



## **Report 00-208**

**tug *Mahia***

**near capsized, parted towline and manoverboard**

**Auckland Harbour**

**5 July 2000**

### **Abstract**

On Wednesday 5 July 2000 at about 0900, the bulk carrier *Dorthe Oldendorff* departed from Chelsea Wharf in Auckland Harbour. The ship was under pilotage and its unberthing was assisted by 2 tugs: one port company tug and one contract tug. The ship was let go from the wharf and turned around into the channel in readiness to transit the harbour. While the skipper of the contract tug, *Mahia*, was preparing to let go, weight came on the towline causing the tug to heel heavily. The towline parted and the *Mahia* rapidly righted itself, throwing the deckhand overboard.

Safety issues identified included:

- poor communication between the bridge team and the crew at mooring stations
- insufficient communication between the tug skipper and the pilot
- loss of situational awareness by the bridge team
- inability to quickly release the towline from the tug.

Safety recommendations were made to the Director of Maritime Safety with regard to the quick release of towlines.

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***Tug Mahia***



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## Abbreviations

kW	kilowatt
m	metre(s)
mm	millimetre(s)
M&I	Marine and Industrial
MSA	Maritime Safety Authority
SOLAS	International Convention for Safety of Life At Sea
t	tonne(s)
UTC	universal time (co-ordinated)
VHF	very high frequency

## Glossary

aft	rear of the ship
ballast	weight, usually sea water, put into a ship to improve stability
beam on	direction at right angles to the length of a ship
bollard pull	measure of the static pull a vessel can exert
bridge	structure from where a ship is navigated and directed
capsize	to overturn or upset a ship
conduct	in control of the ship
conning	directing the course and speed of a ship
draught	depth in water at which a ship floats
flood tide	rising tide
gross tonnage	a measure of the internal capacity of a ship; enclosed spaces are measured in cubic metres and the tonnage derived by formula
heel	angle of tilt caused by external forces
knot	one nautical mile per hour
port	left hand side when looking forward
quarter	that part of a ship between the beam and the stern
shackle	27.5 m marked length of anchor chain cable
shoulder	the part of a ship on each side of the bow where the straight sides begin
starboard	right hand side when looking forward
stern	rear part of a ship

## Data Summary

### Vessel Particulars:

<b>Name:</b>	<b><i>Mahia</i></b>
Type:	tug
Length (overall):	16.81 m
Breadth:	4.6 m
Tonnage (gross):	34.03 t
Built:	1970 by Whangarei Shipbuilding
Propulsion:	two D343 Caterpillar diesel engines each driving, through a twin disc reduction gearbox, a fixed-pitch propeller
Power:	544 kW in total
Bollard pull:	8.0 t
Owner/operator:	Thomson Towboats Limited, Auckland
Port of Registry:	Napier, New Zealand
Crew:	2

<b>Name:</b>	<b><i>Dorthe Oldendorff</i></b>
Type:	bulk carrier
Length:	157.0 m
Breadth:	25.0 m
Tonnage (gross):	13 712 t
Propulsion:	a single 5370 kW Mitsubishi 6UEC45LA diesel engine driving, through a reduction gear box, a controllable pitch propeller
Speed:	14 knots
Operator:	Egon Oldendorff, Lubeck, Germany
Port of Registry:	Monrovia, Liberia

**Date and time:** 5 July 2000 at about 0900<sup>1</sup>

**Location:** Auckland Harbour, off Chelsea Wharf

**Injuries:** nil

**Investigator-in-charge:** Captain John Mockett

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<sup>1</sup> All times in this report refer to New Zealand Standard Time (UTC + 12) and are expressed in the 24-hour mode.

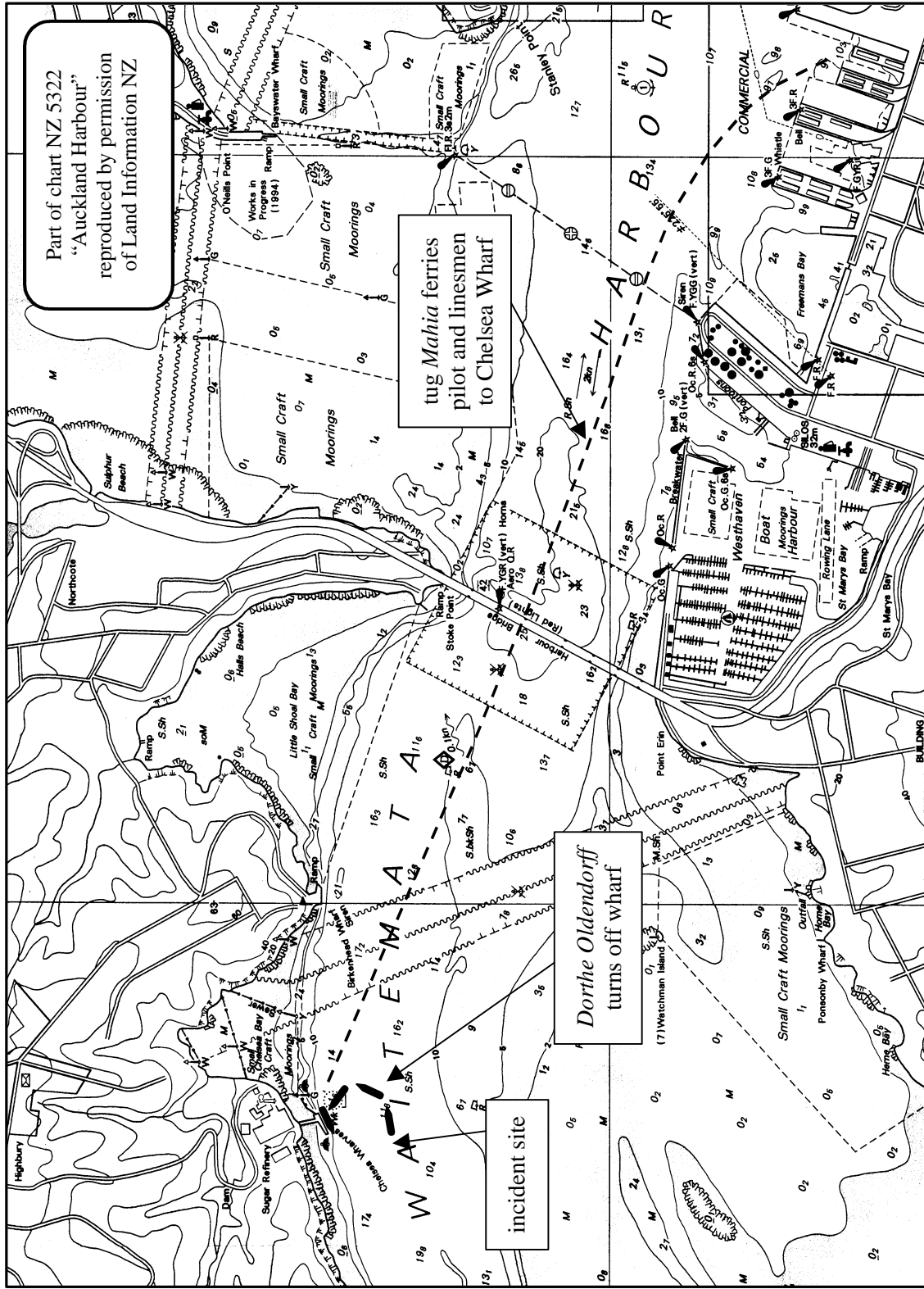


Figure 1  
Part of chart NZ 5322 showing key points

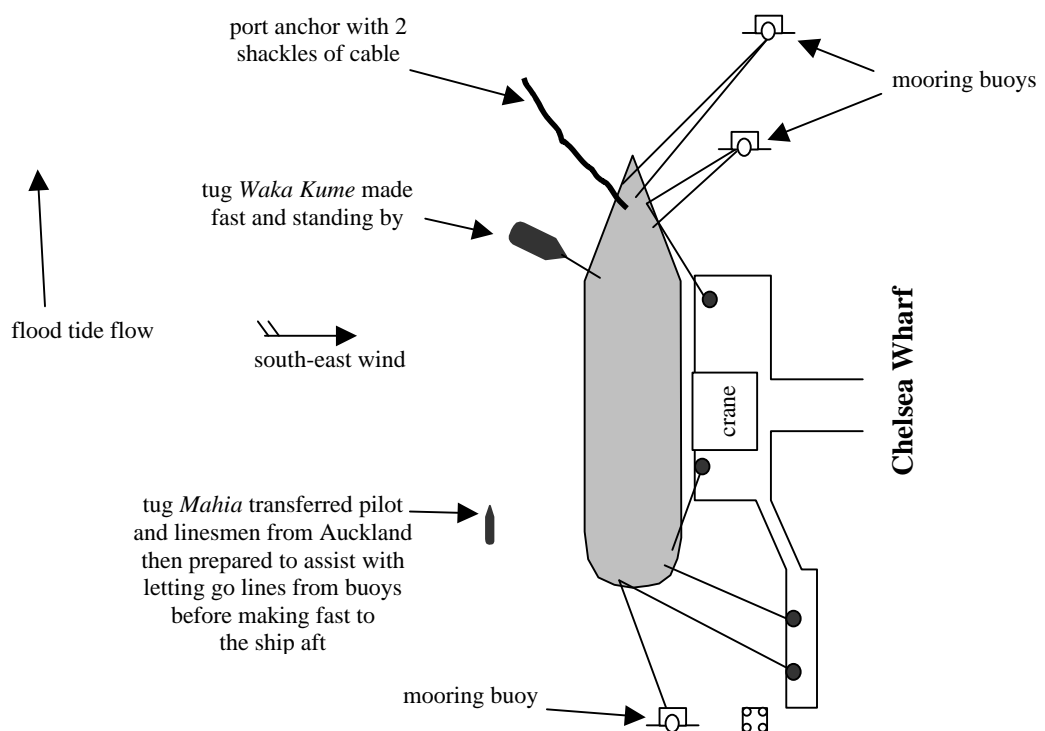


# 1. Factual Information

## 1.1 History of the trip

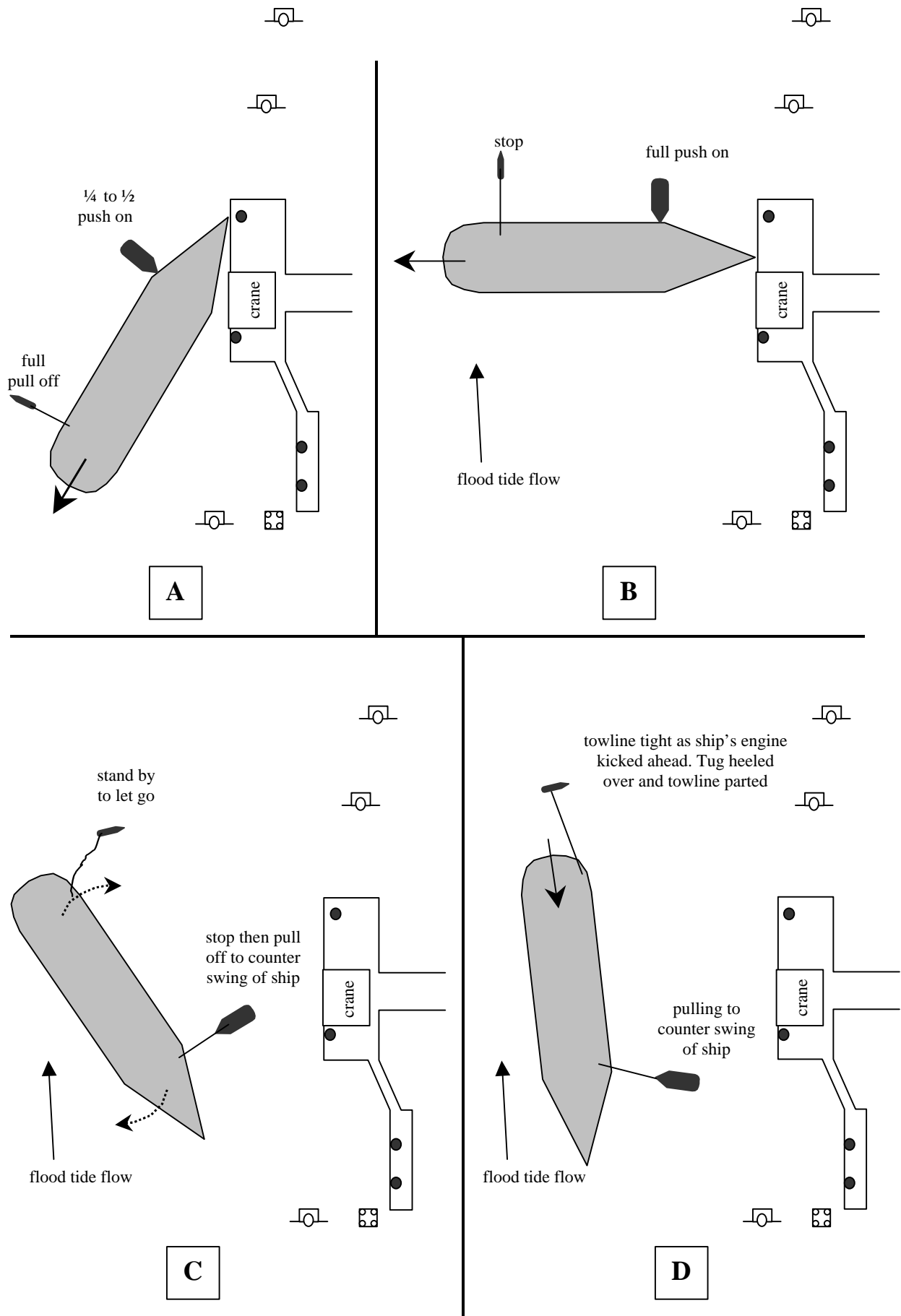
- 1.1.1 On Wednesday 5 July 2000, at about 0900, the bulk carrier *Dorthe Oldendorff* departed Chelsea Wharf in Auckland. There was a harbour pilot on board and 2 tugs assisting. During manoeuvring off the wharf the towline from the after tug *Mahia* parted and the deckhand was thrown into the water. He was recovered by the pilot launch and returned uninjured to the *Mahia*.
- 1.1.2 The pilot had reported for duty at the pilot station at 0700 together with several other pilots. In addition to the scheduled departure of the *Dorthe Oldendorff*, there were 4 container ship and 3 naval ship movements scheduled for the morning. The senior pilot assigned jobs to each pilot and allocated the tugs required for each movement. There were 2 port company tugs, *Waka Kume* and *Waipapa*, manned and available to assist with the movements.
- 1.1.3 The pilot assigned to conduct the departure of the *Dorthe Oldendorff* from Chelsea Wharf travelled to the ship, together with 4 linesmen, on the contract tug *Mahia*. The *Mahia* was required for letting go the mooring lines that were made fast to mooring buoys off Chelsea Wharf (see Figure 1).
- 1.1.4 The port company tug *Waka Kume* was allocated to assist with the departure and went to Chelsea Wharf at the same time. The other port company tug was allocated to another movement occurring at that time. Because of the number of shipping movements scheduled, the pilot had been asked to conduct the departure using only one tug. The size and dimensions of the *Dorthe Oldendorff* fell within the Ports of Auckland criteria for a single tug operation, although an established practice had been to use 2 tugs for such a ship.
- 1.1.5 The pilot agreed to the use of just one tug because that had been a previous practice and the tide was still in flood, which would act in his favour. The flood tide was still flowing in the channel off the wharf but was almost slack alongside the wharf. He did, however, express his reservation about the on-shore south-easterly wind that was blowing at about 15 to 18 knots and would hinder the departure.
- 1.1.6 During the transit to Chelsea Wharf the senior pilot contacted the pilot and suggested that he could use the *Mahia* to assist the departure once it had finished letting go the lines from the mooring buoys. The pilot had previously used the *Mahia* and said that he was confident in the skipper's abilities. He agreed to using the *Mahia* as it would help to turn the *Dorthe Oldendorff* against the wind. On the trip across the harbour, he and the tug skipper discussed the departure.
- 1.1.7 The *Dorthe Oldendorff* was berthed starboard side to Chelsea Wharf and the pilot planned that the *Waka Kume* would make fast to the port shoulder to control the bow. The *Mahia* would put the pilot and linesmen onto the wharf and then let go the mooring buoy lines before making fast aft ready to pull the stern off.
- 1.1.8 The *Mahia* arrived at Chelsea Wharf at about 0830 and the pilot and linesmen transferred to the wharf. The *Waka Kume* arrived at about the same time and stood by off the port bow.
- 1.1.9 The pilot went to the bridge of the *Dorthe Oldendorff* where he met the chief officer. The master was not yet on the bridge so the pilot told the chief officer that the anchor, which formed part of the moorings, had to be weighed before any lines were let go. The chief officer arranged to have the anchor weighed and it was housed before the master arrived on the bridge.

- 1.1.10 The pilot discussed the departure with the master, telling him the order of letting go the lines, the position of the tugs and the procedure for turning the ship off the wharf. The pilot pointed out to the master that the *Mahia* was much smaller than the port company tugs but would be used only to assist the turn off the wharf. The master gave the pilot a pilot information card showing the ship's particulars and departure condition.
- 1.1.11 The *Waka Kume* was made fast on the port shoulder and stood by while the moorings were let go. The engine-room of the *Dorthe Oldendorff* was put onto stand-by at 0839.
- 1.1.12 The pilot told the skipper of *Mahia* to let go the stern line that was made fast onto the mooring buoy. Once that was done he told the skipper to go forward and let go the 2 long lines to the far mooring buoy. As the *Mahia* was moving forward, the pilot told the master to single up aft to one stern line and a spring line (see Figure 2).



**Figure 2**  
**Mooring arrangement of the *Dorthe Oldendorff* at Chelsea Wharf**

- 1.1.13 When the pilot next looked aft, he saw that both stern lines to the wharf had been slackened off and let go, leaving only the spring line made fast.
- 1.1.14 When the *Mahia* had reached the distant forward mooring buoy, the pilot told the master to have the 2 lines slackened off for letting go. The master passed the instruction to forward but the crew slackened all the headlines, including those to the closer mooring buoy.
- 1.1.15 Seeing all the headlines slack, the pilot decided to let them all go although the release of the lines to the closer mooring buoy was sooner than he had planned. Once the headlines were let go, only the forward and aft spring lines to the wharf remained fast.
- 1.1.16 The pilot instructed the skipper of the *Mahia* to make fast at the port quarter. The *Mahia* was made fast using a synthetic towline, the eye of which was put onto bits on the deck of the *Dorthe Oldendorff* and the loose end turned up on the towing bits on the afterdeck of the tug. Once the tug was in position and ready to pull, the aft spring line was let go at 0854.



**Figure 3**  
**Stages of unberthing and turning of the *Dorthe Oldendorff* from Chelsea Wharf**

- 1.1.17 The pilot ordered the *Mahia* to pull off at right angles to the ship. He issued orders to the *Waka Kume* to push on the bow at power settings varying from a quarter to a half. As the ship began to move astern he ordered slow astern on the engine. The time of this engine movement was recorded in the ship's bridge movement book as 0857. This time and the times of subsequent engine movements were recorded to the nearest minute.
- 1.1.18 As the *Dorthe Oldendorff* moved aft, the forward spring line became slack and was let go. With the *Mahia* pulling off aft, the ship swung into the stream stern first and the pilot used the *Waka Kume* to control the bow, keeping it clear of the wharf knuckle and crane. He increased the engine power to half astern at 0858.
- 1.1.19 When the ship was clear of the wharf and at right angles to it, the pilot ordered the *Mahia* to stop pulling but maintain position, and the *Waka Kume* to push on at full power to complete the turn. By this time the stern of the ship was in the flood tide flow and being pushed by it. The pilot and master had been on the starboard wing of the bridge while manoeuvring the ship off the wharf, and at this stage moved into the wheelhouse.
- 1.1.20 When the ship was swinging towards the line of the channel, the pilot ordered the ship's engine stopped at 0859 and instructed the skipper of the *Waka Kume* to stop pushing and then pull off to control the swing, which had become greater than he expected.
- 1.1.21 The pilot told the skipper of the *Mahia* to stop and stand by to let go, and that he was going to kick the engine ahead to arrest the sternway of the ship before letting go the towline. The skipper of the *Mahia* told the pilot that there was no ship's crew aft to let his line go so the pilot requested the master to instruct the aft crew to stand by to let the tug go. At 0900 the pilot ordered half ahead on the engine.
- 1.1.22 The skipper of the *Mahia* had stopped his tug in readiness for letting go and the towline was slack. The stern of the *Dorthe Oldendorff* had swung past the tug's position so that the tug was astern of the ship and beam on to its propeller wash. The wash, which the skipper of the *Mahia* later described as "a sheet of water" from the stern of the *Dorthe Oldendorff*, pushed the *Mahia* astern and the towline became tight again and caused the tug to heel over to such an extent that its deck edge was substantially submerged.
- 1.1.23 At 0901 the pilot ordered the engine stopped and the *Mahia* to be let go. The master passed the instruction to aft. The aft crew arrived to let go the tug but meanwhile the propeller wash from the engine and a surge of water as the engine stopped caused the *Mahia* to heel further. The towline parted and the tug rapidly righted itself. The deckhand, who had been waiting on the tug's aft deck to retrieve the towline, was thrown overboard.
- 1.1.24 The pilot boat was close to the *Mahia*, having travelled from Auckland to pick up the linesmen from Chelsea Wharf. The skipper of the pilot boat manoeuvred close to the deckhand, recovered him from the water and returned him to the *Mahia*.
- 1.1.25 The skipper of *Waka Kume* radioed the pilot to tell him that he thought the *Mahia* was in trouble. The pilot went to the wing of the bridge and looked aft. Seeing the towline in the water he later said that he thought the crew had let the line go prematurely and that it had somehow fouled the tug.
- 1.1.26 The pilot asked the master of the *Dorthe Oldendorff* if the propeller was clear. The aft crew reported that it was but did not mention the fact that the towline had parted, rather than been let go.
- 1.1.27 Meanwhile, the *Dorthe Oldendorff* was about stopped in the water and the *Waka Kume* had arrested the swing. The pilot resumed the outward passage, with the *Waka Kume* remaining in attendance until the ship had cleared the harbour bridge at 0912.

- 1.1.28 The pilot disembarked the *Dorthe Oldendorff* about 35 minutes later. He had been told by the skipper of the pilot boat that the deckhand of the *Mahia* had been in the water but at no time while still on the *Dorthe Oldendorff* was he told that the towline had parted.
- 1.1.29 The skipper of the *Mahia* retrieved the remains of his towline and proceeded to his next job, which was to assist the shifting of a naval ship. The deckhand who had been in the water changed his clothing and continued working all day.
- 1.1.30 The length of the towline was estimated to be about 60 m. The remains of the line retrieved by the crew of the *Dorthe Oldendorff* was 43 m long.

## **1.2 Vessel information**

- 1.2.1 The *Mahia* was built in Whangarei in 1970 for the Hawkes Bay Harbour Board and worked as a harbour tug in Napier. The tug was acquired by its present owner as part of his towing operation based in Auckland.
- 1.2.2 When new, the *Mahia* was fitted with a dedicated quick-release towing hook. About a year before the incident the present owner removed that hook, preferring to secure the tows to bitts on the deck. The removal of the hook also allowed an increased working area aft of the funnel. In the event of an emergency requiring the tow to be released quickly, an axe was kept close at hand to cut the rope. The axe was part of the tug's life saving equipment and had to be moved out close to the towing bitts when towing.
- 1.2.3 The towline used was a synthetic plaited rope of about 60 mm diameter with an eye at each end. The skipper stated that when new, several years previously, it had a certified breaking strain of 29 t. The rope was chaffed in places but not unduly so. The rope was sufficiently long to put one eye onto a towed vessel and then to be made up on the towing bitts on the aft deck of the tug.
- 1.2.4 The *Mahia* was under safe ship management with Marine and Industrial Safe Ship Management (M&I) and was restricted to Auckland Extreme Limits. The tug was audited by an M&I surveyor on 6 June 2000 and no defects were noted.
- 1.2.5 The *Mahia* was fitted with a very high frequency (VHF) radio equipped with the working channels used by Auckland harbour pilots. The tug could be coned either from the wheelhouse or from the open flying bridge as was normally the case when towing.
- 1.2.6 The *Dorthe Oldendorff* was a bulk carrier, 157 m in length and 13 712 gross tonnes, operated on charter by Egon Oldendorff, Lubeck, Germany. The ship had discharged cargo at Chelsea Wharf and sailed in ballast with a draught of about 6 m aft. The master was German, the officers Russian and the crew Filipino.
- 1.2.7 The master and crew of the *Dorthe Oldendorff* were not available after the incident as the ship sailed for overseas. The master made a written statement that has been considered in making this report.

## **1.3 Company information**

- 1.3.1 The *Mahia* was owned and operated by Thomson Towboats Limited of Auckland. The company owned 4 small conventional tugs and 2 barges, which were offered for hire, mainly around the Auckland area.
- 1.3.2 The majority of the jobs undertaken by the company were smaller tows around the harbour.

- 1.3.3 The company did not have an on-going contract for pilotage towage with Ports of Auckland Limited but was engaged on an as-required basis when shipping movements warranted it.
- 1.3.4 Ports of Auckland Limited employed the harbour pilots. It operated 3 dedicated berthing tugs that were significantly more manoeuvrable than older conventional tugs. Of the 3 tugs, the *Waka Kume* and the *Waipapa* were high-powered and the *Daldy* medium-powered. Shipping movements within the port were such that normally only 2 tugs were required. Generally the *Waka Kume* and *Waipapa* were manned and ready for use on a 24-hour basis with the *Daldy* being used if one of them were not available.
- 1.3.5 Ports of Auckland regularly used Thomson Towboats, mainly on jobs such as the transportation of linesmen but also occasionally to assist the movement of smaller ships during busy times.
- 1.3.6 Tugs were allocated to ship movements by consideration of various criteria including length, tonnage, whether berthing or unberthing and the wharf concerned.
- 1.3.7 Oldendorff Carriers, an owner/operator subsidiary of Egon Oldendorff, operated the *Dorthe Oldendorff* on time charter. The company operated a fleet of about 170 ships of which about half were owned and the other half chartered.

#### **1.4 Personnel information**

- 1.4.1 The pilot went to sea in 1962 with the Union Steam Ship Company of New Zealand Limited, where he remained until early 1973 by which time he had risen to first mate and had gained his Masters certificate.
- 1.4.2 He then served about 7 months with Reef Shipping as first mate and relieving master, before joining the then Auckland Harbour Board as trainee pilot in September 1973. He gained his Auckland pilot's licence and progressed through the various stages of ship size and tonnage limitations. He estimated that during his 27-year career as an Auckland pilot, he had piloted in excess of 8000 ships.
- 1.4.3 The pilot had been off duty for 2 days before the incident, and the departure of the *Dorthe Oldendorff* was his first job of the day.
- 1.4.4 The skipper of *Mahia* started his maritime career as a boat builder before going to sea for several years with various coastal shipping and towing companies and held a Master of a River Ship certificate. He was the owner of the towboat company which he had formed in about 1988.
- 1.4.5 The skipper of the *Mahia* had worked the day before the incident but the departure of the *Dorthe Oldendorff* was his first job of the day.
- 1.4.6 Because the *Dorthe Oldendorff* departed New Zealand immediately following the incident, the histories of the master and crew were not ascertained. The pilot stated later that the master was German, the officers Russian and the crew Filipino. The pilot also stated that he had no difficulty communicating with the master.

#### **1.5 Legislation**

- 1.5.1 On 1 February 2001, Maritime Rules Part 40C came into force. Part 40C was titled Design, Construction and Equipment Non-Passenger Ships that are not SOLAS ships.

1.5.2 Part 40C.60 dealt with towing gear and read as follows:

Any ship that is fitted with means of towing other ships must meet the following requirements:

- (a) the design of the towing gear must be such as to minimise any heeling moment due to the lead of the towline. For this purpose, the towing hook or post or towing winch, and any towing fairleads, must be located at the minimum practicable height above the waterline:
- (b) towing hooks and bollards must have positive means of quick release that can be relied on to function correctly under load and for all directions of applied load and expected heel angles:<sup>27</sup>
- (c) towing winches must have an emergency means of rapidly paying out when under load:
- (d) the towing gear and the supporting structure must be strong enough to withstand loads imposed during towing operations. The towing line must be the weakest link in the towing arrangement.

<sup>27</sup> It is recommended that the release mechanism be controlled from the wheelhouse and at the hook or bollard itself. The local control at the hook or bollard should preferably be of the direct mechanical type capable of independent operation.

1.5.3 At the time of the incident, Part 40C was not in force but its introduction will affect future towing operations on tugs such as the *Mahia*.

1.5.4 The towing point on the *Mahia* was sufficiently low to satisfy the requirements of the rule. The towing hook had been removed and no towing winch was fitted. The towline parting showed that it was the weakest link in the towing arrangement. To fully comply with Rule 40C.60 for future towing operations, the issue of quick release of the towline from the towing post would need to be addressed.

1.5.5 When asked for an opinion on the intent of the rule and whether the *Mahia* complied with it, the Maritime Safety Authority (MSA) gave, in part, the following response:

- bollard encompasses all forms of fixed towing, i.e. “stag horns”, post, bollards, “H” posts etc.,
- the quick release is not actually the bollard but a device fitted within the tow line close to the bollard,
- devices are available that act like a quick release hook when fitted in the towing hawser,
- an axe does meet the requirement of a quick release device in accordance with the rule, but it does not meet the requirements of the recommendations in the footnotes,
- it is preferred that the release device is a mechanical device which only requires a pull of a lever, push of a button etc. to activate.

## 2. Analysis

- 2.1 The scheduled departure of the *Dorthe Oldendorff* fell at a time when several other ships had also booked pilots and tugs. Had all those ships been ready to sail at the same time, the rostered pilots and the 2 manned tugs would have been unable to meet their needs. However, it is a common practice to book a sailing time for the best anticipated time of readiness. As a consequence sailing times, particularly those of container ships, are often changed. Ports of Auckland could reasonably have expected to be able to cope with the number of booked movements, anticipating that some of those booked for the same time would be delayed.
- 2.2 On the morning of the incident, one of the tugs was required for the movement of a container ship at the same time as the *Dorthe Oldendorff* was scheduled and ready to sail. Although there was an established practice to use 2 tugs for unberthing ships such as the *Dorthe Oldendorff* from Chelsea Wharf, the ship showed on the Ports of Auckland's confirmed movements list as requiring just one tug. There was insufficient time or staff available to man a third harbour tug so the senior pilot asked the assigned pilot to conduct the pilotage with one tug.
- 2.3 The pilot had previously unberthed similar ships with one tug and agreed, although voicing his reservations because of the on-shore wind at the wharf. While the manoeuvre would have been different, the pilot could probably have successfully unberthed the *Dorthe Oldendorff* with a single tug of the power and manoeuvrability of the *Waka Kume*.
- 2.4 The *Mahia* was used to transport the pilot and linesmen to Chelsea Wharf and was needed to let go mooring lines from the dolphins. Because the *Mahia* was attending anyway, the senior pilot's suggestion to use it to assist was reasonable.
- 2.5 The pilot agreed to the use of the *Mahia* and had ample time in transit to Chelsea Wharf to discuss the operation with the skipper.
- 2.6 The tugs used were of significantly different power but the deployment and method in which they were used were appropriate; the more manoeuvrable powerful tug being used forward where the greater degree of control was required. The master was made aware of the different sizes of the tugs but voiced no objection, presumably because he foresaw no problem.
- 2.7 Although the pilot reported no difficulty in communicating with the master, there appeared to be a less than ideal flow of information between the master and his officers and crew. This was first seen during the unberthing process when mooring lines were slackened or let go before required.
- 2.8 When the lines were slackened or let go before required, the pilot was able to adapt his unberthing plan without much difficulty, although the misunderstanding of his requirements relayed by the master to the forward and aft crew should have alerted him to the potential for later requirements to be similarly misunderstood.
- 2.9 The ship was let go from the wharf and turned into the channel. As it did so, the stern would have entered the flood tide first, causing the rate of turn to be increased. The pilot used the larger power of the *Waka Kume* to control the swing and instructed the skipper of the *Mahia* to stop pulling but maintain position and to stand by to let go. The skipper told the pilot that he could see no ship's crew aft.
- 2.10 Due to the limited manoeuvrability of the *Mahia*, the skipper was unable to maintain position as the stern of the ship swung past his tug. When the pilot told the skipper that he was going to kick the engine ahead to arrest the sternway and to stand by to let go, the tug was almost directly astern of the ship. The skipper told the pilot that there was no ship's crew aft but did not tell him that he had been unable to maintain position as requested.



- 2.11 The pilot told the master to instruct the aft crew to attend the *Mahia*. He had warned the master that the tug would shortly be letting go and in light of the errors made during unberthing, it would have been prudent to have stressed the need for the aft crew to be ready to tend the towline quickly.
- 2.12 The pilot, together with the master, was monitoring the progress of the ship from the wheelhouse and would have had no view of the stern. The *Dorthe Oldendorff* had built up a small amount of sternway which the pilot needed to arrest, and although he warned the skipper of the *Mahia* that he was going to kick the engines ahead, it would have been prudent to have gone to the wing of the bridge from where he could watch the aft tug and still monitor the ship.
- 2.13 Letting go any tug from the stern of a ship is a critical operation. The tug is manoeuvring close to the stern and propeller and inevitably there is slack line in the water. The ship might need to manoeuvre at any time to maintain control in the channel. The *Mahia* was a small tug and not as manoeuvrable as the dedicated berthing tugs and so was particularly vulnerable when working alongside a large ship.
- 2.14 The *Dorthe Oldendorff* was in ballast and therefore at light draught. In such a condition the propeller would not be fully immersed and the effect of the propeller wash on a small tug such as the *Mahia* more violent than at deep draught.
- 2.15 When the pilot kicked the engine ahead to stop the ship it also had the effect of pushing the *Mahia* away. The line became tight and as the tug was by then lying across the propeller wash, the tug was pulled over on its side by the towline. The engine movement times were recorded to the nearest minute and indicated that the kick ahead lasted for one whole minute but it was probably significantly less than that.
- 2.16 The kick ahead probably resulted in some forward motion of the ship further pulling the tug over. The deckhand was on the aft deck in readiness to retrieve the towline but would not have had time to get the axe and cut the rope before it parted under the strain. The towline was in reasonable condition and under normal circumstances considered fit for the purpose for which it was being used.
- 2.17 The tug righted itself and the motion was sufficiently violent to throw the deckhand overboard. He was thrown clear and not injured, probably because he had been standing on the open deck area.
- 2.18 Immediately after the incident the skipper of the *Mahia* had no time to use his VHF radio to alert the pilot. When the skipper of the *Waka Kume* told the pilot that he thought the *Mahia* was in some sort of trouble, the pilot looked aft and thought that the towline floating in the water had somehow fouled the tug. It is not an uncommon occurrence for the crew of ships to throw a towline into the water rather than lowering it to the tug. In light of the previous misinterpretation of his requirements, the pilot's presumption that this had happened on this occasion was probably warranted.
- 2.19 Before proceeding, it would have been prudent of the pilot to call the skipper of the *Mahia* on the VHF to make sure that all was well. The skipper of the *Mahia* still did not alert the pilot to his problem.
- 2.20 Having seen the towline in the water, the pilot asked the master if the propeller was clear. The master asked the aft crew, who reported that it was but did not report that the towline had parted. The aft crew, relatively unaffected by the parting towline, should have reported it to the bridge.

- 2.21 It was fortuitous that the pilot boat was at the scene and was able to recover the deckhand from the water quickly and return him to the *Mahia*. The skippers of both the *Mahia* and the pilot boat would have been concentrating on the recovery, and the lack of initial advice to the pilot, while not ideal, was understandable.
- 2.22 When a tug is assisting a pilotage operation, it is under the control of the pilot or master on the ship. The tug skipper may not always be able to maintain a safe position relative to the ship as required by the pilot or master, which makes it important that he can quickly release the towline from his tug in the event of an emergency.
- 2.23 Although Maritime Rules Part 40C.60 came into force after this incident, it was written in such a way to infer that both towing hooks and bollards must have positive means of quick release. While fitting a quick release mechanism to a towing hook is a relatively simple matter, it is not so for bollards such as fitted on the *Mahia*.
- 2.24 Towing bollards are themselves strong, rigid structures with an associated supporting structure to make them strong enough to endure the loads applied during towing. It would not be feasible to construct them in a manner so that they were also a quick release device. Such a concept would mean that a mechanism would somehow collapse the bollard and release the towline. It is difficult to conceive how this could be engineered but it would anyway inevitably weaken the overall structure.
- 2.25 The MSA interpreted the rule to mean that some form of quick release device should be fitted within the towline close to the bollard, but the insertion of a device into the towline would restrict the crew's ability to adjust the length of the towline if required. The wording of the rule needs to be changed to clarify its intent with regard to bollards.
- 2.26 In the case of this incident, an axe was to serve as the only quick release option. Axes have traditionally been accepted within the towing fraternity as a method of severing the towline in an emergency. The MSA offered an opinion that the axe met the requirement of the rule for a quick release device but did not satisfy the recommendation that it could be controlled from both the wheelhouse and locally.
- 2.27 It is questionable whether in a situation such as this incident, an axe wielded by the deckhand, already having difficulty maintaining balance on the surface of a heavily canting deck, could be described as a "positive means of quick release that can be relied on to function correctly under load".
- 2.28 Towing hooks and winches can be easily engineered to give a quick release function operated from the wheelhouse and from the hook or winch itself. In the case of tugs used to assist pilotage operations where the tug skipper is not in charge of the full operation, it would be preferable if the tow were from such a hook or winch.

### **3. Findings**

- 3.1 The pilot and the skipper of the *Mahia* were appropriately qualified and experienced to carry out their respective duties during the departure of the *Dorthe Oldendorff*. The qualifications and experience of the master and crew of the *Dorthe Oldendorff* were not established.
- 3.2 The pilot and the skipper of the *Mahia* were sufficiently rested, and fatigue did not contribute to this incident.
- 3.3 The combination of the tugs *Waka Kume* and *Mahia* was sufficient to have safely carried out the unberthing of the *Dorthe Oldendorff* in the weather and tide conditions at the time, provided that the bridge team remained conscious of the limited power and manoeuvrability of the *Mahia*.
- 3.4 A poor line of communication existed between the master on the bridge and the crew at mooring stations, which delayed the letting go of the *Mahia's* towline.
- 3.5 The skipper of the *Mahia* was unable to maintain position and keep the tug clear of the propeller wash as required, due to the limited manoeuvrability and the constraints of the towline.
- 3.6 The skipper of the *Mahia* had an opportunity to warn the pilot of his position in relation to the ship's stern when the pilot advised him that he was going to put the engine ahead.
- 3.7 The bridge team's situational awareness of what was occurring at the stern of the *Dorthe Oldendorff* was low.
- 3.8 The *Mahia's* towline parted when the tug was caught beam on to the propeller wash of the *Dorthe Oldendorff*.
- 3.9 There was insufficient time for the tug's deckhand to cut the towline before it parted, and his being thrown overboard was probably unavoidable.
- 3.10 Had there been a mechanical quick release device that was controllable from the wheelhouse and at the bollard, either the skipper or the deckhand could have released the towline as the *Mahia* was pulled over.
- 3.11 Had the towline not parted it is likely that the *Mahia* would have capsized.

### **4. Safety Actions**

- 4.1 Subsequent to this incident, Ports of Auckland Limited introduced an additional checklist for pilots titled "Procedure when using small conventional tugs". The procedure lays out the requirements for communications, discussion of operation, making fast forward or aft, the need for crew to continually attend the tug, the need for slow speeds to allow the tug to keep position and the letting go of the tug on completion.
- 4.2 Thomson Towboats Limited introduced the Ports of Auckland Limited checklist "Procedure when using small conventional tugs" into the Safe Ship Management Manuals of the company tugs.

## 5. Safety Recommendations

5.1 On 6 July 2001 the Commission recommended to the Director of Maritime Safety that he:

- 5.1.1 draft an amendment to Rule Part 40C.60(b) for the consideration of the Minister to clarify the intent of the rule with regard to the requirements for positive means of quick release mechanisms for ships towing from bollards (031/01)
- 5.1.2 Draft an amendment to Rule Part 40C.60 for the consideration of the Minister to include an additional requirement that ships towing in pilotage operations must be fitted with either a towing hook that has a positive means of quick release or a towing winch that has means of rapidly paying out when under load, either of which must be controllable from the conning positions and at the hook or winch. (032/01)

5.2 On 1 August 2001 the Director of Maritime Safety replied, in part:

### 5.2.1 TAIC Recommendation 031/01

We noted that paragraphs 2.23 and 2.24 of the Commission's report discusses the requirement of Clause 40C.60(b) of Maritime Rule Part 40C that "towing hooks and bollards must have positive means of quick release . . .", and proposes the Rule clause infers that the bollard itself must be capable of performing this duty.

MSA does not support this view. The intent of the Rule was that a quick release mechanism should be installed within the towline. We are, however, considering additional wording in Clause 40.60 to clarify this matter.

Paragraph 2.26 discusses the use of an axe as a means of quick release. It should be noted that Maritime Rule Part 40C is intended for all non-passenger ships that are not SOLAS ships. This includes small work boats which may be utilised in towing operations and an axe is an appropriate means of quick release.

In the case in question, the use of an axe to release the line would be ineffective and an alternative means of release should have been provided.

Considering the report, its recommendations and our comments, we would note that there would be merit in clarification of the Rule requirements and propose either a text change for the Minister's consideration to clarify the requirements for towing bollards, or expansion notes within the advisory circular for this Rule.

### TAIC Recommendation 032/01

While MSA is supportive of this recommendation, we intend to conduct a survey of service providers to determine if the practice of towing from fixed bollards during ship handling operations is widespread.

Dependent upon the results of this survey, MSA will consider what available outcomes are appropriate, including amendment to the current Rule, expansion of advisory text or a Marine Notice.

Approved for publication 11 July 2001

Hon. W P Jeffries  
Chief Commissioner