



**NO. 95-202**

**BULK CARRIER MV. *ALLTRANS* VKBE**

**PORT OF BLUFF**

**25 MARCH 1995**

### **ABSTRACT**

On Saturday, 25 March 1995 at 0312 hours the Bulk Carrier MV. *Alltrans*, outward bound from Tiwai Point, ran aground in "Number Three Reach" of the Bluff Harbour Channel. Causal factors included human fatigue, tension and loss of situational awareness. It was recommended to the Manager Operations for Southport New Zealand Ltd that he review the roster procedures for Southport Harbour Pilots.

# TRANSPORT ACCIDENT INVESTIGATION COMMISSION

## MARINE ACCIDENT REPORT NO. 95-202

### Vessel Particulars

<b>Name</b>	MV. <i>Alltrans</i>
<b>Registered</b>	Sydney, Australia
<b>Official Number</b>	850587
<b>Call sign</b>	VKBE
<b>Type</b>	Bulk Carrier
<b>Class</b>	Lloyds +100 A1 L.M.C. UMS Bulk Carrier
<b>Built</b>	1983
<b>Main propulsion unit</b>	One 7723 KW direct reversing diesel engine driving a four bladed fixed pitch propeller
<b>Rudder</b>	Single streamlined, semi-balanced
<b>Length over-all</b>	189 M
<b>Breadth, moulded</b>	29.4 M
<b>Depth, moulded</b>	16.3 M
<b>Gross Tonnage</b>	27,662 tonnes
<b>Nett Tonnage</b>	8,461 tonnes
<b>Dead-weight Tonnage</b>	35,218 tonnes
<b>Summer Draft</b>	10.178 M
<b>Vessel Owners</b>	Holyman Ltd
<b>Vessel Operators</b>	ASP Ship Management Ltd
<b>Vessel Charterers</b>	Comalco Aluminium Ltd
<b>Location</b>	Bluff Harbour, Number Three Reach, Main Channel
<b>Date and Time</b>	25 March 1995 0312 hours *
<b>Persons on board</b>	Crew 18 Passengers Nil Other 1 (Pilot)
<b>Injuries</b>	Nil
<b>Nature of Damage</b>	Major damage to ship's bottom structure with several compartments breached
<b>Information Sources</b>	Transport Accident Investigation Commission field investigation
<b>Investigator in Charge</b>	Mr T M Burfoot

\* All times in NZST (UTC + 12 hours)

# 1. NARRATIVE

- 1.1 The *Alltrans* is a self discharging Bulk Carrier capable of carrying approximately 35,000 tonnes of cargo in bulk. She was purpose built to carry “Alumina” under long term charter from Australian ports to Tiwai Point Aluminium Smelter. Cargo is discharged via a conveyor running through the lower centreline of the ship and ashore via the cargo tower (a large structure situated on the starboard side of the vessel about half way up the forward deck as shown in figure 1).
- 1.2 The cargo tower is irregular in shape and constructed in parts of lattice-work steel and effectively creates a blind sector from the navigating bridge looking forward (see figures 1 and 2).
- 1.3 The Port of Bluff is a tidal port (see figure 3). Due to strong currents in the entrance channel to the harbour which are caused by the in and outflow of the tide, vessel arrival and departures are restricted to times of slack water (when the tidal flow reverses and current in the channel is negligible).
- 1.4 High winds can delay vessels wishing to transit the channel, particularly larger vessels, due to restricted area for manoeuvring available in the channel to counter the effects of the wind and any tide that may be running. The approach channel topography restricts the size of ships that can use the port and further restrictions are placed on ship size for sailings during the hours of darkness. The *Alltrans* is 0.4 metres wider than specified by Southport Operations for transits during the hours of darkness. She had been granted an exemption by Southport Operations due to her length being nine metres less than the maximum allowed.
- 1.5 The Southport Pilot had some 34 years experience at sea, the last 17 years of which were as Harbour Pilot. He had been piloting for Southport for the last five years during which time he had piloted the *Alltrans* in and out of Bluff on numerous occasions.
- 1.6 The Master of the *Alltrans* had some 20 years experience at sea, the last five years of which were as Master. He was new to the vessel having joined her at Bell Bay as Supernumerary Master on the 11 March 1995. After 4 days as Supernumerary Master he took command of the *Alltrans* on 16 March 1995. It was the Master’s first call into the Port of Bluff.
- 1.7 Although there was information on board the *Alltrans* about the Port of Bluff and the trade in which the vessel was engaged, the Master had requested, through his agent, additional updated port information. This was not an unreasonable request. Sometimes when a ship is on a regular trade with regular Masters, port information on board can become outdated and of little use to a Master new to the vessel and the trade, and, as in this case the Master felt he needed clarification of tidal information for safety and commercial reasons. The information requested was supplied to the Master.
- 1.8 The *Alltrans* has been commissioned and calling in to the Port of Bluff for about ten years. Voyage number 259 saw the *Alltrans* berthing at Tiwai Wharf at about 0730 hours on 23 March 1995. Cargo discharge progressed as normal and the sailing time was scheduled for 2000 hours on 24 March to correspond with the time of “high tide slack water” in the channel at 2100 hours. The Pilot boarded the *Alltrans* at approximately 2000 hours and was told by the Master that a crew member had been injured on board and had been taken to the Southland Hospital by the ship’s Agent for treatment. The latest possible departure time from the berth was to be 2040 hours in order to be in the channel close to the time of “slack water”.

**Figure 1**



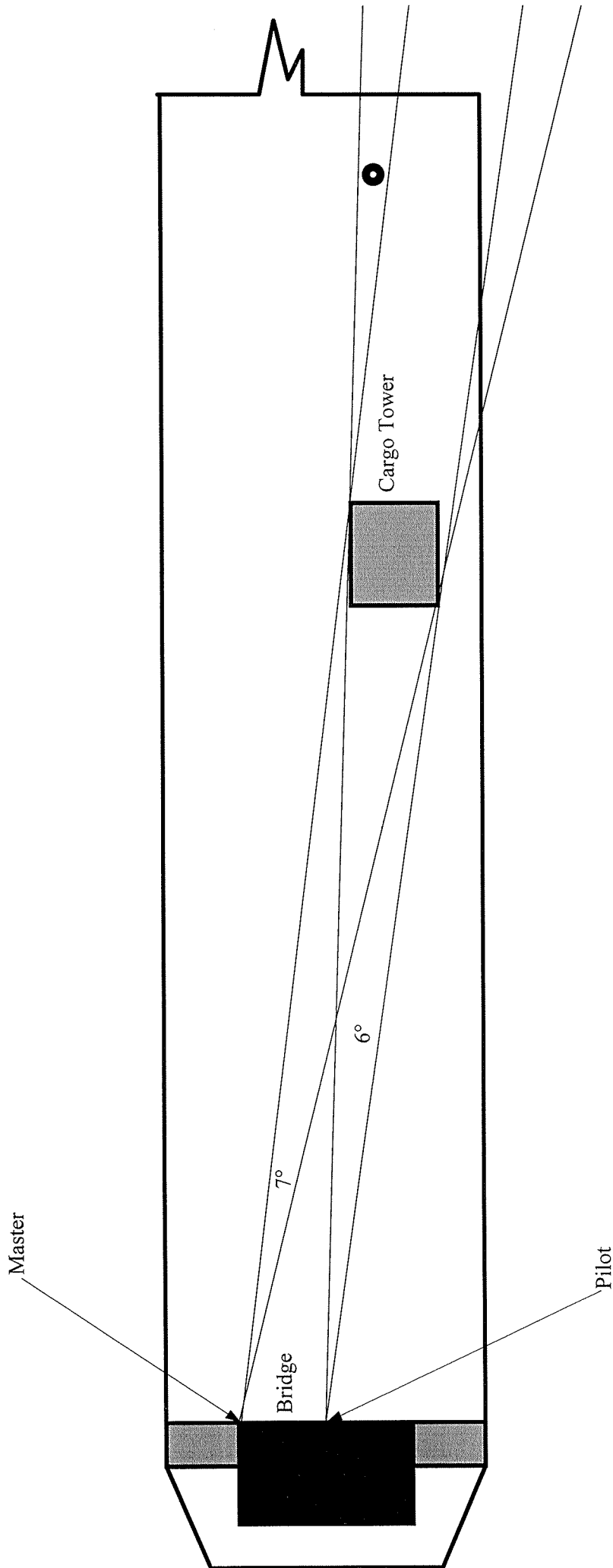
View forward from centreline of the *Alltrans* wheelhouse  
(Pilot's conning position)



View forward from port side of the *Alltrans* wheelhouse  
(Master's favoured position)

**Figure 2**

**Diagram showing forward blind sectors created by cargo tower**



Note: Any object in the sector marked ● would be visible to the Master but not the Pilot

Diagram not to scale



As it became apparent that the injured seaman would not be on board in time for departure, the Master made the decision to delay the sailing until the next “slack water”. Sailing time was postponed to 0230 hours the following morning 25 March.

- 1.9 When the Pilot boarded, the Master took the opportunity to go over the sailing plan in detail with him. The Pilot was co-operative and explained the departure manoeuvre to the satisfaction of the Master. A Pilot Information Card applicable to the *Alltrans* was given to the Pilot that showed the manoeuvring characteristics, machinery and navigational equipment installed on the vessel and their operational status. The Master then asked the Pilot to confirm some of the port information that he had received from Southport Operations regarding the calculation of tidal heights. Although the Pilot answered the Master’s questions the Pilot showed signs of annoyance claiming that all this information must be on board already given that the vessel had been in the trade for ten years. The Pilot departed the vessel about 2100 hours.
- 1.10 The Master had been working from about 0700 hours to the scheduled time of departure of 2000 hours 24 March. When the sailing time was rescheduled for 0230 hours the following morning he had “grabbed a couple of hours sleep here and there” before the rescheduled sailing time.
- 1.11 The Pilot had been working his rostered day in the office of Southport Operations from 0800 to 1700 hours on 24 March. He was also First Call Pilot for the 2100 hour tide that day, on which the *Alltrans* was originally scheduled to sail. After the *Alltrans* sailing was rescheduled for 0230 hours the following morning he had gone home and had two hours “fitful” sleep before reboarding the *Alltrans* at about 0230 hours 25 March.
- 1.12 The Pilot recalled his annoyance at a 10 minute delay to the *Alltrans*’ second attempt to sail from Tiwai Wharf while a search was carried out for a missing crew member. At 0252 hours on Saturday, 25 March 1995 the MV. *Alltrans* left Tiwai Wharf in Bluff Harbour under the command of the Master and the charge of the Southport Duty Pilot. The vessel was outward bound in ballast condition on voyage number 259 to Gladstone, Australia. Also on the bridge were the First Mate, and the duty watchman who was steering the vessel manually. The ship’s sailing draft was 5.8 metres forward, 6.7 metres aft with a metacentric height of about 6.5 metres. The maximum allowable draft in the channel for that tide was 7.7 metres to give any transiting vessel a minimum underwater clearance of about 1.2 metres. The *Alltrans* therefore had an underwater clearance of about 2.2 metres in the channel.
- 1.13 On departure the *Alltrans* was assisted by two Southport tugs. Once the vessel had been swung off the berth and steadied in the channel heading outwards the tugs were let go. The vessel proceeded down Number Three Reach keeping the Davey Leading Lights “slightly open”(not in line) to the south-west as is the normal practice for the port. By keeping the leading lights open to the south-west the vessel passed close by the channel port-hand beacons, on the starboard side of the vessel in this case (outward bound). The reason for choosing this path is to attain the deeper water that exists on the south-west side of the channel, and by this increasing the underwater clearance. This route was part of the passage plan agreed on by the Master and Pilot.
- 1.14 As the *Alltrans* passed Number Three Beacon on her port side the engine telegraph was put on “Full Ahead” and the speed of the vessel began to slowly increase. At about this time the Master asked the Pilot if he would require manropes on the pilot ladder. The question annoyed the Pilot as he had already discussed with the Bosun and the Master how he would like the pilot ladder rigged, and he pointed out, “the ship has been coming here for ten years and the crew should know how to rig the pilot ladder by now”.

- 1.15 The Pilot was “conning” the vessel from a position close to the centreline and forward in the wheelhouse as the vessel entered the channel at Number Three Beacon. The position of the cargo tower in relation to where the Pilot was standing is shown in figures 1 and 2. Since the vessel departed during hours of darkness the cargo tower was visible only as a faint outline against the dark night sky to seaward.
- 1.16 The Master had positioned himself on the port side of the wheelhouse as this position afforded him a view slightly across the starboard bow and an unrestricted view to port. He often moved around the bridge to counter the blind sector created by the cargo tower and to orientate himself with the various port navigation aids.
- 1.17 At about the time Tidal Beacon was abeam to starboard, the Master asked the Pilot “we will be turning right at that red beacon on the starboard bow?”. The Pilot recalled thinking this was a strange question but he confirmed to the Master that they would be turning to starboard at Channel Rocks Beacon. The Pilot was then distracted by a short dialogue between the Master and the Helmsman regarding the latter’s course-keeping. The Master had then walked to the port bridge wing to look astern and compare the alignment of the Rear Leading Lights with that of the Davey Leading Lights forward. In the meantime the Pilot had looked down and seen the red flashing Argyle Beacon passing close down the starboard side, and mistaking it for the Channel Rocks Beacon he ordered a “hard to starboard” wheel movement that subsequently resulted in the vessel running aground. The First Mate did not question the Pilot’s order to put the helm over “hard to starboard”.
- 1.18 The Master, on returning from the bridge wing to his favoured position on the port side of the wheelhouse had not heard the Pilot give the order “hard to starboard”. It had taken him a few seconds to re-establish the position of the Channel Rocks Beacon (flashing red, every two seconds), and when he did so he noticed that it was dead ahead and the bow was swinging to starboard. From the position where the Master was standing he could not see the rudder angle indicator. He had to step back to do so and seeing the rudder in the “hard-over to starboard” position immediately asked the Pilot what he was doing. The Pilot moved towards the Master and then noticed the Channel Rocks Beacon fine on the port bow.
- 1.19 Recognising the situation, the Pilot ordered “wheel to amidships” and “wheel hard to port”. The engine was left on “Full Ahead” to maintain maximum rudder effectiveness in trying to stop the vessel leaving the channel. It soon became apparent to both the Master and the Pilot that the remedial action was not going to be sufficient to stop the vessel leaving the channel and striking the Channel Rocks Beacon, so the Pilot ordered “rudder hard to starboard” to set a course to pass the Channel Rocks Beacon down the port side of the vessel. He did this in the hope that there may have been enough water on the outside of the beacon to let the vessel pass back into the channel without running aground and without damaging the beacon.
- 1.20 There was a disagreement between the Master and the Pilot as to the appropriate actions. The Master wanted to put the engine on “Full Astern” and let go an anchor, however the Pilot requested he keep the engine on “Full Ahead” and not let go the anchor so as to maintain control of the vessel while carrying out his intended manoeuvre. The Master initially agreed to the Pilot’s request.
- 1.21 There was not sufficient depth of water and at 0312 hours the vessel ran aground on the southwest side of “Number Three Reach” on to rocks close outside Channel Rocks Beacon (see figure 3). Although evidence suggested that the vessel did not directly strike the visible spar of Channel Rock Beacon, in the course of the grounding the beacon was left tilted over to an angle of approximately 45 degrees. It is probable that the hull of the vessel contacted the submerged tripod arrangement that rigidly attached the beacon to the sea floor.



- 1.22 With the disagreement between the Master and the Pilot as to what should be done, the main engine was given a flurry of orders via the telegraph, but due to the rapid changes and short time interval between these orders, the engine was unable to carry out every order. The end result was the engine stopped about the time the vessel ran aground.
- 1.23 It was estimated the vessel was making five knots through the water at the time of the grounding and after initial damage assessment by ship's crew the Master considered the vessel should return to port and undergo an underwater inspection to determine the extent of the damage.
- 1.24 Over the three hours following the grounding, various manoeuvres were carried out using two tugs and the ship's engine to try and free the vessel. These manoeuvres were carried out after consultation between the Master, the Pilot and the Operations Manager for Southport, who had arrived on board in the capacity of Chief Pilot. At 0604 hours on 25 March the *Alltrans* was refloated and continued out of the harbour to anchor in the Port Approaches. Further assessment of the damage and its effect on the ship's static stability was made at anchor while awaiting the next "slack water" to re-enter port. The *Alltrans* was secured to a safe berth in the Port of Bluff at 1112 hours 25 March.
- 1.25 At the time of the grounding visibility was described as very good. The wind had been north-east at 10 knots prior to unberthing and had risen to north-east 20 to 25 knots during the unberthing manoeuvre. A gale warning was current for the area predicting winds south-west at 30 knots and heavy rain showers were expected to accompany the passage of a cold front over the region that night. Shortly after the grounding it rained heavily for approximately 30 minutes.
- 1.26 Inspection by divers of the ship's underwater hull revealed seven punctures and significant buckling, indents and scraping. A total of five compartments were breached, four water ballast and one fuel oil tank. The vessel also suffered some heavy scraping on the bottom of the rudder and the propeller had one blade bent and several nicks from the propeller blade tips. The collision bulkhead between the forepeak and No. 1 starboard double bottom water ballast tank was set upwards and detached from the outer hull. No persons were injured as a result of the accident. There was no pollution, as the breached fuel oil tank was empty at the time of the grounding.
- 1.27 The light characteristics of the three port-hand channel beacons of 'Number Three Reach' in order of appearance when outward bound are as follows:
- Tidal Beacon (Q.R.6m2M) Quick flashing red, 6 metres high and seen at 2 miles distance.
  - Argyle Beacon (Q[2]R.5s5m3M) Two Quick flashing red every 5 seconds, 5 metres high and seen at 3 miles distance
  - Channel Rocks Beacon (Fl.R.2s7m3M) Flashing once red every 2 seconds, 7 metres high and seen at 3 miles distance.
- The beacons conform to the International Association of Lighthouse Authorities (IALA) Maritime Buoyage System Region A, which New Zealand has adopted. The difference in light characteristics of the three beacons make them readily distinguishable from each other to a prudent mariner.
- 1.28 A combination of five factors may have contributed to the grounding of the *Alltrans*;
- **Human fatigue** - Both the Master and the Pilot had approximately two hours of broken sleep in the 17 hours leading up to the grounding.

- **Tension** - Some degree of tension had developed between the Pilot and the Master. This was due to the contrast in their backgrounds. The Pilot was familiar with both the vessel and Bluff Harbour and exhibited a degree of impatience with the Master who, because he was new to the vessel and to the trade, addressed a series of questions to the Pilot on matters of which, in his opinion, the Master should have been aware. Such tension on the bridge can preoccupy the minds of those involved in conning the vessel to the detriment of efficient monitoring of her progress.
- **Mindset** - It was the Pilot's normal practice to move around the bridge while piloting vessels through the Bluff Harbour Entrance Channel, however on this occasion he chose to remain stationary in the centre of the wheelhouse. This caused the Pilot to lose sight of one of his visual cues (Channel Rocks Beacon) behind the cargo tower at about the time the Master was confirming the Pilot's intention to turn right "at that red beacon". Shortly after, the Pilot initiated a starboard turn upon sighting a red flashing beacon close on his starboard side (Argyle Beacon). Although the light characteristics of Argyle and Channel Rocks Beacon are readily distinguishable from each other, in this instance the Pilot failed to identify the correct light characteristics of the beacon and took action based alone on criteria that he had fixed in his mind, i.e. a flashing red light on his starboard side.
- **Loss of situational awareness** - One of the responsibilities of the Duty Officer on the bridge while the vessel is under pilotage is to monitor the vessel's position and progress along the planned track and to inform the Master and/or Pilot of any deviation from that planned track as though he himself had the charge<sup>1</sup>. On this occasion the First Mate became so intent on monitoring the performance of the Helmsman that he lost sight of the vessel's overall position in the channel and was unaware that the turn to starboard ordered by the Pilot was too early.
- **The cargo tower** - As can be seen from figures 1 and 2 the cargo tower does create a blind sector forward making it necessary for those on the bridge to move around to keep an effective lookout. Although the cargo tower was visible as a faint outline against the dark night sky to seaward, it was possible the Pilot forgot its presence and its effect on visibility when his attention was focused on other matters.

1.29 Human fatigue probably contributed to the tension, mindset, and loss of situational awareness. The chance timing of the Master's question to the Pilot about turning right at "that red beacon" (Channel Rocks Beacon) when at the time Channel Rocks Beacon is thought to have been obscured from the Pilot's view by the cargo tower, probably led the Pilot to believe that the red flashing beacon he subsequently saw abeam of the vessel close by the starboard side was Channel Rocks Beacon. He then initiated the turn into what should have been "Number Two Reach". The Master, having established to his satisfaction the vessel's position in the channel, then walked out to the port bridge wing and did not hear the Pilot initiate the turn to starboard. Given the size of the *Alltrans* and the narrowness of the channel, by the time the Master noticed the early turn to starboard, questioned the Pilot, waited for the Pilot to realise the situation and take corrective action, it is unlikely any corrective action taken at that time would have prevented the *Alltrans* from running aground.

1.30 Considering the hours of duty the Pilot had worked during the day of 24 March, it would have been prudent for him to have called in one of the standby Pilots to pilot the *Alltrans* at her rescheduled time.

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<sup>1</sup> Bridge Team Management Guide, published by The Nautical Institute

## **2. FINDINGS**

- 2.1 The *Alltrans* was fully surveyed and held all relevant certificates and documents required for a vessel of her class.
- 2.2 The *Alltrans* was adequately manned as required for a vessel of her class.
- 2.3 The *Alltrans* was under the command of the Master and in the charge of a Duly Licensed Southport Pilot at the time of the grounding.
- 2.4 There was no failure of equipment or machinery that contributed to the grounding of the *Alltrans*.
- 2.5 A proper passage plan was agreed upon by the Master and the Pilot before the *Alltrans* departed the berth.
- 2.6 The weather conditions were within acceptable limits for the *Alltrans* to depart.
- 2.7 The *Alltrans* sailing condition met all safety requirements and although she exceeded the maximum transit beam for the hours of darkness this had Southport's approval.
- 2.8 No pollution occurred as a result of the grounding.
- 2.9 Fatigue, tension, mindset and loss of situational awareness among the persons making up the bridge team on departure, were contributing factors to the grounding.
- 2.10 The blind sectors created by the cargo tower on the foredeck of the *Alltrans* could have been an additional contributing factor to the grounding.

## **3. SAFETY RECOMMENDATIONS**

- 3.1 It was recommended to the Operations Manager for Southport New Zealand Ltd that:  
  
The procedures associated with the Roster for Southport Harbour Pilots be reviewed, documented and if necessary, amended to minimise the risk of fatigue affecting a Pilot's fitness for duty. (032/95)
- 3.2 The Operations Manager for Southport New Zealand Ltd responded as follows:  
  
*Southport New Zealand Ltd is in the continuing process of obtaining ISO 9002 accreditation for various areas of its operation and presently setting up the systems and audits for Marine Services. Incorporated in this will be the procedures for the pilotage rosters. Actual dates of ISO approvals may vary depending on availability of auditors but it would be hoped by the end of 1995.*
- 3.3 It was recommended to the General Manager for ASP Ship Management that he consider:
  - 3.3.1 Placing on board all his vessels a copy of the publication "Bridge Team Management, A Practical Guide" published by The Nautical Institute, together with a circular outlining this accident and drawing attention to chapter six, "Teamwork" and chapter seven, "Navigating With a Pilot on Board". (033/95); and

- 3.3.2 Circulating a memo to all Sea Staff advising the importance of time management on board with regard to making use of available time to obtain sufficient sleep. (034/95); and
- 3.3.3 Constructing a diagram showing forward blind sectors created by the cargo tower on the foredeck of the *Alltrans* and any vessel with a similar obstruction, and having this diagram displayed permanently on the bridge and incorporated on the existing Pilot Information Card. (035/95)

3.4 The General Manager for ASP Ship Management responded as follows:

- 3.4.1 *All of the ships in our management carry copies of "Bridge Team Management - a Practical Guide". We also regularly send Masters and First Officers on Bridge Teamwork training courses. Information on accidents suffered in the fleet is circulated to all ships with references to our own manuals and to other instruction documents as appropriate.*
- 3.4.2 *Instructions on avoidance of fatigue are contained in our instruction manuals.*
- 3.4.3 *There is not a diagram on board at present indicating the forward blind sectors created by the cargo tower on the foredeck. This shall be attended to immediately.*

16 August 1995

M F Dunphy  
Chief Commissioner

## **GLOSSARY OF TERMS**

<b>In Command</b>	Over-all responsibility for the vessel
<b>In Charge</b>	In control of the vessel
<b>Conning</b>	Another term for “In Charge” or “In Control”
<b>Draft</b>	Depth of the vessel in the water
<b>Helm</b>	Ship’s wheel
<b>Metacentric Height</b>	Measure of the vessel’s statical stability in the water
<b>Statical Stability</b>	Measurement of vessel’s stability in still water
<b>Telegraph</b>	Device used to control the vessel’s main engine
<b>Underwater clearance</b>	Distance between the vessel’s deepest point and the sea bottom





