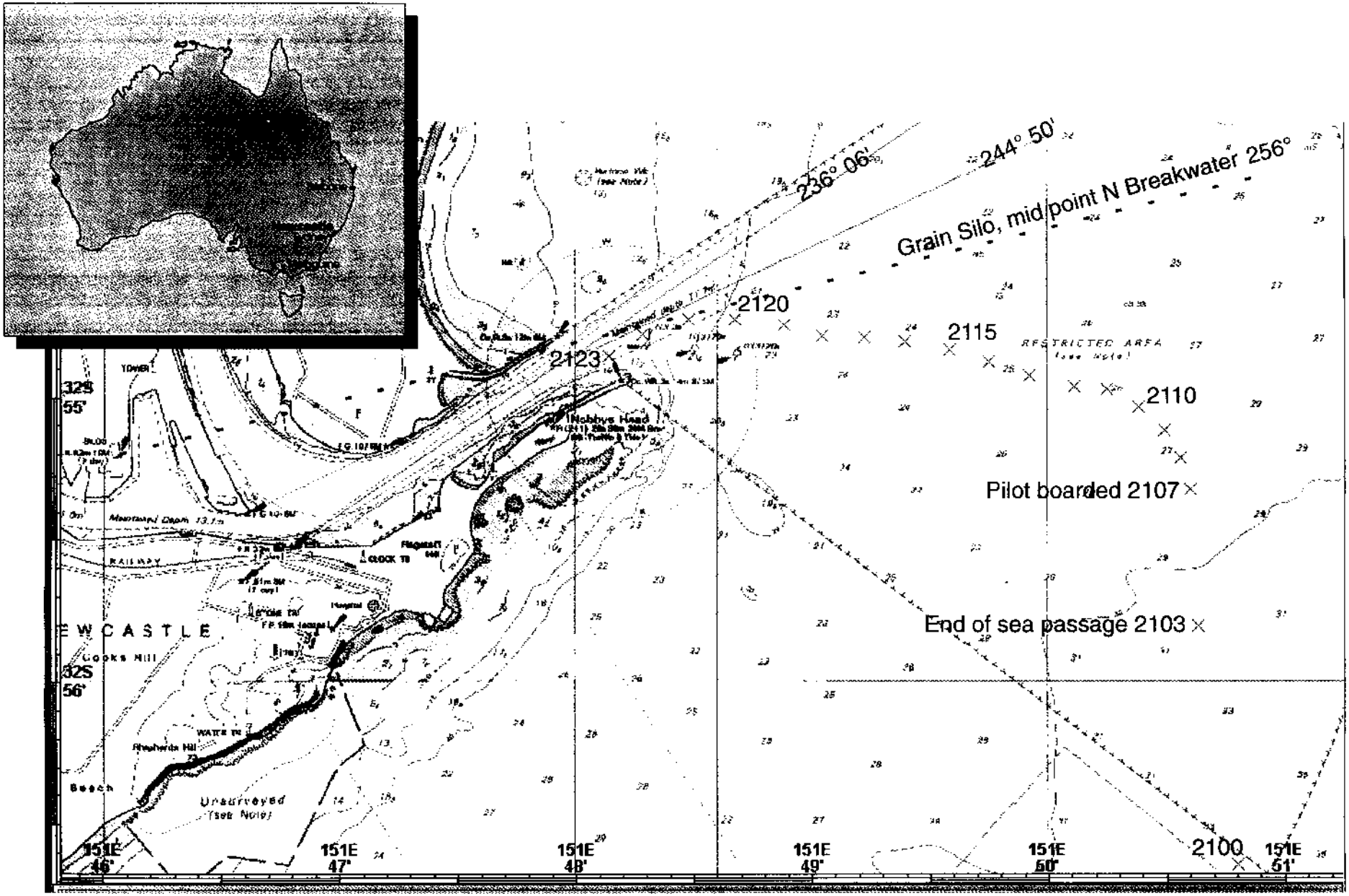
Two tugs, Walana and Iron Cove, with 50 tonne and 45 tonne bollard pull respectively, waited by no. 1 buoy, inside the breakwaters to assist the ship in berthing.

The night was clear with little or no wind. The sea was calm with a swell of between 1.6 m and 1.7 m with a period of 10.5 seconds. The tide was close to high water at 1.8 m above a datum of 17.7 m, giving a total depth of water of 19.5 m in the dredged channel. All the shore navigation lights were clearly visible.

At 2108, under the Pilot's direction and with the ship about two miles east of Nobby's Head, the engine speed was increased to full ahead manoeuvring revolutions, 90 rpm and the ship altered course to port, from a true course of about 350°, for the entrance to Newcastle Harbour.

According to those on the bridge, the pilotage seemed to proceed normally without any unusual incident or reason for concern. At approximately 2111, the ship steadied on a course of about 286° before resuming a steady turn to port, at about 2116. The ship passed the 'wave rider' buoys at about 2120 and full port rudder was applied. Both the Pilot, on the port bridge wing, and the Mate on the starboard side of the wheelhouse could see the 'deep water' leading lights with the rear light open to the south of the front light. At a little before 2122, as the ship passed about 100 m off the entrance buoy, 10° of starboard rudder was applied to check the swing to port and bring the ship into the dredged channel.

At 2123, the bridge of River Torrens was abeam of the Southern Breakwater light and the Pilot was standing at the ship's side on the port bridge wing. The ship was turning to port despite the rudder being at 'hard to starboard' and no. 2 buoy, marking the southern side of the channel about 590 m inside the breakwater, had disappeared from



Section of chart Aus 207 – Reconstruction of approximate course followed from 2100 to 2123.

(Based on course recorder and engine revolutions)

view blocked by the bow and self-discharging tower. The Pilot requested one of the tugs to ' . . .nip round to the port bow and push', but before the tug could cross the bow, River Torrens started to swing back to starboard and the order was rescinded. At about 2123½, the engine speed was reduced to half ahead and full port rudder was ordered. Looking down the port side of the hull the Pilot saw the buoy reappear and stated that he saw the southern limiting lights in transit.

At 2124½, the engine speed was reduced to slow ahead and the ship continued to swing to starboard. At 2124¾, the Pilot ordered the tug Walana to 'lean on starboard shoulder now'. At about 2125, a loud 'bang' was heard on board River Torrens, on the tugs and at Nobby's signal station. The ship's engine was stopped and put astern and, shortly after, the Pilot repeated the order to the tug Walana to lean on the starboard shoulder. He then ordered the tug Iron Cove to 'get round to the port quarter if you can'. At 2125½, with the ship's head at about 270°, the Pilot ordered full power from the tugs; the skipper of Walana responded that he was pushing with full power.

Immediately on hearing the apparent impact, the Master asked the engine room to check all spaces for the ingress of water and instructed the Chief IR to sound the double bottom tanks.

The bow of River Torrens continued to swing to starboard and the Pilot ordered that the port anchor be dropped. This was acknowledged by the Third Mate, who was at that time with the forward mooring party on the starboard side of the main deck by the break of the forecastle, adjacent to where Walana was pushing.

The Third Mate, accompanied by an IR, went up the ladder to the forecastle and the anchor windlass. The anchors had not been completely cleared before arrival and the chain 'preventers' were in place on each anchor cable. The windlass brakes had been giving concern and the chain preventers were left in place to prevent either anchor from releasing accidentally, should either brake fail during the pilotage. Unbeknown to those on the bridge, the forecastle party was unable to clear the preventer on the port anchor. Just after 2126, the Pilot asked whether Walana was clear of the starboard anchor and the tug skipper replied that he was about to 'bail out'. The Pilot then ordered the starboard anchor to be let go. However, the forward mooring party was unable to comply. As the Stockton side of the channel was close and the anchors had not been let go, the Master rescinded both orders to drop the anchors.

Just before 2127, River Torrens grounded on the north side of Newcastle entrance channel, about 250 m west of no. 1 buoy, with the ship's head at about 290°. The main engine was stopped. The skipper of Walana offered to put a line to the port shoulder and to try and drag the vessel free, however, at this time the Pilot was not sure the vessel was aground, as the ship's head was continuing to swing. However, it was soon realised the vessel was in fact aground and Iron Cove was made fast through the centre towing lead aft. Walana passed around

the bow, between the ship and the breakwater, to the port quarter where it was also made fast. At about 2129, the ship's head was steady on a heading of 312°.

When it was realised that the ship had taken the ground, the Master sent the Mate to check the empty no. 3 double bottom. When it was established that this was dry, and no pollution had been caused by the grounding, the vessel was refloated at about 2147 using the ship's main engine and the two tugs pulling aft.

The vessel backed across the channel and its stern went close to the southern edge of the channel before the vessel was turned to resume its passage to the Western Basin. After refloating, the vessel reportedly handled as expected during the remaining passage to the berth. It was eventually made fast at 2248 and the main engine was stopped. While alongside the berth, the rudder, propeller and bottom plating were inspected by divers.

The Pilot left the ship and returned, at about midnight, to the Pilot Station from where he rang the Newcastle Police and requested that the Police subject him to a breath test to establish if any alcohol was present in his blood. The Police arrived at about 0030 and administered the test which showed no trace of alcohol.

Comment and Analysis

Ship's machinery

Marine Orders require that the steering gear of a ship travelling at full speed at its deepest draught should be capable of altering the rudder angle from 35° on one side to 30° on the other in 28 seconds. The investigators were not in a position to test the rudder to see if it met this criteria, but evidence was given that the time taken for the rudder to move from full port to full starboard was 19 seconds. Subsequent trials, after the vessel completed repairs in July, showed, at that time, the rudder angle could be altered from full port to full starboard within 20 seconds.

The evidence is that the main engine and other auxiliary machinery operated properly. Other than the brakes on the ship's port and starboard windlasses, the ship's machinery and equipment operated as required.

Times

Documentary evidence was obtained from the deck log book, 'Bridge/ Engine Movement Book' (bell book), engine movement printout and course recorder on board River Torrens. Before entering harbour, the bridge and engine room clocks had been synchronised. On the bridge, manually entered times such as when passing buoys and entering harbour were recorded to the nearest minute, the Mate taking the time from the Global Positioning System (GPS) display on the radar. Engine movements were recorded automatically to the nearest 30 seconds.

Of importance in the analysis of the incident is the relative time between the times entered in the ship's log, which were taken from the GPS clock, the engine movements, and the rudder movements as indicated by the course recorder. These would seem to be accurate to about ±30 seconds of each other, allowing for the fact that the course recorder was about three to four minutes slow of the GPS displayed time.

A log of shipping movements and regular weather observations is also maintained by the marine officer on watch at Nobby's Head. These times are only considered to be accurate to within one or two minutes.

The only precise times were those taken from the radio communications monitoring system at Nobby's Head, which are accurate to the nearest second. The transcript of the tape recording is at Table 1 (see next page).

Compass headings

Examination of the course recorder trace shows that there was a one degree error in alignment (*the trace showing one degree high compared with the ship's gyro compass*), and that there was a difference between the quadrant pen and the trace pen of about 1.25 mm.

The Pilot submitted that, based on the error in the course recorder and the ship's alignment at no. 3 berth Western Basin, where the gyro compass itself

Transcript of tape recording — Table 1

Time Hrs:min: sec	Transcript	
21:23:25	Pilot –	One of you tugs nip round on the port bow.
	Tugs –	OK Captain.
21:23:45	Pilot –	Ah, she's coming back now.
21:24:45	Pilot –	Walana, lean on starboard shoulder now.
21:25:10	Tug –	(Acknowledged)
	Pilot –	Walana, lean on the shoulder.
	Tug –	Very Well Captain.
21:25:15	Pilot –	Iron get round on the port quarter if you can.
	Tug –	(Acknowledged)
21:25:30	Pilot –	Bore it up her.
	Tug –	You've got the lot Captain.
21:26:08	Pilot –	You clear of starboard anchor Walana
	Tug –	Have to bail out in a minute Captain.
21:26:59	Tug –	I will put a line up on port shoulder, Captain, and drag you off if you like.
	Pilot –	Don't think she's up, I'm not sure, just hold fire for the time.
	Tug –	(Acknowledge)
	Pilot –	She's still swinging gently.
21:28:00	Tug –	Iron all fast centre lead, Captain.
	Pilot –	Yea, thanks a lot, just keep pushing the stern to starboard.
	Tug –	(Acknowledge)
21:28:10	Tug –	I can put that line up for you Captain and square you up.
	Pilot –	OK, thanks a lot.
	Tug –	(Acknowledge)

was 1° high of the true heading, a 2½° adjustment should be made to the headings shown on the course recorder. This gyro error was not apparent during the investigation, but the Inspector accepts the Pilot's observation. However, in the context of this investigation the gyro error is of minor significance and a 1° error, based on the course recorder trace has been applied in the text of this report.

The Pilot

The Pilot had extensive seagoing experience, including ten years in command of bulk carriers, during which time he held a pilot exemption certificate for the port of Newcastle. He joined the Newcastle Pilot Service in 1985 and had been a licensed pilot for the port of Newcastle for ten years. He held a 'First Class' pilot licence,

qualifying him to pilot any size of ship. Until the incident of 31 May, he had not been involved in any pilotage accident.

The Pilot began his pilotage 'watch' at 1600 on 31 May, having just returned from a seven day period of leave. He reported that he was well rested and had enjoyed a relaxing period off duty.

Before boarding River Torrens that evening, the Pilot had taken a ship from its berth in Newcastle to sea and, at about 1830, he had boarded a 38,600 tonne deadweight bulk carrier at the pilotage ground and had taken it to a berth in the harbour. Both passages were completed without incident or concern.

Immediately after berthing the bulk carrier, he returned to the pilot boarding ground to board River Torrens.

Records, held by the Pilot, showed that he had piloted the vessel on about ten previous occasions. On five occasions he had piloted the ship from the sea to the berth, although four of these passages had been at draughts below 10 m. Based on his experience with the vessel, he found that 'it was a little heavy' (a little slow to respond to rudder movements), but otherwise he could not recall the vessel giving any unusual problems.

Although, in the afternoon and evening of 31 May, he had boarded three ships in quick succession and River Torrens was the third ship he had piloted since resuming duty at 1600 that day, there is no suggestion that he was suffering from fatigue. The breath test for possible alcohol consumption, which he sought on his own initiative, showed no trace of alcohol and it was not a factor affecting his performance.

Pilotage

Newcastle Port pilotage is relatively short. There is about three miles of open sea between the pilot boarding ground and the 'entrance buoy'; and from the entrance buoy to the extreme northern berths is about a further three miles.

The main leading lights into the harbour give an approach course of 236° and a further set of leading lights, marking the deepest water, are in transit on a heading of 245°. However, the entrance to the Port of Newcastle is characterised by a prevailing south-easterly swell, which runs at nearly right angles to the harbour entrance, making it difficult to steer a steady course on any ship with the swell at right angles. To counter this, pilots tend to bring the ships in with the swell astern or nearly astern, steering to the east of the wave rider buoys with Stockton bridge ahead. Course is then altered to port bringing the light marking the silo and the breakwater light in line (or nearly so), followed by a further turn to port to bring the deep water leading marks in line, before bringing the main leading lights in transit as the vessel passes the southern breakwater end.

This approach uses the swell, and any north going current across the harbour entrance, in maintaining the swing to

port as the ship's bow comes into the protection of the breakwaters, while the stern remains subject to the swell. To minimise the period that the stern alone is subject to the swell and any cross current, ships routinely enter the breakwater at full manoeuvring speed, with staged reductions to maintain the effectiveness of the rudder as soon as the after part of the ship passes the seaward end of the Southern Breakwater.

The Channel width at the Southern Breakwater end is 275 m, reducing to about 185 m between buoy no. 1 and buoy no. 2.

The inward passage

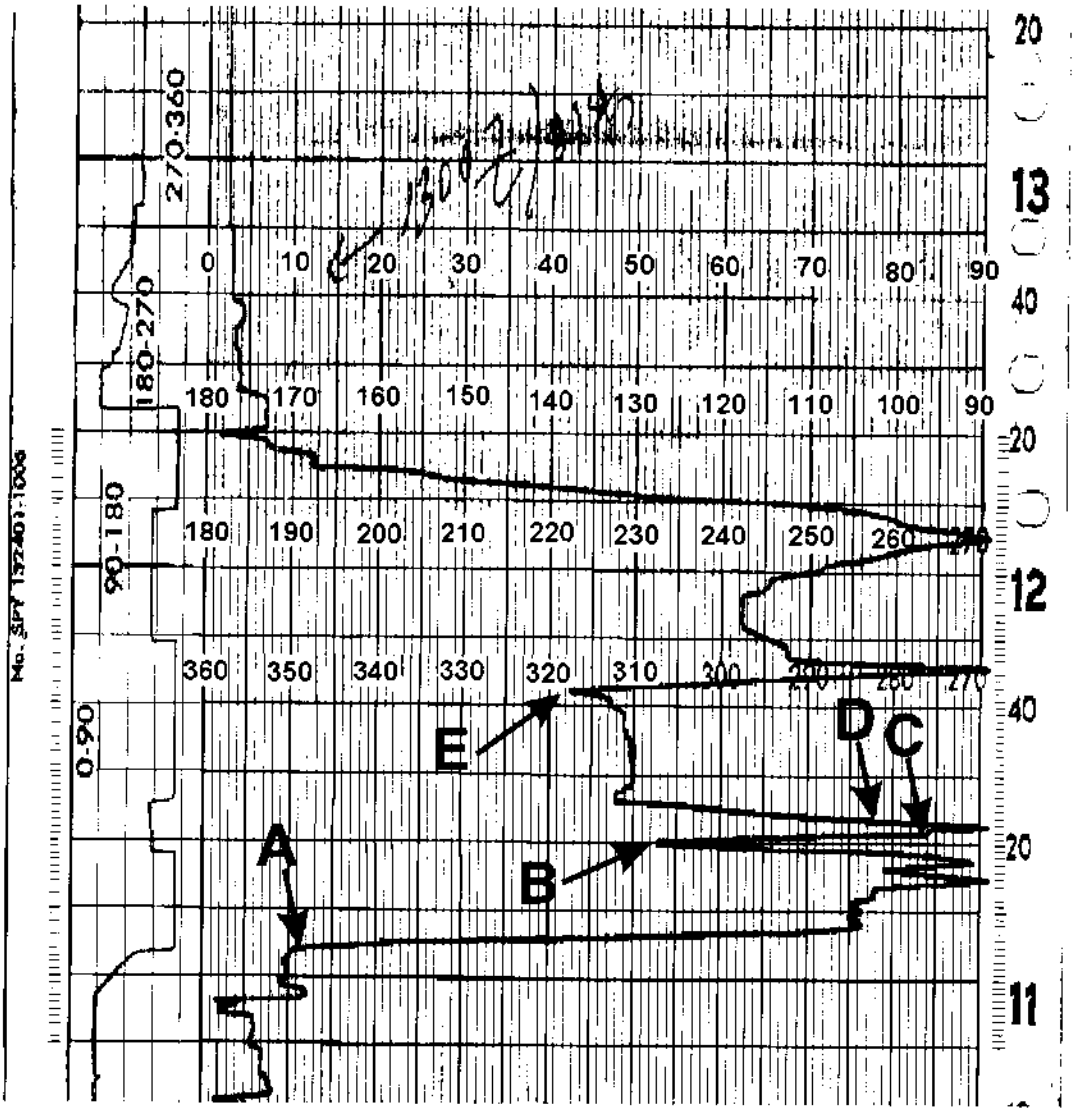
Before arriving off Newcastle, the bridge equipment had been tested and found to be working and the second of the two steering motors started. The Pilot made no complaint about any defective equipment.

The Pilot stated that he gave helm orders to effectively steer the ship into port, giving rudder angle, rather than course orders to the Helmsman. He did not ask the Helmsman to steer any compass course, or to steer by any shore mark. The course recorder does not show the rudder angle, only the ship's head at any given time, however all the evidence suggests that at all times the Helmsman applied the rudder angle ordered by the Pilot.

Analysis of the course recorder shows the passage from the position at which the Pilot was embarked to the time that the vessel made contact with the south bank of the channel, can be divided into a number of discrete, but interconnected elements:

1. The initial heading of 351°;
2. An alteration of course to port of about 66° over 3 minutes to a heading of about 286°;
3. A general heading of between 286° and 285° for 5 minutes;
4. A general heading of 284° for about 1½ minutes;
5. A 26° alteration to port from 284° to 258°, over about 2½ minutes;
6. An 10° alteration to starboard bringing the vessel to 268° as the vessel was passing the outer wave rider buoy at about 2119½;
7. A slow and steady alteration of course to port from 268° at a rate of about 5°/min between 2120 and 2122, to 258°;
8. An accelerated rate of turn between 2122 and 2123 at about 25°/min, from 258° to 231½°;
9. An increasing rate of turn to starboard of about 18 °/min between 2123 and 2124½, at about which time the ship touched the southern bank on a heading of 263°.

The Pilot's planned approach to come on to the deep water leading lights, was to steer for a position off the entrance to the harbour and use the fixed red light on the grain silo in transit with the mid point of the Northern Breakwater, a heading of about 257°. At 2117, the grain silo was bearing about 261°(T), the course



Course recorder trace 1100 – 1230 UTC (2100 – 2230 EST)

(course recorder approximately 3 minutes slow of ship time)

Legend

A Pilot on board
B Passing southern breakwater
C Probable contact on southern side of channel
D Probable grounding on northern side of channel
E Vessel refloated

was altered slowly to port from a heading of about 284°. At 2118, with the ship's heading 270°, the silo was bearing 260°(T) and at 2119, with the ship's head 258°, the silo was nearly dead ahead and in line with the western end of the Northern Breakwater.

It seems that to maintain this heading would have meant passing close to the inner wave rider buoy and would not have brought the deep water leads into transit. Course was altered to starboard to 268°, before the turn to port was resumed at 2120.

The Pilot recalled that, from his position on the port bridge wing as the ship approached the entrance, he could see the deep water leading lights 'just open' indicating that, at that time, the vessel was to the south. He considered that had he been on the centre line, or on the starboard wing of the bridge, the lights would have been in line. Although the Master could not recall the deep water leading lights, the Mate, who was by the starboard radar and the engine control console, recalled that from his position he could see the two intense green 'deep water' leading lights and from where he stood the two lights were open, placing the ship on the south side of the leading marks. He was unable to say how far apart they were, but he was certain that they were open.

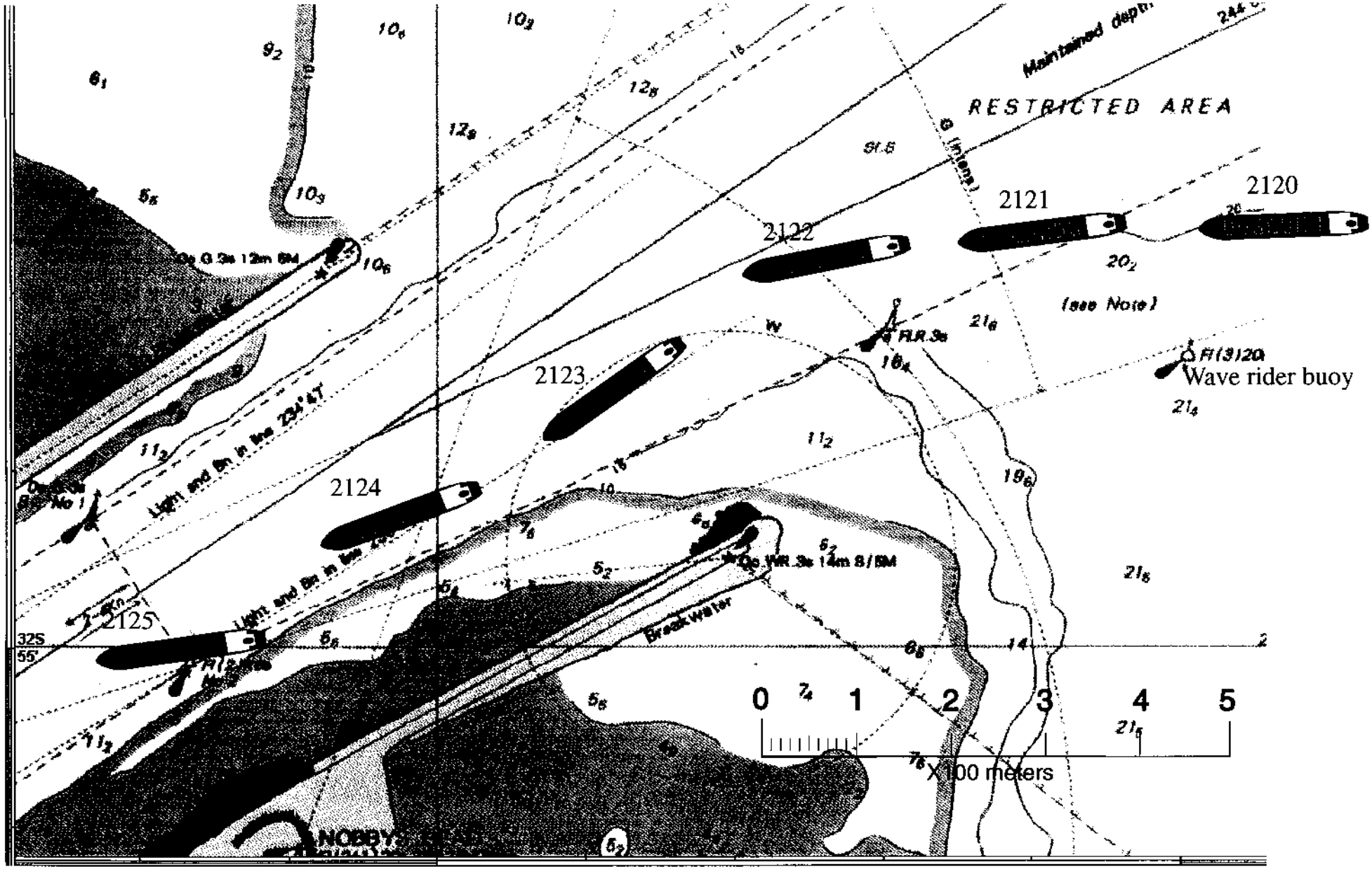
The 'deep water' leading lights form an entrance transit of about 245°(T). It would appear from the reconstruction of the approach course that River Torrens was at all times, between picking up the Pilot and the contact with the southern bank of the channel, to the south of the deep water leading lights. The ship did reach a heading of 245° at about 2122, but at this time the vessel was to the south and east of the 'deep water' leading lights and swinging to port as it passed the entrance buoy.

The course recorder shows a most southerly heading of 232° for less than one minute at 2123, a heading only 4° off the entrance course of 236°, at which time the ship was heading towards, or to the south of, no. 2 buoy. The skipper of the tug Walana, the tug closest to River Torrens, stated that while trying to cross the bow and get into position he was not sure on which side of no. 2 buoy the ship would pass. In the Inspector's opinion, based on the position of the contact at 2125, the ship had therefore to be well to the south side of the channel at this time.

Reported rudder and engine movements

In recounting the inward passage, the Pilot described an accelerated turn to port as the vessel passed between the Northern and the Southern Breakwaters, although the vessel had initially 10° of starboard (counter) rudder and then full starboard rudder applied. The course recorder trace shows an increased rate of turn at about this time and supports the Pilot's description.

A little before 2119, the Pilot ordered an alteration to starboard. After about a minute the Pilot ordered port helm and the ship reached a heading of 268° at about 2120. With the helm amidships the vessel steadied on the



Section of chart Aus 208 – Reconstruction of vessel's entry

(Base point 2125 position – heading from course recorder corrected for time)

end of the Northern Breakwater, instead of falling off to port on to the deep water leads, as anticipated. A little after this, full port rudder was applied to continue the turn to port before passing an estimated 100 m off the 'entrance buoy'. The Pilot stated that at this time, at about 2121 he ordered 10° of starboard rudder, and when this had no effect, full starboard rudder was ordered as the ship's mid section (hatches 4/5) was abeam of the extreme end of the Southern Breakwater at about 2121¾.

Those on the bridge have different recall of when or where helm orders were given, particularly as the vessel approached and passed the fairway buoy. However, the Helmsman stated that there seemed to be a lot of helm orders and 'hard over' orders in a short distance.

It has been established that the rudder was put hard to port at about the time the vessel passed the wave rider buoys at 2120, and returned to 'midships' before being put hard to starboard at about 2122½ and hard to port at about 2124. These rudder movements, each one taking about 19 seconds to complete, occurred within a time span of 3½ to 4 minutes and a distance of 900 m or five ship lengths. The increase in rate of turn to port as the vessel entered the harbour was probably associated with the rudder movements and particularly the full port rudder at about 2120.

Because the ship was on the south side of the channel the room for recovery from the unexpected increase in rate of turn to port was limited. The full starboard rudder, to counter the turn to port, was applied at about 2123. Once the full starboard rudder took effect it turned the stern into the southern bank of the channel. Although full port rudder was applied at about 2124, to avoid no. 2 buoy, the rudder and propeller made contact with the southern bank.

There is also some discrepancy in the recall of the engine movements requested by the Pilot. The Pilot stated that, at about the time of the noise of the contact with the southern bank of the channel, he ordered half ahead before ordering the engine stopped and astern revolutions. However, the automatic engine movement printout shows no half ahead movement between slow ahead at 2124½ and stop at 2125. In submission the Pilot suggested that his order for half ahead was given immediately before, or coincided with, the contact with the southern bank and his order did not register, given the activity immediately following the contact.

The Master recalled that the engine revolutions were progressively reduced until the stop at 2125, after which two astern movements were ordered before grounding on the northern side of the channel. The Mate, who could not hear the Pilot when he was on the bridge wing, could recall no half ahead movement at about the time or after the vessel made contact with the southern channel bank. After the contact the Pilot and Master both entered the wheelhouse and he was certain no half ahead order was made when he could hear the Pilot directly.

The engine movement recorder shows the movements as follows:

Table 2

Engine Control Record

Time*	Movement
10.59.5	*S/B
11.00.0	AH H
11.01.0	AH S
11.07.5	AH H
11.08.0	AH F
11.23.5	A H
11.24.5	A S
11.25.0	S
11.25.0	A H
11.25.5	A F
11.27.5	S
11.31.5	A S
11.33.0	A H
11.34.0	AS F
11.37.5	S

* All times shown in UTC, add ten hours for local ship's time.

The recorder shows the engine was at full ahead between 2108 and 2123½, it is therefore logical that the 'A' at 2123½ and 2124½ denote ahead revolutions. The ship was aground at 2131 and the engine was put astern to try and free the ship. The 2131½ and 2133 movements are logically astern movements, particularly as the 2134 is 'AS', or astern. However, it is not clear from the engine printout whether 2125 and 2125½ are ahead or astern movements. Evidence from the Master and Mate indicates that after the initial contact and the order for 'stop engine' at 2125, the subsequent engine movements were astern.

Whatever engine movements were ordered, there was no increase in propeller revolutions to half ahead as the vessel cleared no. 2 buoy, as described by the Pilot. And with the ship already swinging to starboard, its forward momentum and the effect of the ship's right handed propeller going astern, the vessel's swing was maintained, despite the effort of the tugs.

The grounding of the ship on the northern side of the channel caused some superficial scrape marks to the ship's forward bottom plating. Indentations observed in the plating forward were reported, by the Master, to have been there for some time. However, it was the contact with the southern channel bank that caused the most damage. The rudder and propeller were severely damaged, and the transmitted shock through the propeller shaft caused damage to the crankshaft journals.

Under-keel clearance and interaction

A work value submission by the Adelaide Pilots of 1990 reports that after lengthening in 1985, River Torrens became difficult to handle at deep draught, and in the channel to Port Adelaide was liable to sheer in an unpredictable way. This report is probably a reflection of interaction with the channel bottom and bank effect in the Adelaide approach channel. No other reports were produced suggesting that River Torrens was particularly difficult to manoeuvre.

While entering Newcastle Harbour on 31 May, with a water depth of 19.5 m, the under-keel clearance, allowing for squat, would have been not less than 7.5 m. It is doubtful whether interaction with the channel bottom materially affected the ship's handling or that bank effect caused an attraction towards the southern side of the channel, although some bank effect may have been experienced immediately before the contact with the southern bank of the channel.

Bridge team

The Master had been at sea for 36 years and had been in command since 1985. He had been Master of River Torrens for about five years and held a pilotage exemption for the port of Brisbane.

The passage to Newcastle, the various courses and timings, had been planned as far as the pilot boarding ground but the voyage had not been planned berth to berth. The Master was content to leave the fairly short and, in terms of course alterations and general navigation, straightforward pilotage in the Pilot's hands.

This attitude overlooked Marine Notice no. 7 of 1994, Bridge Resource Management (BRM) and Navigational Practice, issued by the Australian Maritime Safety Authority in June 1994, which draws the attention of seafarers, shipowners and pilots to human and organisational errors underlying certain instances of grounding and collision. The Notice (Attachment 2) emphasises the need for passage planning and states:

'It is emphasised that in this context, the term voyage includes the pilotage phase.'

All ships managed by ASP Ship Management carry the International Chamber of Shipping publication *Bridge Procedures Guide* which incorporates passage planning. *Bridge Procedures Guide* was first published in 1977, with a second edition in 1990. The managing company's standing instructions make specific reference to passage planning, the ICS Bridge Procedures Guide and the practice of berth to berth navigation techniques.

When the Pilot boarded River Torrens at 2107 on 31 May, he informed the Master that the ship would berth port side to, at no. 3 berth, Western Basin Grain Terminal and of the planned position of the two tugs that were to assist in the berthing. The Master did not offer a pilotage card and the Pilot did not ask for one. The exchange of information was minimal.

From the time the Pilot was embarked at 2107 to the passing of the breakwater, no check of the ship's position was entered on the chart and the Master was not consciously monitoring the ship's position in relation to the leading lights, content to leave the conduct of the ship to the Pilot.

The Master accompanied the Pilot and relayed his orders to those on the bridge. Although he did not pay

particular attention to the deep water leads, he could see the main leading lights open on the port bow, as the vessel approached the entrance.

The absence of a passage plan covering the pilotage phase of the voyage, and his reliance on the Pilot, meant that the others on the bridge were not in a position to advise the Pilot if they felt the vessel was significantly out of position or that the pilotage was not otherwise going to plan.

Although it cannot be assumed that a plan covering the pilotage phase would have prevented the grounding, the absence of such a plan meant that the pilotage could not be effectively monitored, the ship's officers were not sufficiently alert to the significance of the ship's position relative to the leading lights and there was reduced support to the Pilot.

Alcohol and fatigue

There was neither any evidence to suggest, nor any reason to suspect that the performance of any of the ship's staff was affected by alcohol. The ship had been on passage from Adelaide to Newcastle for about three days, during which time the Master and Mate followed their normal daily routine. There is no evidence to suggest that either was particularly tired or fatigued.

Ship's anchors

It is normal practice when entering or leaving port, or navigating in restricted channels, to have a ship's anchors ready for immediate dropping and to have a seaman standing by the anchor windlass to release the anchor by opening the brake if required.

However, after experience in a previous port, the brakes on River Torrens' windlasses were considered by the Chief IR to be unreliable. As a result, for entry into Newcastle, neither anchor was fully cleared ready for immediate dropping. Instead, a chain 'preventer', or strop, was left in place through each anchor cable to ensure that the anchor would not release accidentally.

This information had not been passed to the Master. He was unaware of the defect in both anchor windlasses or that the anchors were not immediately available.

The Pilot ordered the port anchor to be let go as the vessel veered across the channel towards the tidal trap on the northern side of the channel. However, none of the crew were standing by in the immediate vicinity of either windlass and, because all the forward mooring party of four were on the starboard side of the main deck by the break of the forecastle, the person releasing the anchor had first to climb the ladder, go to the chain preventer and remove it, before releasing the brake. In the event, the weight of the anchor cable on the preventer inhibited its being removed easily. It had not been removed by the time the order for letting go the starboard anchor was given and the same problem was experienced with the chain preventer

on that windlass. Neither anchor could be released immediately, and the Master rescinded the orders very soon afterwards, when he realised that if the anchors were released it would be in shallow water and there was a danger of the ship 'sitting' on the anchors, causing damage to the bottom plating.

Had the anchors been dropped immediately they would have been released in the channel and may have helped to prevent the vessel running aground on the north bank of the channel. Once the ship's bow was in shallow waters, the dangers of 'sitting on' the anchors and the probable resulting damage, outweighed any benefits in dropping the anchors.

Use of the anchors would not have prevented the initial contact with the southern bank of the channel.

Tugs

The two tugs Walana and Iron Cove were under the command of two experienced tug masters and had the power and manoeuvrability to assist in the berthing of River Torrens. When responding to the Pilot's orders just after the ship entered the breakwater, they did so to the maximum extent possible, given that River Torrens was proceeding at between 7 and 9 knots and the time for them to react to the various orders was governed by the developing situation.

The tugs responded to everything that was required of them and no action on their part, either alone or together would have prevented either the initial contact with the southern channel bank or the grounding on the north side of the channel.

Conclusions

These conclusions identify the different circumstances and causes of the incident and should not be read as apportioning blame or liability to any particular organisation or individual.

The Inspector is satisfied that neither alcohol nor drugs (prescribed or illicit) were factors in this incident.

The Inspector considers that the following factors are relevant to the contact made by River Torrens with the south bank of the channel, about 80 m east of no. 2 buoy:

1. The port entry had been inadequately planned by both the Pilot and ship's staff and insufficient action was taken to ensure River Torrens was in the intended position at the harbour entrance.

2. As the ship approached the harbour entrance the ship was south of the leading transit delineated by the 'deep water' leading lights.

3. When the vessel turned to enter harbour it was south of the transit delineated by the main leading lights.

4. There was an acceleration in the rate of turn of the ship as it passed the Southern Breakwater head and, because the ship was towards the south side of the channel, there was insufficient room for the situation to be recovered.

5. The absence of any planning of the port entry by the Master of River Torrens meant that the pilotage could not be effectively monitored and the ship's officers were not sufficiently alert to the significance of the ship's position relative to the leading lights, resulting in reduced support to the Pilot.

6. The planning and communication between the Master and Mate, the Master and Pilot, and the bridge team and the forward anchoring party was ineffective.

7. The bridge organisation, with the Master relaying the Pilot's orders and an experienced officer standing by the telegraph, did not allow for a physical check to be made of the ship's position.

The following factors contributed to River Torrens taking the ground on the northern bank:

1. After contact with the southern channel bank, the existing forward momentum, combined with the astern movements of the engine, maintained the ship's turn to starboard.

2. Although it is problematic whether, had the anchors been dropped immediately when ordered, one or both anchors would have prevented the ship taking the ground, the fact that they were not cleared must be considered a factor in the incident.

Submissions

Under the provisions of 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 reasonable to do so, give the person a copy of the report or the relevant part of the report. Sub-regulation 16(4) provides that a person may provide written comments or information relating to the report.

The final draft report was sent to the Master and Mate of River Torrens and the Pilot. All three made submissions and furnished information in response to the draft report. Where appropriate the text has been changed, otherwise the substance of their submissions is reproduced below.

The Master

The Master submitted a number of specific points in regard to the report. The following extracts from the submission have been edited to the extent of removing names and the page and paragraph numbers relevant to the draft report:

1. *'The allegation that inadequate planning was in place and insufficient action was taken to ensure the MV River Torrens was in the intended position at the entrance to Newcastle Harbour is unsupported by the evidence.*

   On the short pilotage as is the case while entering Newcastle Harbour there is no alternative route, nor can it be said that there is any ambiguity as to the Pilot's course on approach to the entrance to Newcastle Harbour and to the berth. The pilotage route is quite plain and straight forward and on 31 May 1995 the Pilot on approach to the entrance to Newcastle Harbour was following established practice and procedure and as a result I formed the opinion that it was unnecessary for me to intervene or countermand the Pilot's intended course into the Harbour and into the berth.

   There were no grounds upon which I could dispute his pilotage of the ship as it approached the ***entrance to*** *Newcastle Harbour.*

   On 31 May 1995 when MV River Torrens entered Newcastle Harbour, planning of passage to berth would not have prevented the Pilot's order of 'hard-to-port' at the Harbour entrance. This order arose from the circumstances which occurred at that precise moment. It was those circumstances that lead to the accident.

   MV River Torrens was proceeding to Newcastle Wheat Berth. This route is relatively short, unambiguous and follows a clearly defined channel. Under these circumstances I do not believe that passage to berth could realistically have been planned so that the accident would have been prevented.

   Passage planning and pilotage to berth is documented in the International Chamber of Shipping Bridge Procedure Guide. In particular, Part A, Chapter 2 on Passage Planning states:

" 2.2.2. After his arrival on board, the pilot, in addition to being advised by the master of the manoeuvring characteristics and basic details of the vessel for its present condition of loading, should indicate the passage plan he intends to follow. The general aim of the master should be to ensure that the plan is safe and the expertise of the pilot is fully supported by the ship's bridge personnel."

I make particular reference to the fact that ***the pilot should indicate the passage plan he intends to follow.***

The fact that pilotage is compulsory at Newcastle, indicates the Master does not have the required local knowledge of the port to take the ship into harbour himself. Hence, engagement of a pilot who is duly licensed and better qualified, to take charge of the pilotage passage. Under these circumstances, the question arises - WHO PLANS THE PASSAGE FROM PILOT BOARDING GROUND TO BERTH? If it is the master, as has been implied in the report, then, to my opinion, there is a contradiction to the legal requirements to engage a pilot. If it is the pilot, as referred in ICS Bridge Procedures , then the pilot should board the vessel with a passage plan to berth.

I therefore do not agree with the report's conclusion, as the facts indicate otherwise.'

2. *'The acceleration in the rate of turn of the ship at the harbour entrance, was in fact initiated by the Pilot's order of 'hard-to-port'. It is now clear that the final turn to port at the harbour entrance to come on the main leads, was made premature and fell short of the main leads. It was believed that action of 'hard-to-port' helm order was largely influenced by the concern of the ship overshooting the main leads line and head towards the northern breakwater, when the ship's response to initial order of smaller port helm was slow.*

   As Master of the ship, I believe there was no opportunity to countermand the Pilot's order of 'hard-to-port', which would have avoided the incident and grounding of the MV 'River Torrens'. The order of 'hard-to-port' took place at a restricted, critical stage in pilotage where there was very little margin for error and for two persons to give different orders. The lapsed time from the instant the Pilot ordered 'hard-to-port' until the time the ship made contact with the steep ledge on the southern side of the channel was approximately two minutes.

   Nor do I believe in the circumstances, it would have been proper to question the Pilot's order of 'hard-to-port' as until the order was given, the Pilot had been exemplary in his handling of the ship while entering Newcastle Harbour.

3. *It is not clear from the Report, precisely what it is that the author suggests was absent, and which would have meant that the pilotage could have been more effectively monitored. Although there was no discussion with the Pilot in regard to his plan of approach or his*

pilotage plan in the harbour, the Pilot's intentions, his approach, and progress of the ship towards the Harbour Entrance were clearly understood. The approach to the Harbour Entrance was made within acceptable parameters. The Pilot had the full support of the Bridge Team.

I do not believe further 'planning of the port entry' would have prevented the Pilot ordering 'hard-to-port' on approach to the Harbour Entrance, as that order had arisen from circumstances peculiar to the ship's position at that moment, and in the present case, as a result of the ship's slow response to initial smaller helm.

Please note that the bridge team on 31 May 1995 consisted of the Master, First Mate and one Integrated Rating and the Pilot ('The Bridge Team').

The Integrated Rating was there to perform one specific task only, that is, to steer the ship in accordance with the orders given. He did exactly what was required of him.

The First Mate was at station by the bridge console monitoring all controls and communications. He kept track of the ship's passage in relation to navigation marks and land marks and executed engine movement orders. As the ship approached restricted waters, the need for quick response to orders confined him to his station. The First Mate carried out all that was required of him in an efficient manner.

I was, practically, with the pilot at all times, monitoring his pilotage, and, in the absence of any doubt as to his piloting ability, ensuring that his orders were correctly and promptly carried out, and all equipment functioning normally. That is to say, a full support was given to the pilot, as the Master, and as part of the bridge team.

The bridge team functioned in a normal manner, as it has done on all previous occasions when the ship had entered ports safely with a pilot. I am not aware of any principle or mechanism of Bridge Resource Management which could have been exercised to prevent the incident.

4. *I do not agree with the criticism that there was a lack of planning or communication between members of the Bridge Team or Forward Station. The channels of communication were, under the circumstances, very good.*

   At all relevant times during the pilotage, I remained close to the Pilot. There was no doubt as to his competence and I remained attentive to his requirements. The Pilot was fully aware of the progress of the vessel and his conduct of the ship on approach to the entrance to Newcastle Harbour was beyond reproach. All orders given by the Pilot were correctly and promptly responded to by the Bridge Team.

   Until the order by the Pilot of 'hard-to-port' was given at the Harbour Entrance, the ship had made a normal approach to harbour, within acceptable and safe limits, and

pilotage conducted by clearly visible navigational aids and landmarks, to come on the Main Leads at the Harbour Entrance.

I do not agree with the criticism in the report that the Bridge organisation did not allow for a physical check to be made of the ship's position. If not for reasons explained in the report, a physical check of the ship's position could have been undertaken if required.

5. *As to the conclusions in the report regarding factors contributing to River Torrens grounding on the northern bank, the orders to let go port anchor, starboard anchor, and subsequent rescinding of orders to let go anchors, were given in quick succession. With hindsight, I believe, had the anchors dropped, the ship might have suffered more serious damage from sitting on the anchors, as the ship at that time was already very close to the northern bank. At the very least, the anchors could have been a serious hindrance to tugs' assistance forward.*

The Mate

The Mate made two substantive comments in submission.

1. *Planning of Port Entry*

   As the report mentions the pilot's preferred approach to Newcastle Harbour is to enter with the swell astern, entering the channel while swinging on to the leads when near the entrance beacon. In the case of River Torrens, a swing to port resulted in the ship being positioned south of the leads. The Pilot took action to centre the vessel in the channel, however the eventual swing to starboard, with the ship positioned on the southern side of the channel, led to the stern making contact with the southern bank.

   Only three minutes elapsed between the time of the vessel passing the entrance beacon and contact with the southern bank. The vessel's heading was never steadied during this time, the pilot taking action constantly to position the vessel further north following the initial swing to port.

   With this in mind I question if a formal plan would have averted the situation.

2. *Bridge Team Organisation*

   In pilotage waters, with current manning levels, an officer is occupied on the bridge operating telegraphs, relaying and verifying helm orders, communications with the engine room and recording the passage in the bridge movement book. The need for a quick response to pilot orders restricts the ability of the bridge officer to leave the control position for any length of time. This is particularly so when the pilot and master are positioned on the bridge wing as the mate is the sole officer remaining in the wheelhouse.

   The time required to take and plot a position fix would take the officer on the bridge away from the control area for an unreasonable time. In channels and enclosed waters a check on the ship's position is made

in reference to navigation marks and leads on a continuous basis. The close proximity of navigation marks and changes to the ship's heading make position fixing inaccurate in such circumstances.

The pilot did not request any special assistance or navigation information from me during the pilotage.

The Pilot

The Pilot made a detailed submission on the report.

In commenting on the reconstruction, diagrams at page 15, he stated:

that neither the positions nor the attitudes of the vessel as shown in the computer model chart are in accordance, other than generally, with the Pilot's recollection.

In particular, when the vessel was abeam of the entrance buoy, she was almost on the line of the deep draught leads, parallel to them or pointing slightly to the south of them, and continuing to turn to port.

In relation to the report's conclusions the Pilot submitted:

Conclusion 1.

Whilst the vessel was marginally south of the desired position at the entrance buoy, this of itself was not cause for concern as the vessel normally would have been expected to be on the deep draught leads in the entrance and on the main leads a minute or so later. The deep draught leads mark the entrance to the channel almost abeam of the end of the Northern Breakwater. They mark the centre of the 'maintained depth' area. A good number of ships entering the harbour dead on those leads would have their port sides where the River Torrens had her port side, i.e. 'Cape' size ships, 'Iron Pacific', with no concern being justified and as a normal occurrence.

The difficulty is that it is obvious that if there had been no accident, planning would, ipso facto, have been adequate. The approach taken by the vessel that night was no different to that taken regularly by other vessels being brought into port and the fact that its starboard side was on or nearly on the leads, so that at most its port side was 100 metres off the Entrance Buoy does not adequately answer why the vessel took a shear to port roughly on a line joining the tips of the Northern and of ***the Southern*** *Breakwaters. She could have quite safely carried on with her starboard side just on the 236°(True) leads all the way to No 4 buoy without damage.*

Even if it had been expressly planned and deliberately been decided to sail the vessel with her starboard side parallel with and in line with the 236° (True) lead, nothing would have happened to the vessel. She still would have not sheared to port to the extent that she did.

It is therefore clear that no additional planning could have

altered the fact that the vessel was where she found herself at the time she entered the Harbour. She was supposed to be close to the leads and the Entrance Buoy. A vessel must not be equated with an aircraft landing on the centre line of the strip.

To say this is however not the same as saying that the bridge organisation was perfect. Communications could have been better. Lit gauges showing helm movements and revolutions of the engine could have been displayed on the port wing etc..a device could have been fitted to the vessel to show the centre line of the vessel from the port wing notwithstanding the unloading machinery in the bow. There could have been more personnel thus freeing the Mate to take positions or to report on the opening of the leads as seen from the starboard side etc.. In that sense, the Pilot agrees there could have been better planning but cannot see what voyage planning could have been prepared beforehand. Unless to plan to assist the Pilot at the end of the voyage is itself "Voyage planning".

This leaves in the Pilot's opinion two possibilities about which there is no evidence. The first is that there could have been a strong current setting across the breakwaters. There is anecdotal evidence of this ocurring in the past. Pilots and the Harbour Master can be questionned on that point. The second is that the helm was put the wrong way and when the Pilot asked for starboard he got port. This accords with the observed behaviour of the ship.

If there was no current, the vessel would not have sheared to port unless the wheel was put to port. As there is no evidence at all of any current, or wind, or external force such as a strong following or crossing swell, then what but the wheel could possibly have made the vessel shear to port?

If the Master had been requested to have the wheel put "hard a port" when this should not have been done, he would have questioned it. If he agreed with the "hard a port" order (had it been given) initially, he would have queried it when the vessel gently turning to port he did not hear as expected the order "Hard a starboard", "starboard ten"... "Steady" "Steady as she goes"... Nothing of that sequence being heard and the last order being 'Hard-a-port" the Master would immediately have realised things were not normal. But the Pilot said he ordered "Hard-a-starboard". That was a logical order to which no-one would pay particular attention since expected to be given, and yet, she went to port and accelerated her turn to port. The course recorder shows it objectively and all witnesses agree.

The conclusion is a partial one as stated and does not fully set out the sequence of events.

Conclusion 4.

The accelerated turn commenced when the vessel's midships was abeam of the eastern tip of the Southern Breakwater and after passing the entrance buoy and after the helm order for hard-a-starboard

helm had been given. The vessel had not responded to the hard-a-starboard helm as expected which was to nudge her on to the Stockton leads. Instead she took a swing to port and accelerated the swing to port level with the Southern Breakwater.

It is suggested it be replaced with:

"Because the vessel would not come onto the leads on passing the Entrance Buoy although the wheel had been ordered hard-to-starboard, the vessel remained on the southern side of the channel so that when the port swing accelerated as the ship passed the Southern Breakwater there was insufficient room for her to come broadly to starboard so that the propeller and rudder touched the bank.

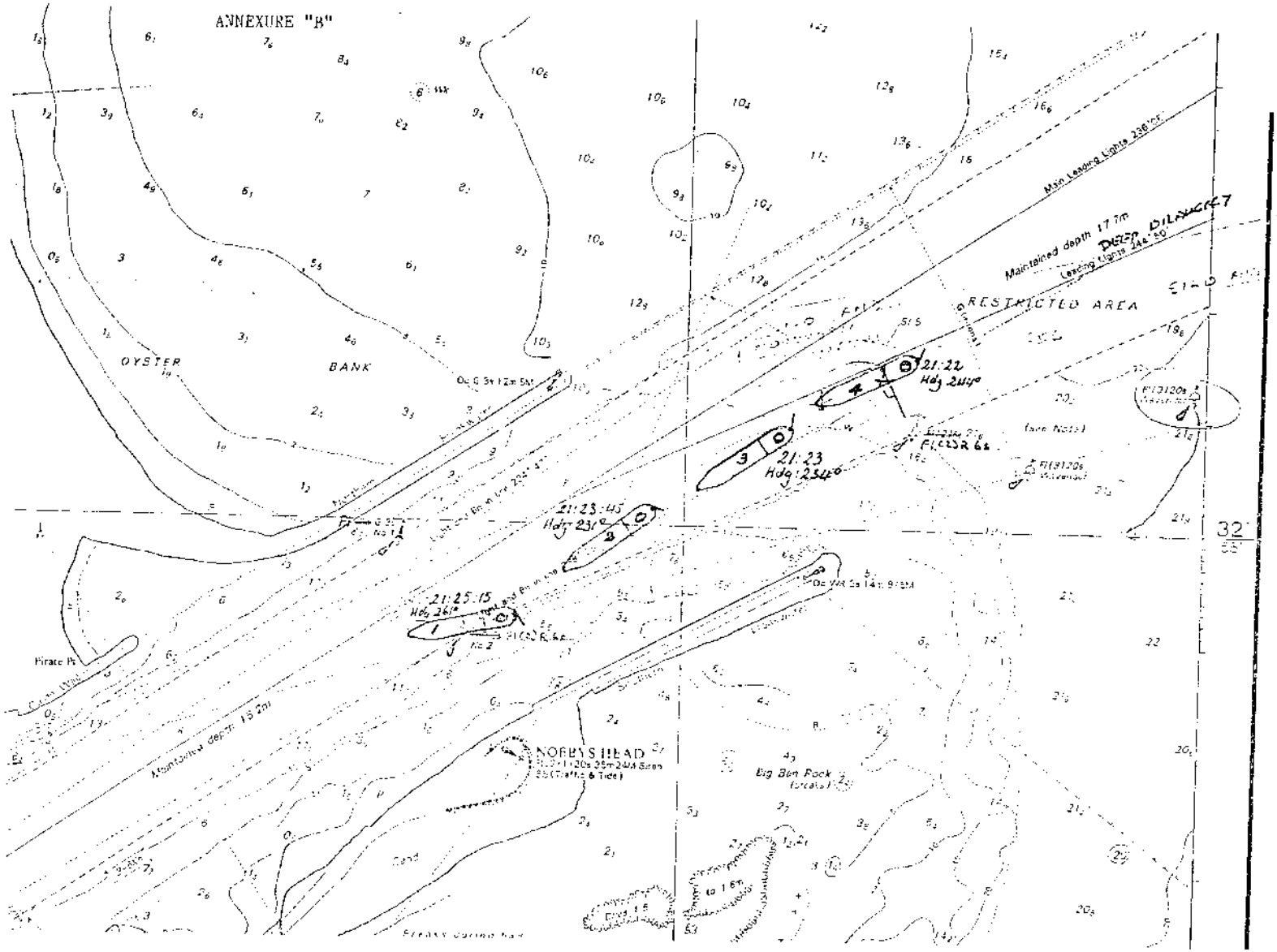
The Pilot agrees that better planning can only be an advantage. Naturally there will be differences of views equally valid depending on the interpretation of times and courses and visual judgements made. These must be subjective assessments to a large extent being interpretations of numerous factors.

One such possible interpretation has been offered as to the possible positions of the vessel at the entrance and within the port until touching the Southern bank by means of the computer generated model chart.

Another interpretation based on the course recorder trace corrected for gyro error, and relying on times from the engine log and Nobby's and the Pilot's and Master's evidence and the tug master's evidence is included herewith by way of a chart and referred to as Annexure 'B' (See chart next page).

The vessel is drawn to scale including the portion representing the bridge.

The Pilot cannot explain why the vessel took a sudden sheer to port at the level of the tip of the Southern Breakwater when she was hard-a-starboard.



Section of chart Aus 208 – Provided as part of the Pilot's submission

Details of River Torrens

Former name	ex Selwyn Range
Flag	Australian
IMO Number	7420716
Owners	ANL Limited
Managers	ASP Ship Management
Year of Build	1977
Year of modification	1985
Type	Bulk carrier (self-unloader)
Builder	New South Wales State Dockyard, Newcastle
Classification Society	Lloyd's Register of Shipping
Length	181.79 m
Beam	24.87 m
Gross Tonnage	21,047
Nett Tonnage	9980
Summer Deadweight	31,921 tonnes
Summer Draught	11.021 m
Engine	B&W (6 cylinder)
Engine Power	8532 kW (11,600bhp)
Crew	18 (plus 3 Trainees)

ATTACHMENT 2

MARINE NOTICE

7/1994

BRIDGE RESOURCE MANAGEMENT (BRM) and NAVIGATIONAL PRACTICE

This Marine Notice is to remind seafarers, shipowners and pilots of the importance of sound Bridge Resource Management (BRM) and Watchkeeping techniques to enhance human and systemic errors in navigating ships.

Investigation and analysis of a series of recent collisions and groundings have shown that proper Watchkeeping and Bridge Resource Management (BRM) techniques could have prevented some incidents. The human and organisational errors underlying these casualties arose from insufficient pre-passage planning and briefing of the bridge team, the lack of sound BRM processes and poor navigational practice. Some of the errors were:

- failure to delegate tasks and assign responsibilities,
- failure to set priorities,
- insufficient support to master and/or pilot,
- inadequate monitoring,
- misuse of electronic navigation aids and;
- failure to detect and/or challenge deviation from the passage plan and standard operating procedures.

Of particular concern are those ships engaged in regular short voyages where the nature of the trade is such that they are frequently under some form of pilotage. In these circumstances, there may be a tendency to ignore (through familiarity) the need to constantly review and revise the passage plans.

BRM should begin at the initial pre-passage planning stage to identify the dangers to be met and the necessary precautions and contingency arrangements, and continue until the end of the passage. A debriefing should be held shortly after the passage to analyse the events and to identify improvements that can be made in the BRM arrangements for subsequent passages. BRM should include a clear identification of all the bridge team members at all stages of the voyage, their relative duties and responsibilities, and the line of command including the levels of authority in making, challenging or responding to decisions and instructions. Mariners should acquaint themselves with the provisions of Section 4.2.1 of Marine Orders Part 28 (Operations Standards and Procedures) and the requirement to plan the voyage. It is emphasised that in this context, the term voyage includes the pilotage phases. It is important that all members of the bridge team share a common view of the intended passage and the agreed procedures to transit the passage. Effective BRM results in a bridge team that, amongst other things, has good situation awareness, anticipates danger in an evolving situation, obtains relevant information early, is not preoccupied with minor technical problems, delegates tasks and responsibilities, set priorities and has contingency plans, uses all data available with appropriate screening, monitors progress, and encourages the bridge team to recognise the development of an error chain and to take action to effectively break the sequence.

Mariners are further reminded of Section 4.2.2. of Marine Order Part 28 which requires navigators to use a multiplicity of aids to fix the ship's position. It is poor practice to rely solely on one aid such as radar or GPS, notwithstanding the accuracy and reliability of modern systems. This is especially relevant when passing through confined waters, regions of dense traffic, poor visibility or areas subject to strong winds and tides.

A number of marine casualties that have occurred with a pilot on board have been attributed to a poor master and pilot relationship. In many cases, when the pilot boarded the ship, the master and deck officers ceased to monitor the navigation and the position of the ship. The master and the bridge team should remember that they are always responsible for and in charge of the safe navigation of the ship, even when navigating with a pilot; see section 410B of the Navigation Act, section 7 of Marine Orders Part 28. A pilot working on board a ship becomes a member of the bridge team, and as such is subject to the same conditions of operation as the other members of the team. All BRM steps and procedures apply equally when a pilot boards the ship, and the bridge team should conduct a pre-passage briefing together with the pilot to ensure a shared view of the intended passage. During the pilotage the master and the deck officers must continue to monitor the safe passage of the ship, and critically appraise the pilot's advice.

P McGrath
Chief Executive
June 1994

File: M94/608
Distribution: 900, 800, 330, 313, 314, 315, 320
Last Marine Notice to each category: 6/1994 330, 900, 800