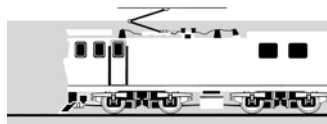
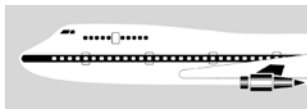


MARINE OCCURRENCE REPORT

01-216

Yacht *Toolka-T* and tug and barge *Wainui* and *Sea-tow 11*,
collision, Takatu Point, north of Auckland

16 November 2001



**TRANSPORT ACCIDENT INVESTIGATION COMMISSION
NEW ZEALAND**

The Transport Accident Investigation Commission is an independent Crown entity established to determine the circumstances and causes of accidents and incidents with a view to avoiding similar occurrences in the future. Accordingly it is inappropriate that reports should be used to assign fault or blame or determine liability, since neither the investigation nor the reporting process has been undertaken for that purpose.

The Commission may make recommendations to improve transport safety. The cost of implementing any recommendation must always be balanced against its benefits. Such analysis is a matter for the regulator and the industry.

These reports may be reprinted in whole or in part without charge, providing acknowledgement is made to the Transport Accident Investigation Commission.



Report 01-216

Yacht *Toolka-T* and tug and barge *Wainui* and *Sea-Tow 11* collision

Takatu Point, north of Auckland

16 November 2001

Abstract

On Friday 16 November 2001, at about 0445, the yacht *Toolka-T* fouled the towline between the tug *Wainui* and barge *Sea-Tow 11* and was carried along the towline until it collided with the bow of the barge. The *Toolka-T* passed under the barge and sank as a result of the collision.

The collision occurred off Takatu Point while the *Toolka-T* was southbound towards Gulf Harbour and the *Wainui* was northbound from Auckland to a sand excavation site north of Cape Rodney.

There were 4 people on board the *Toolka-T*. The owner of the yacht was unable to get clear of the yacht and did not survive. The other 3 crew were rescued and suffered minor injuries only. There were 5 crew on the *Wainui*, none of whom were injured. The *Sea-Tow 11* was not manned.

Safety issues identified included:

- the standard of training of watchkeepers on both vessels
- the legislative requirements for crewing and qualifications of both commercial and pleasure vessels.

Safety recommendations were made to the Director of Maritime Safety to address the issues.



yacht *Toolka-T*



tug *Wainui*



barge *Sea-Tow 11*

Contents

- Abbreviations ii
- Glossary..... ii
- Data Summary..... iii
- 1 Factual information 1
 - 1.1 History of the trip, the *Wainui* 1
 - 1.2 History of the trip, the *Toolka-T* 2
 - 1.3 The wreck 4
 - 1.4 Weather information..... 4
 - 1.5 Post-accident inspection 4
 - 1.6 Personnel information 6
 - 1.7 Vessel particulars..... 6
 - 1.8 Legislation 8
 - 1.9 Pleasure Boat Safety Advisory Group Report 12
 - 1.10 Overseas legislation..... 12
- 2 Analysis 12
 - Vessel recognition 12
 - Risk of collision..... 13
 - Wainui* 13
 - Toolka-T* 14
 - Crewing arrangements..... 16
 - Training 16
 - Compulsory education and qualification 17
- 3 Findings 17
- 4 Safety Actions 18
- 5 Safety Recommendations..... 19

Figures

- Figure 1 part of chart NZ5227 showing approximate tracks of the *Wainui* and the *Toolka-T*.....iv
- Figure 2 diagram showing extent of paint marking on tow (not to scale)..... 5
- Figure 3 photograph of the paint marks on towline 5
- Figure 4 approximate position where the *Toolka-T* fouled the towline 5
- Figure 5 diagram showing make-up of towline on the *Wainui* (not to scale) 7
- Figure 6 reconstruction of accident from evidence of watchkeepers 15

Abbreviations

GPS	global positioning system
kW	kilowatt
m	metre(s)
mm	millimetres
MSA	Maritime Safety Authority
M&I	Marine and Industrial
nm	nautical mile
SSM	Safe Ship Management
t	tonnes
UTC	universal time (co-ordinated)
VHF	very high frequency

Glossary

abeam	direction at right angles to the length of a ship
aft	rear of the vessel
beam	width of a vessel
bridge	structure from where a vessel is navigated and directed
class	category in classification register
conduct (con)	in control of the vessel
gross tonnage	a measure of the internal capacity of a ship; enclosed spaces are measured in cubic metres and the tonnage derived by formula
knot	one nautical mile per hour
port	left hand side when facing forward
restricted limits	operating limits as defined in Maritime Rule part 20
starboard	right hand side when facing forward
track	the path intended or actually travelled by a ship

Data Summary

Vessel Particulars:

Name:	<i>Toolka-T</i>	<i>Wainui</i>	<i>Sea-Tow 11</i>
Type:	Joubert design	tug	dumb (unmanned) barge
length (overall):	11.28 m	16.48 m	40.70 m
breadth:			12.20 m
depth:			3.66 m
gross tonnage:	13.0 t	45.62 t	547.0 t
propulsion:	a single 33 kW Volvo diesel engine driving a fixed-blade propeller in addition to sails	two Gardner diesel engines, producing a total of 343 kW, each driving a fixed blade propeller	none
limits:	unlimited	restricted limits	coastal
Port of Registry:	Adelaide	Auckland	Auckland
Built:	Australia in 1979	1962	1987
Owner/operator:		McCallum Brothers Limited	
Crew:	4	5	nil
Injuries:	1 fatal 3 minor	nil	not applicable
Damage:	yacht sunk	nil	nil
Date and time:		16 November 2001 at about 0445 ¹	
Location:		Takatu Point, north of Auckland	
Investigator-in-charge:		Captain John Mockett	

¹ All times in this report refer to New Zealand daylight Time (UTC + 13) and are expressed in the 24-hour mode

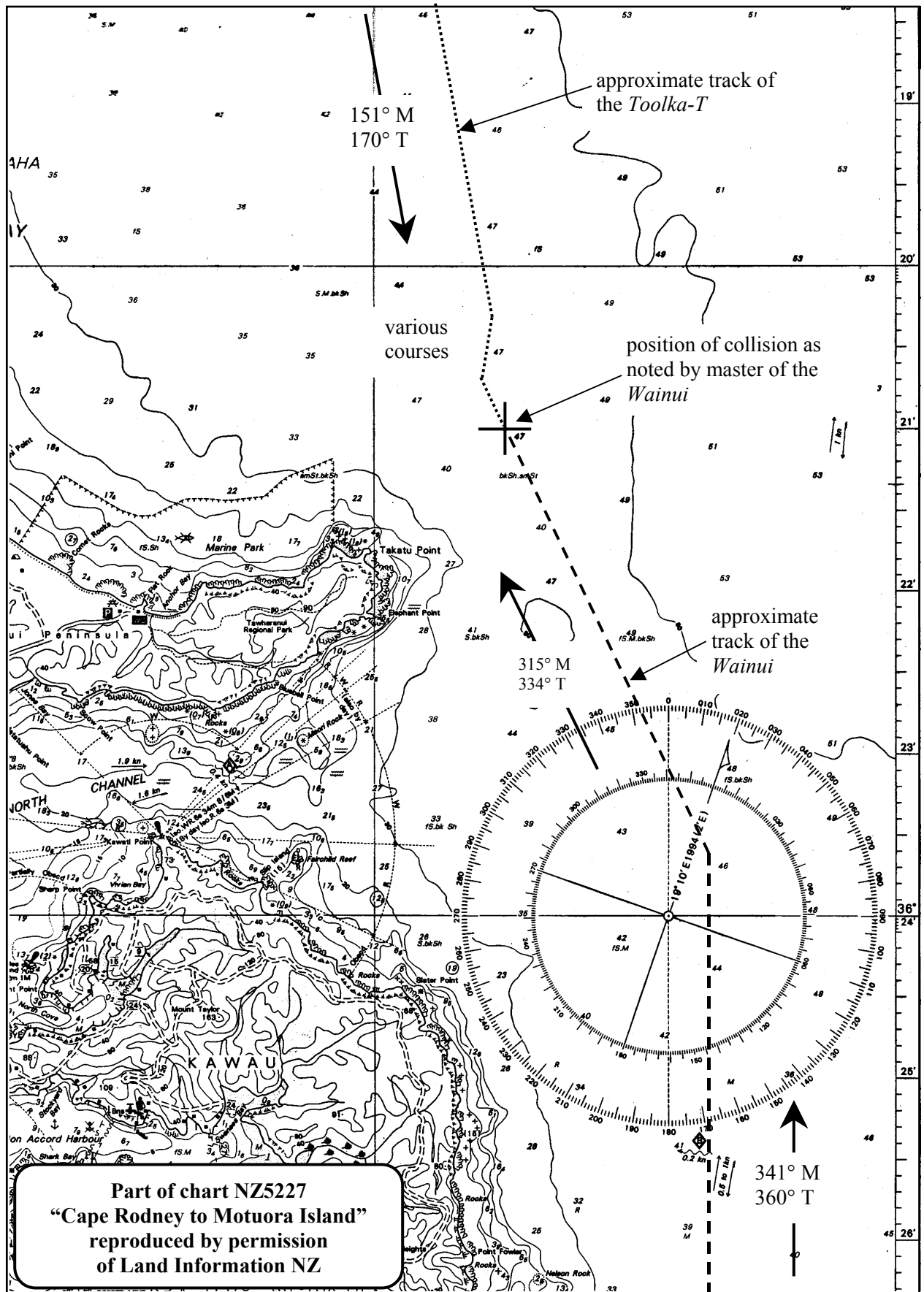


Figure 1
 part of chart NZ5227 showing approximate tracks of the Wainui and the Toolka-T

1 Factual information

1.1 History of the trip, the *Wainui*

- 1.1.1 At about 2345 on Thursday 15 November 2001, the tug *Wainui*, with a master and 4 crew on board, left its berth in Freemans Bay in Auckland, and proceeded to Wynyard Wharf to collect the barge *Sea-Tow 11*. At 0005 on 16 November, the *Wainui* left Wynyard Wharf with the *Sea-Tow 11* in tow, bound for Pakiri Beach where it was to carry out a sand excavation operation.
- 1.1.2 For the passage out through Auckland Harbour, the master conned the tow using a short towline. The tow arrived at “A” Buoy at about 0100, and once clear of the confines of the harbour the master paid out the towline to its full length of about 500 m.
- 1.1.3 The master set the tow on its course to the north at a speed of about 8 knots and handed the watch over to the engineer. As was common on coastal trades, watches were set between geographical locations rather than the traditional time slots. The engineer stood the first sea watch from “A” Buoy to a position between Tiritiri Matangi Island and Kawau Island where he handed over to the first deckhand at 0320.
- 1.1.4 The first deckhand stood the second sea watch to a position off Takatu Point. The charted course past Takatu Point was 334° true, relating to 315° magnetic (see Figure 1). Shortly before reaching Takatu Point, the deckhand saw a green light on the starboard bow and a corresponding echo on the radar. He estimated that it was about 20 degrees on the bow but could not remember at what distance. When Takatu Point was abeam, he recorded the time of 0435 in the logbook and briefly went below to call his relief.
- 1.1.5 When the first deckhand returned from below, the light was broader on the starboard bow. From his brief observation of the other vessel, he estimated that it would pass down the starboard side of the tug, although he had not taken compass or radar bearings nor had he established what type of vessel it was. He recalled seeing a white masthead light in addition to the green sidelight as the other vessel approached. The second deckhand came to the bridge at about 0440 and was to stand the third sea watch as far as Cape Rodney.
- 1.1.6 When the relieving deckhand came to the wheelhouse, the first deckhand simply asked him if he was ready to take the watch but did not point out the light on the starboard bow which was by that time about 30 degrees on the bow. The relieving deckhand said he was ready to take the watch and the first deckhand went below and turned in.
- 1.1.7 The second deckhand quickly appraised the position of the tug and scanned the surrounding area. He saw the other vessel about 45 degrees on the starboard bow. He recalled first seeing a white masthead light and, when he looked closer, seeing sidelights alternating between green and red. He recalled that he thought that the other vessel would pass down the starboard side but he was concerned because he could not identify exactly which way it was heading.
- 1.1.8 Because of the alternating sidelights, the deckhand realised that the other vessel was heading more or less towards the *Wainui* but that it was too close for him to alter course to starboard, so he altered course to port by “a few degrees” to give more sea room to the other vessel, which he still thought was going to pass down the starboard side of the tug.
- 1.1.9 As the other vessel approached the tug’s starboard beam, the deckhand realised that it was very close but thought it would pass clear.
- 1.1.10 The deckhand watched the other vessel pass close to the tug’s starboard beam and then it appeared to alter its course to starboard and began to pass between the tug and the towed barge.

- 1.1.11 As the other vessel approached the stern of the tug, the deckhand saw the barge's green sidelight extinguished briefly before becoming visible again. It was then that he realised that the other vessel was a yacht and what he had seen was the sail crossing between him and the barge's sidelight.
- 1.1.12 The yacht's progress suddenly stopped and it then moved aft until it came into contact with the bow of the barge. The deckhand saw a lot of sparks and the lights of the yacht suddenly went out. He immediately tried to pull back the engine throttles but in his confusion, was unable to do so. The time was recorded as 0445.
- 1.1.13 The master later said that about this time he became aware of a change in tone of the engines as if they "had dropped in revs and were working harder", but he had not fully woken up.
- 1.1.14 The deckhand went below and woke the master, telling him that a boat had gone over the towline and the barge had run over it. The deckhand returned to the bridge followed by the master. In the small confines of the tug's sleeping quarters, the deckhand's call to the master also woke the other 3 crew, who went up on deck.
- 1.1.15 The master reduced the speed of the tow and started to turn it around to return and search in the area of the collision. He also turned the global positioning system (GPS) on. He then went to the flying bridge above the wheelhouse to con the tug from there, where he would have a better view of the surrounding area and the barge. The master controlled the tow while the engineer shone the searchlight over the sea and the remaining crew kept a lookout from the deck.
- 1.1.16 Meanwhile the master used the very high frequency radio (VHF) to call Auckland Maritime Radio and told the operator about the accident and an estimated position, which he had observed from the GPS as 36° 21' South and 174° 53' East. In turn Auckland Maritime Radio broadcast a warning to other ships and informed Kawau Coastguard and the Westpac Rescue service.
- 1.1.17 As the *Wainui* approached the area of the collision, shouts for help were heard and a group of 3 people clinging to a float were picked out in the light of the searchlight. The master manoeuvred the tug close to the survivors and the crew helped them board the tug.
- 1.1.18 The survivors told the master that there was a fourth member of the yacht crew still missing. While the master continued to search the area, the survivors were taken below to have showers and get into dry clothing. During the search, the master was contacted on VHF by the Police search and rescue centre. The reception was poor and further communication was by mobile telephone.
- 1.1.19 The Royal New Zealand Navy ship *Resolution* joined the search area to use its multi-beam sonar scanning equipment to try and locate the sunken yacht.
- 1.1.20 The Kawau Coastguard rescue boat arrived on the scene and joined the search. Very little debris was sighted and the missing man was not found. After searching for about an hour and a half, the survivors were transferred to the Coastguard boat and taken to Sandspit.
- 1.1.21 At about 0700 the Coastguard and Police search and rescue stood down the *Wainui*, and the master took the tow back to an anchorage off Rangitoto Island, arriving at 1130.

1.2 History of the trip, the *Toolka-T*

- 1.2.1 The *Toolka-T* left Opuia bound for Gulf Harbour at about 1100 on Thursday 15 November 2001, having arrived from Vanuatu the day before and cleared Customs and Immigration formalities. The yacht was based in Gulf Harbour and crewed by the owner, his partner and 2 friends who were returning home after spending about 4 months cruising in the Pacific.

- 1.2.2 The trip down the coast was uneventful and because of the light winds was made under sail with the assistance of the engine, which gave a speed of about 5 to 6 knots. The owner acted as skipper and the 3 others as crew without any particular designations.
- 1.2.3 During the day, all the crew were up and informally took turns taking the con. At 2000 watches were set with the 2 friends taking the first two 2-hour watches, the owner on the midnight to 0200 and the owner's partner on the 0200 to 0400.
- 1.2.4 The first of the 2 friends stood the 2000 to 2200 watch alone, taking the yacht from off Tutukaka Head to a position to the north of Whangarei entrance. He then remained on deck with his friend as she stood the 2200 to midnight watch, both going below after they handed over to the owner just before the intended alter course position at Sail Rock.
- 1.2.5 The owner stood the next watch until 0200, by which time the yacht was about 8 miles to the north of Cape Rodney. The owner handed the watch over to his partner (hereafter referred to as "the watchkeeper"), at which time the yacht was in autopilot on a course of about 151° magnetic (170° true), and heading towards the next waypoint off Takatu Point.
- 1.2.6 During her watch, the watchkeeper passed or saw several other vessels, including some fishing vessels. As the end of her watch approached, she decided not to call her relief, the first of the 2 friends, knowing that he had stayed up until midnight while his friend was on watch.
- 1.2.7 At about 0425 the watchkeeper sighted a "brightly lit" vessel right ahead of the yacht. She observed the vessel on radar at about 4 miles distant, but she did not plot it on the radar or take visual bearings. It appeared to her to be closing on a more or less reciprocal course and showing bright white lights and a green starboard sidelight. From her observations, the watchkeeper thought the other vessel was a fishing vessel.
- 1.2.8 In order to arrange a port-to-port passing, the watchkeeper initially altered course by 5° to starboard, expecting that the other vessel would also alter to starboard.
- 1.2.9 It soon became apparent to the watchkeeper that the vessels were still closing and she had not detected any alteration of course by the other vessel. Still wishing to pass port-to-port, even though the yacht was "fairly well to starboard of him", she altered the course by a further 20° to starboard. At this time she estimated that the vessels were about 2 nm apart and closing.
- 1.2.10 The course alterations did not have the desired effect in that the other vessel continued to show a green sidelight and still appeared about dead ahead. The watchkeeper decided to give up the attempt to cross to the port side of the other vessel, and altered back to port, bringing the yacht to a heading more or less reciprocal to the other vessel, to pass starboard-to-starboard with it. At this time she estimated that the vessels were about half a mile apart and still closing.
- 1.2.11 A few minutes later, the yacht passed close down the starboard side of the other vessel, which was the tug *Wainui*. At this stage, the watchkeeper was concentrating on the tug and did not see any other lights. As soon as the tug passed she altered the course back to her original heading of 151° magnetic.
- 1.2.12 Within a very short time the watchkeeper became aware of the towline connecting the *Wainui* and *Sea-Tow 11* in front of the yacht but there was no chance to avoid hitting it. She called a warning to her companions and tried turning the wheel to port but the yacht's keel fouled the towline. By this time she could see the green and red sidelights of the barge, and its bow bearing down on the yacht.
- 1.2.13 The first of the 2 friends arrived in the cockpit of the yacht from below. He disengaged the autopilot and also tried to turn the helm to port but collision was imminent and inevitable.

- 1.2.14 At about 0445, the *Toolka-T* collided with the sloping flat face of the bow of the *Sea-Tow II* and was dragged a short way wedged under the bow, before being dragged underneath the barge.
- 1.2.15 The watchkeeper and the first of the friends were thrown around in the cockpit and eventually managed to free themselves as the yacht came free of the *Sea-Tow II*. The second of the friends had been in the companionway of the yacht and she too was able to get clear as the barge passed.
- 1.2.16 The three survivors grouped together and clung to a floating fender. They saw the *Wainui* return to the area of the collision and called for help each time the searchlight passed near to them. During the time they were in the water, they continually called out for the owner but never got any response.
- 1.2.17 The survivors were taken aboard the *Wainui* and were given warm and dry clothing after showering. The ensuing search of the area failed to find the owner or any significant debris from the *Toolka-T*.

1.3 The wreck

- 1.3.1 At 0810, the navy vessel *Resolution* located the wreck of the *Toolka-T*. The wreck was lying in 49 m of water in position 36° 21.347' South and 174° 53.262' East.
- 1.3.2 At 1550, the Maritime Operations Centre was advised that divers from the navy vessel *Kahu* had located and recovered the body of the owner from the wreck.

1.4 Weather information

- 1.4.1 At the time of the accident, the weather was reported by the master of the *Wainui* to have been a light 5 to 10 knot westerly wind, slight seas and very good visibility.
- 1.4.2 The crew of the *Toolka-T* later said that the wind was between south-west and south-south-west and the weather generally fine.

1.5 Post-accident inspection

- 1.5.1 The barge *Sea-Tow II* suffered only minimal damage during the collision. There were witness marks on the bow of the barge showing where the *Toolka-T* had hit and been dragged under the barge. The wire bridle contained traces of metal indicating where the rigging of the yacht had struck. The towing pennant was marked with blue/green paint for about 40 m of its length (see Figure 2).
- 1.5.2 The tug *Wainui* suffered no damage during the collision. The towline, which was wound onto a towing winch, was marked with green/blue paint (see Figure 3). The paint on the towline and the barge pennant was said to match the antifouling paint of the *Toolka-T*.
- 1.5.3 The towline was attached to the bridle of another of the company's barges and stretched out. The towline was marked with the paint over a length of 53 m from where it attached to the towing pennant of the barge.

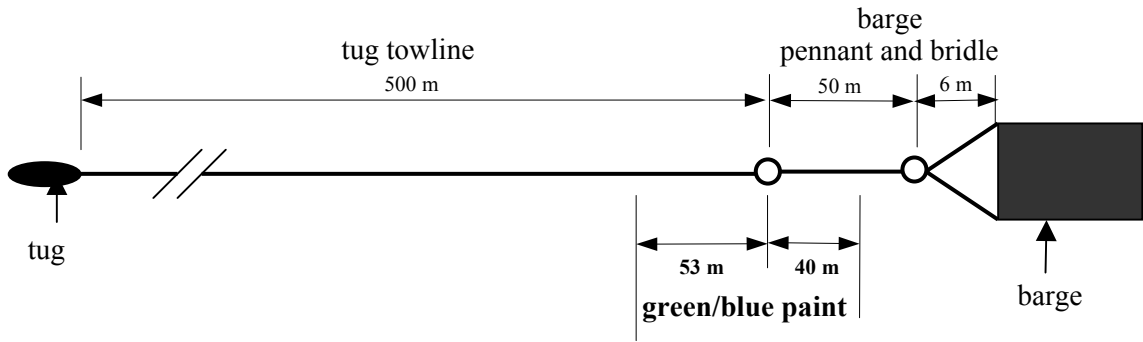


Figure 2
diagram showing extent of paint marking on tow (not to scale)

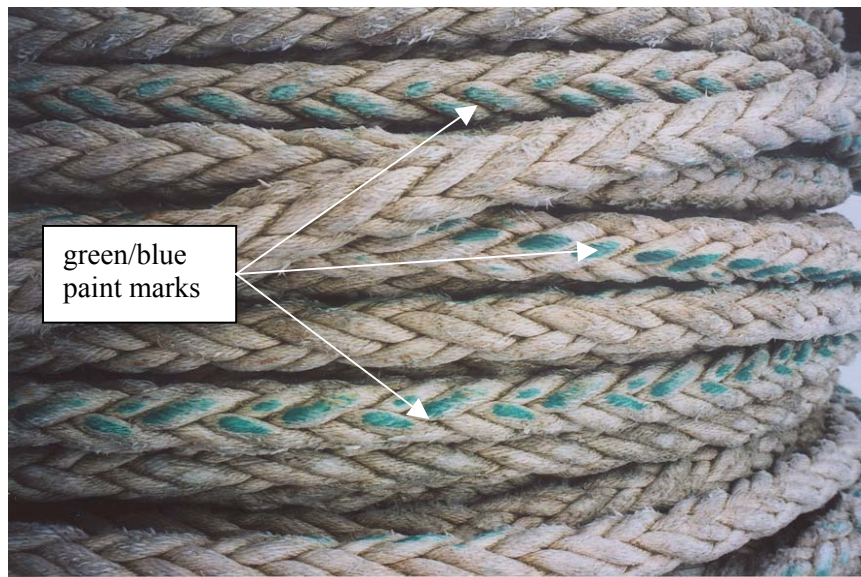


Figure 3
photograph of the paint marks on towline

1.5.4 The antifouling paint left on the towline indicated that the *Toolka-T* fouled the line about 109 m ahead of the barge, and that the line came free of the hull only about 16 m ahead of the barge (see Figure 4).

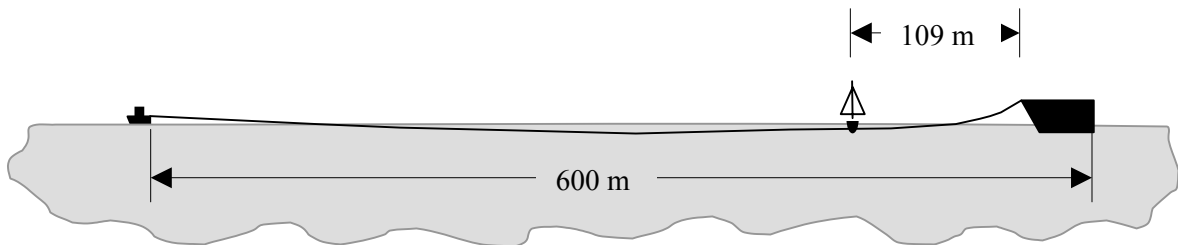


Figure 4
approximate position where the *Toolka-T* fouled the towline

1.5.5 The wreck of the *Toolka-T* was not recovered.

1.6 Personnel information

- 1.6.1 The master of the *Wainui* had been at sea for about 31 years, all of which was worked on tugs. He held a Master Small Home Trade Certificate gained in 1979 and a Certificate of Local Knowledge for a Master of a Tug Boat Under 100 Gross Tonnes, Operating Within the Auckland Pilotage District, also gained in 1979.
- 1.6.2 The master of the *Wainui* had worked for the operator since 1974. He was the regular master of another company tug, the *Barbara W*, but had made about 70 trips on the *Wainui* as relief master.
- 1.6.3 The first deckhand of the *Wainui* had worked on tugs on the New Zealand coast for about 30 years. He had regularly been deckhand on the *Wainui* for about 5 years, making about 70 trips each year. He also relieved on another of the company tugs, making about 30 trips each year on that vessel. He did not hold any maritime qualification.
- 1.6.4 The second deckhand of the *Wainui* had first gone to sea in 1987 and spent 5 years with another tug company. He then went with the Union Steamship Company as a seaman for another 5 years, during which time he stated that he gained an Australian Marine Operators Certificate. This certificate had no equivalent in the New Zealand licensing structure. After then spending several years ashore, he returned to sea with the operator about 3 months before the accident. He had been a part of the regular crew of the *Wainui* since joining the company.
- 1.6.5 The skipper, and owner, of the *Toolka-T* was said to be “an experienced sailor”. He was reported to have been sailing in Australian and New Zealand waters for at least 15 years and undertook annual trips around the South Pacific islands. It was not clear whether he held any maritime qualifications, but he was the most experienced person on board.
- 1.6.6 The watchkeeper of the *Toolka-T* started sailing in about 1964 and sailed New Zealand coastal waters with her husband on their yacht for about 17 years. After the death of her husband she sold their boat but continued sailing as crew for other people, during which time she started offshore sailing. Since 1992 she was partner to the owner of the *Toolka-T* and together they spent the winter months each year cruising around the South Pacific islands, and the summers around New Zealand. The watchkeeper had no maritime qualification.
- 1.6.7 The watchkeeper normally wore spectacles to correct her short-sightedness. However, she had broken them a few weeks before the accident and consequently was not wearing them at the time. Although she was able to see the navigation lights of the *Wainui*, she could not distinguish between them and they “merged into one another”.
- 1.6.8 The 2 friends who made up the crew of the *Toolka-T* each had many years sailing experience; one in particular had sailed regularly on the *Toolka-T* for about 8 years. Neither had any maritime qualifications.

1.7 Vessel particulars

Wainui

- 1.7.1 The *Wainui* was a 16.48 m tug of 45.62 gross tonnes powered by 2 Gardner engines producing a total of 343 kW. Electrical power was supplied by a shaft generator which also charged batteries. The tug was owned and operated by McCallum Brothers Limited of Auckland and was used as part of a sand excavation operation. The tug towed an empty self-loading barge to the beaches north of Cape Rodney and returned with the full barge to Auckland.
- 1.7.2 The tug was under safe ship management with M&I Safe Ship Management and its certificate was issued on 29 September 2000 and valid to 20 July 2004, subject to periodic inspections. The vessel was restricted to the Northland, Auckland, Barrier and Bay of Plenty Inshore Limits.

1.7.3 The operator had in place a safe ship management manual, comprehensively setting out the company procedures. Staff were requested to sign the manual to acknowledge that they were conversant with its contents or would seek advice if unsure. Although the master and second deckhand had not signed the latest version of the manual for the *Wainui*, they had signed the manual the tug, *Barbara W*. The 2 manuals were almost identical, differing only in the vessel details.

1.7.4 The towline on the *Wainui* was 500 m long and made up of various length sections to be used in certain conditions. Each length had soft eyes spliced at the end and through the spliced eye of the next length. The tug's towline was shackled to the towing pennant permanently rigged on the barge, and the other end put on the towing hook at whatever length was required. The towline was made of 56 mm multiplait rope (see Figure 5).

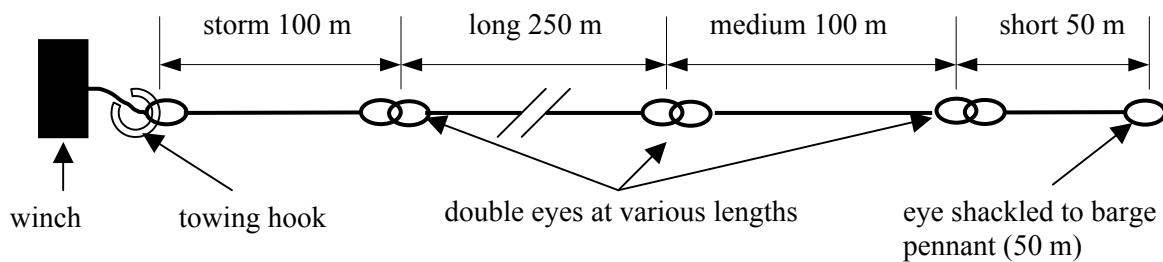


Figure 5
diagram showing make-up of towline on the *Wainui* (not to scale)

1.7.5 The towing hook was not fitted with a quick release, nor was it required to be. An axe was available to sever the line if, in the event of an emergency, the tow had to be released when weight was on the line.

1.7.6 On the morning of the accident the *Wainui* was towing the *Sea-Tow 11* using the full length of the towing line, so the total distance between the stern of the tug and the stern of the barge was almost 600 m, being the 500 m towline, 50 m barge pennant, 6 m barge bridle and the 40.7 m length of the barge itself.

1.7.7 When towing a barge with a long towline, the catenary² of the towline varies with the length and type of rope and the amount of power applied to the tow. The master estimated that with the tow as set on the night of the accident, the towline would have been submerged by about a metre at its mid length.

1.7.8 The *Wainui* was fitted with navigation lights that could be configured to show the appropriate lights depending on the length of tow, or if the tug was running without a tow. The lights were tested after the accident and found to be working correctly.

1.7.9 The tug's crew later said that the navigation lights were working on the night of the accident. The lights were seen by the watchkeeper on the *Toolka-T*, and also reported to have been working by the crew of another commercial vessel, the *Coastal Carrier*, that had passed the *Wainui* at about 0330.

1.7.10 There was a spotlight on the bridge of the *Wainui* that could be used to illuminate the barge, and floodlights on the aft deck that could be used to light the towline.

1.7.11 The *Wainui* was not fitted with an autopilot and consequently had to be hand-steered at all times.

² a curve formed by a towline suspended between two points

- 1.7.12 The *Wainui* was fitted with a GPS but it had not been running on the night of the accident because the unit was a recent replacement for a stolen unit, and the new one had not yet been interfaced with the radar and no waypoints had been entered into it. The radar was working on the night of the accident.

Sea-Tow 11

- 1.7.13 The *Sea-Tow 11* was a 40.7 m unmanned barge of 547 gross tonnes. The barge had no propulsion machinery but was fitted with self-loading equipment. The barge held a Safety Certificate to operate within coastal limits.
- 1.7.14 The hull of the barge was mostly painted black but had the large words SEA – TOW painted in yellow on either side.
- 1.7.15 The navigation lights fitted to the *Sea-Tow 11* consisted of sidelights and a sternlight for use when being towed, and anchor lights. The lights were powered by batteries charged by solar panels and when switched to “auto”, as they were on the night of the accident, were operated by a photo-electric switch arrangement.
- 1.7.16 Although not as bright as the lights on the *Wainui*, the barge’s navigation lights were reportedly working on the night of the accident. The tug’s crew observed the starboard light extinguished by the passage of the sail in front of it, the yacht’s crew saw the lights just before the collision. The crew of another vessel that had passed the *Wainui* earlier said that they had seen the lights of the barge as well as those of the tug.

Toolka-T

- 1.7.17 The *Toolka-T* was an 11.28 m sloop of Joubert design. It was 13.0 gross tonnes, constructed of glass reinforced plastic and built in Australia in 1979. In addition to its sails, it had a 33 kW diesel engine. The yacht was registered in Australia, its home port being Adelaide.
- 1.7.18 The *Toolka-T* had a deep cockpit from which it was steered. There was an aft cabin but this was not used when sailing. Forward of the cockpit and accessed by a companionway was the saloon area which doubled as a sleeping area. It was in this area that the off-duty crew were sleeping at the time of the accident.
- 1.7.19 The yacht was fitted with radar, GPS and an autopilot, all of which were in use on the night of the accident. The yacht was fitted with a radar reflector.
- 1.7.20 The navigation lights on the *Toolka-T* consisted of the tricolour lantern at the masthead for use when sailing. This lantern was in use on the night of the accident. Additionally, for use when motoring, there were pulpit sidelights and a masthead light halfway up the mast and a sternlight, but the watchkeeper later stated that these were not in use at the time of the accident.

1.8 Legislation

- 1.8.1 New Zealand Maritime Rules Part 22, Collision Prevention, lays out the requirements for the navigation lights that each particular type of vessel must carry, the need to identify the presence of other vessels and the conduct between those vessels. Those rules pertinent to this accident are listed below.

Vessel recognition

1.8.2 Rule 22.24(1) (a) to (d), Towing and Pushing state:

- (1) When towing, a power-driven vessel must exhibit –
 - (a) instead of either of the masthead lights prescribed in rule 22.23(1)(a) and (b), two masthead lights in a vertical line, EXCEPT that when the length of tow exceeds 200 metres measured from the stern of the towing vessel to the after end of the tow, 3 such lights in a vertical line must be carried; and
 - (b) sidelights; and
 - (c) a sternlight; and
 - (d) a towing light in a vertical line above the sternlight

1.8.3 Rule 22.25 (1), Sailing Vessels Underway and Vessels Under Oars states:

- (1) A sailing vessel underway must exhibit:
 - (a) sidelights; and
 - (b) a sternlight.

A sailing vessel of less than 20 metres in length may combine the sidelights and sternlight into one tricoloured lantern carried at or near the top of the mast where it can best be seen.

1.8.4 Rule 22.25 (4), Sailing Vessels Underway and Vessels Under Oars states:

- (4) A vessel proceeding under sail when also being propelled by machinery must exhibit a black conical shape, apex downwards, forward where it can best be seen. At night it must exhibit the lights for a power-driven vessel prescribed in rule 22.23 instead of those prescribed in rule 22.25.

1.8.5 Rule 22.23 (1), Power-Driven Vessels Underway states:

- Subject to 22.23 (3), a power-driven vessel underway must exhibit –
- (a) a masthead light forward; and
 - (b) a second masthead light abaft of and higher than the forward one EXCEPT that a vessel of less than 50 metres in length is not obliged to exhibit such light but may do so; and
 - (c) sidelights; and
 - (d) a sternlight.

1.8.6 Rule 22.23 (3) (a) (1), Power-Driven Vessels Underway states:

- (a) Instead of the lights prescribed in rule 22.23 (1) –
 - (1) a power-driven vessel of less than 12 metres in length may exhibit an all round white light and sidelights.

1.8.7 Rule 22.21 Definitions Relating to Section 2 (lights and shapes) states:

“Masthead light” means a white light placed over the fore and aft centreline of the vessel showing an unbroken light over an arc of the horizon of 225 degrees and fixed to show the light from right ahead to 22.5 degrees (2 points) abaft the beam on both sides of the vessel:

“Sidelights” means a green light on the starboard side and a red light on the port side each showing an unbroken light over an arc of the horizon of 112.5 degrees and fixed to show the light from right ahead to 22.5 degrees (2 points) abaft the beam on its respective side;

“Sternlight” means a white light placed as close as practicable to the stern showing an unbroken light over an arc of the horizon of 135 degrees and so fixed to show the light from right aft for 67.5 degrees (6 points) on both sides of the vessel.

Collision avoidance

1.8.8 Rule 22.5, Look-out, states:

Every vessel must at all times maintain a proper look-out by sight and hearing as well as by all means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision.

1.8.9 Rule 22.7, Risk of Collision, states:

- (1) Every vessel must use all available means appropriate to the prevailing circumstances to determine if risk of collision exists. If there is any doubt, such risk shall be deemed to exist.
- (2) Proper use must be made of radar equipment if fitted and operational, including long range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observation of detected objects.
- (3) Assumptions must not be made on the basis of scanty information, especially scanty radar information.
- (4) In determining if the risk of collision exists, the following considerations must be among those taken into account:
 - (a) such risk may sometimes exist if the compass bearing of an approaching vessel does not appreciably change;
 - (b) such risk may sometimes exist even when an appreciable bearing change is evident, particularly when approaching a very large vessel or a tow or when approaching a vessel at close range.

1.8.10 Rule 22.12 (3) Sailing Vessels, states:

- (3) Sailing vessels when operating propelling machinery must obey the rules for a power-driven vessel.

1.8.11 Rule 22.14, Head-on Situation, states:

- (1) When two power-driven vessels are meeting on reciprocal or nearly reciprocal courses so as to involve risk of collision, each must alter its course to starboard so that each passes on the port side of the other.
- (2) Such a situation will be considered to exist when a vessel sees the other ahead or nearly ahead and –
 - (a) by night, the masthead lights of the other vessel are in line or nearly in line and/or both sidelights are visible.

1.8.12 Rule 22.15, Crossing Situations, states:

When two power driven vessels are crossing so as to involve risk of collision, the vessel which has the other on her own starboard side must keep out of the way and must, if the circumstances of the case admit, avoid crossing ahead of the other vessel.

Crewing

1.8.13 New Zealand Maritime Rules Part 31B, Crewing and Watchkeeping, Offshore, Coastal and Restricted (Non-Fishing Vessels) lays down the requirements for minimum manning and the required certificates for crew of such vessels.

1.8.14 Rule 31B.4(2)(a) states in part:

Rule 31B does not apply to any pleasure craft.

1.8.15 Rule 31B.14 sets out the minimum crew and required qualifications for vessels in the Inshore area. For a non-passenger vessel of more than 6 m but less than 20 m the minimum qualifications required are:

Master – LLO (Local Launch Operator)

Engineer – in accordance with the flowchart and may be the master.

The flow chart indicated that for the power of the propulsion plant of the *Wainui*, no engineer was required.

1.8.16 Rule 31B.18 Watchkeeping Standards stated:

The owner and the master of the vessel must establish watchkeeping procedures for (a) navigational watchkeeping and (b) engine-room watchkeeping.

Company instructions

1.8.17 Under Rule 31B the *Wainui* was required to carry a master with at least a Local Launch Operator certificate and 2 other crew to enable watchkeeping. The Company required that, for the *Wainui*, the minimum complement should be 5 and that the master shall hold at least a Coastal Master certificate, and an engineer with at least an Engineer Local Ship certificate shall be carried.

1.8.18 In accordance with Rule 31B.18, the operator of the *Wainui* had, as part of its comprehensive safe ship management system, Standing Orders for Navigational Watchkeeping, which included:

- The watchkeeper is responsible for the safe navigation of the vessel at all times with particular care to avoid collision or stranding in accordance with the regulations. A copy of the “Regulations for the Avoidance of Collision at Sea” are to be kept in the wheelhouse of tugs at all times.
- The master should be summoned immediately if the watchkeeper has any doubts regarding other vessel in close proximity, the position of the tug and barge, deteriorating weather conditions, relative navigation warnings and shall include anything that affects the safe operation of the vessel. If the master is to be called, it shall be with sufficient warning to allow corrective action to be taken. A Captain’s alarm is situated in the wheelhouse to allow the watchkeeper to call for assistance without leaving his station.
- The bridge/wheelhouse of the vessel shall not be left unattended at any time.
- Any vessel approaching with 2 nm by day and 4 nm at night should be contacted by radio and made aware of the tow and the limitations of the tug and barge if the watchkeeper is unclear of the intentions of the other vessel. If radio contact is not possible all other means shall be made to alert the other vessel including foghorn (5 sharp rapid blasts), spotlight and topline floodlights.

1.9 Pleasure Boat Safety Advisory Group Report

1.9.1 The Maritime Safety Authority (MSA) set up an advisory group to explore the extent of the safety problem that existed in the private boating community in New Zealand. The Group's final report was published in December 1999.

1.9.1 The Group made several recommendations, among which were some relating to education and public awareness, which were:

increased levels of targeted recreational boating safety initiatives and education programmes, with a particular focus on issues identified as important in the Group's analysis (including the use of PDFs)

that the impact of these education initiatives be measured against agreed targets (including but not limited to reductions in fatality rates and increases in uptake of structured courses) over a five year period

that the introduction of a form of compulsory boating safety education be reconsidered

that the Canadian system of compulsory boating safety education, recently introduced, be monitored for success in Canada and possible future implementation in New Zealand.

1.9.3 With regard to boat identification and registration the Group recommended:

that options for boat identification or boat registration not be implemented on a national basis at this time, unless further safety-related information comes to light.

1.10 Overseas legislation

1.10.1 As mentioned in the recommendations above, the Canadian authorities introduced legislation requiring compulsory education for the private boating community. The Australian and various European authorities have also introduced similar legislation to varying degrees. With regard to identification and registration of boats, the authorities have set a variety of standards and requirements.

2 Analysis

Vessel recognition

2.1 The *Wainui* was showing the appropriate navigation lights for the length of the tow, and the *Sea-Tow II* was showing the correct lights as the towed vessel. An observer with knowledge of the rules should have been able to identify the configuration as being a tug and tow with a length in excess of 200 m.

2.2 The *Toolka-T* was showing the masthead tricoloured lantern lights to indicate that it was a sailing vessel. An observer seeing the vessel from ahead would be presented with a view of one or both of the sidelights and, with a knowledge of the rules, should have been able to identify it as a sailing vessel and know its general direction.

2.3 The *Toolka-T* was, however, being propelled by both sails and its engine and, under the rules should be regarded as a power-driven vessel and should have been identified as such. The watchkeeper of the *Toolka-T* said that the neither the yacht's masthead light halfway up the mast or the pulpit sidelights were on. However, both deckhands on the *Wainui* recalled seeing a white light in addition to a green light. The conflicting reports confuse the analysis of the accident but are probably the result of memories being affected by the traumatic events.

- 2.4 If, in addition to the tricolour lantern, the yacht's steaming light was switched on, it would have been below the level of the lantern showing a sidelight and would have been an unusual configuration in that sidelights should be below a masthead light.

Risk of collision

- 2.5 When a bridge watchkeeper sights another vessel, there are several tasks that must be completed. Firstly it must be ascertained whether the vessels will pass clear of each other or if they will be so close that there is a risk of collision. This is done by taking a series of bearings of the other vessel. If the bearing is not changing appreciably then a risk of collision is deemed to exist. Ideally the bearings should be taken by compass, but the aspect relative to some fixed point on the vessel may be enough, provided the vessel's course remains constant.
- 2.6 On a tug with a long tow, a watchkeeper must keep in mind that while the bearing of another vessel may be changing with respect to the tug itself, the same may not necessarily be true for the towed vessel some distance behind it. In such a case, risk of collision may not exist between the tug and the other vessel, but could exist between the tow and the other vessel.
- 2.7 Secondly, the type of vessel must be identified. Under the rules to prevent collisions, types of vessel are identified by different configurations of lights at night and shapes during the day. The types of vessels may dictate which has to give way to the other.
- 2.8 The rules allow tugs that may be severely restricted in their ability to manoeuvre, to show additional lights to identify that fact and alert other vessels to keep clear. The *Wainui* was not severely restricted and was not showing such lights. Therefore, the tug and tow was obliged to act as any other power-driven vessel.
- 2.9 Thirdly, the distance between the vessels has to be established and therefore the amount of time available to take any necessary corrective action.
- 2.10 The configuration of the lights of another vessel and where they are seen relative to the observing vessel may be sufficient to tell a watchkeeper whether or not a risk of collision exists.
- 2.11 Only persons who are fully conversant with and understand the rules for the prevention of collisions at sea, can make proper identification of the type of vessel, risk of collision and any necessary avoiding action.

Wainui

- 2.12 When the first deckhand sighted the *Toolka-T*, he saw a green sidelight on his own starboard side. The bearing of the light was opening so he presumed that it would pass clear. What inference he took from subsequently sighting a white light is not clear. The first deckhand was probably correct that the other vessel would pass clear of the tug but it would appear that he took no account of the length of the tow and whether there was a risk of collision with the towline or the towed barge.
- 2.13 When a close-quarter situation is developing at the time of a change of watch, it is accepted good practice for the off-going watchkeeper to remain in charge until the situation is resolved, rather than expect a new watchkeeper to quickly grasp the situation. Whether the collision would have been avoided had the first watchkeeper remained, could not be established.
- 2.14 When handing over a watch to another watchkeeper it is of paramount importance that the relieving person is fully apprised of the position of the vessel, any other vessels in the vicinity and any upcoming alterations of course. The second deckhand was given none of this information and took a little time to verify the position of the tug before seeing and assessing the other vessel. The second deckhand was concerned about the other vessel and unsure of its

type and movement. Had his concerns been realised earlier he may have had time to alert the master, or to have thought through the need to illuminate the towline and barge.

- 2.15 Neither of the deckhands established what type of vessel the *Toolka-T* was, nor could they tell with any certainty how far off it was. Both realised that it would pass the *Wainui* but at a close distance, but neither appeared to take account of the length of tow and whether or not it would pass safely behind the barge.
- 2.16 Having formed the view that the other vessel would pass clear, the first deckhand therefore did not feel the need to call the master for assistance in accordance with company procedures.
- 2.17 The second deckhand took over the watch only 5 minutes before the collision. Had he been told of the *Toolka-T* close on the starboard bow, he may have declined to take over. Having not been told of it, he was left with insufficient time to properly assess the situation that had developed.
- 2.18 Finding another vessel close on his starboard bow, and a situation that concerned him because he was unable to determine its direction, it would have been prudent of the second deckhand to have called the master, and to have illuminated the tow.
- 2.19 Had the aft floodlights been put on, the watchkeeper of the *Toolka-T* may have been alerted to the *Sea-Tow 11* in time to possibly stay clear of it.
- 2.20 Had the master been called before the *Toolka-T* crossed the towline, he would not have had sufficient time to have taken action to avoid the *Toolka-T* crossing between the tug and barge but would have been able to slow the tug which may have increased the catenary, or reduced the tension on the line sufficiently to allow the yacht to have passed over it.

Toolka-T

- 2.21 When the watchkeeper first saw the *Wainui* she was presented with the 3 vertical white masthead lights and a green light. Although the masthead lights were not clear to her, the green sidelight was. Because she saw these lights right ahead, she assumed that the vessel was on a reciprocal course. The sight of a distinct green sidelight should have indicated to her that the other vessel would continue out to her starboard side and probably pass clear. Her misinterpretation was a result of a lack of formal training in the rules, and may also have been affected by her impaired vision without spectacles.
- 2.22 The watchkeeper appears not to have observed the *Wainui* for long enough to realise that it would move out to her starboard bow. Instead she presumed she was faced with a head-on situation and altered course to starboard in the expectation that the *Wainui* would do likewise. In doing so her heading followed the *Wainui* and thus it remained right ahead.
- 2.23 The green light seen by the watchkeeper should have indicated to her that the yacht was on the starboard bow of the other vessel and that a crossing situation existed rather than a head-on situation. In the crossing situation that existed, had there been a risk of collision, then the *Wainui* would have been the vessel required to give way, with the *Toolka-T* maintaining its course and speed.
- 2.24 The watchkeeper had not realised that the *Wainui* was a tug and was therefore not looking for the lights of a barge behind it. She concentrated on the tug itself, but had she continued to keep a full lookout she might have seen the barge in time to have avoided it. However, when she did see the barge, it was too late to avoid the collision. The effort made to turn the yacht away was understandable but would have had no effect with the keel fouled on the towline. No attempt was made to stop the engine but again it would have been too late to have changed the outcome.

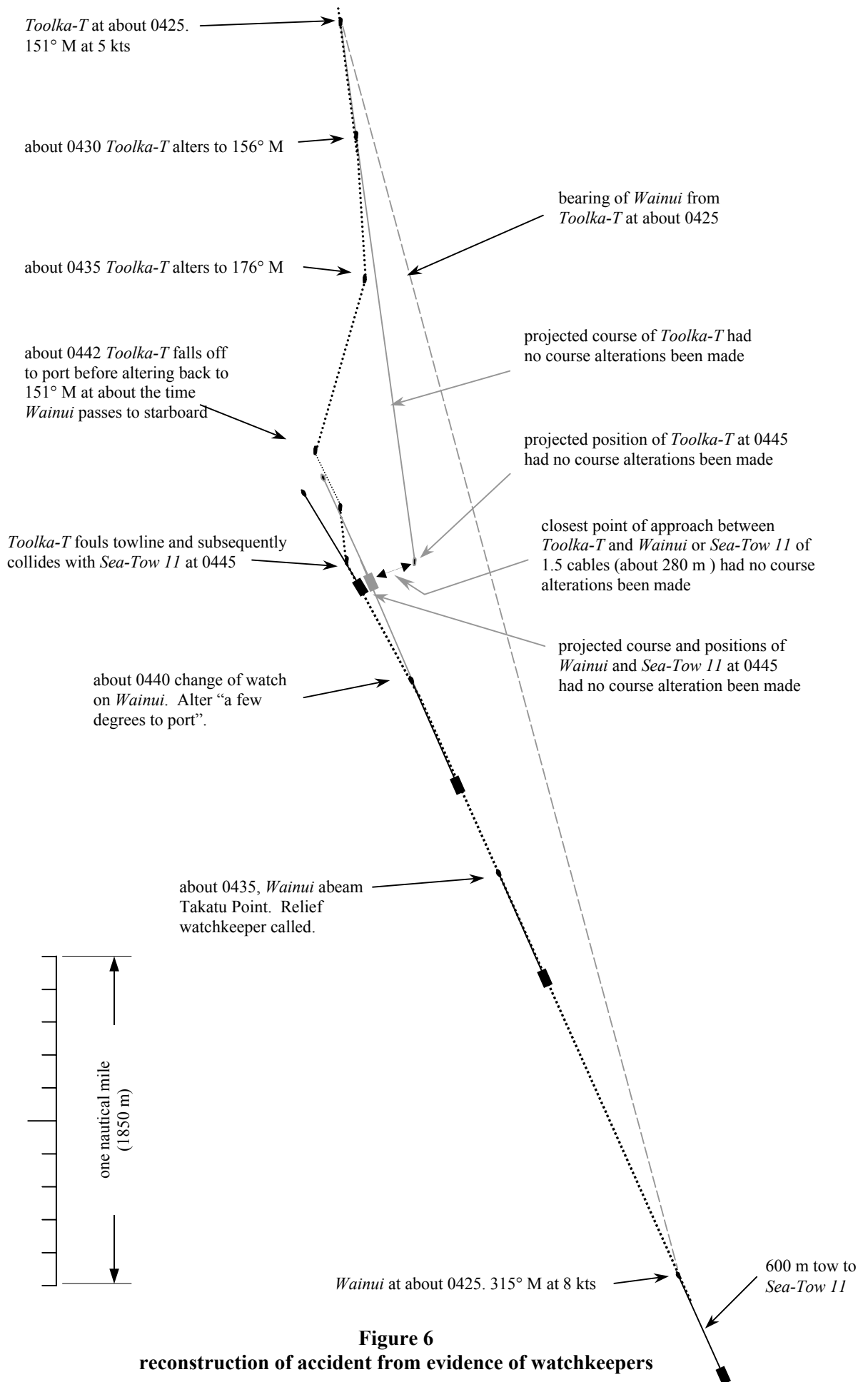


Figure 6
reconstruction of accident from evidence of watchkeepers

- 2.25 A reconstruction of the accident worked back from the accident position and using the evidence from both vessels indicated that had the watchkeeper not made any alteration of course, the *Toolka-T* would have passed the starboard side of both the *Wainui* and the *Sea-Tow 11* (see Figure 6).

Crewing arrangements

- 2.26 A single-handed watchkeeper has the responsibility for the safety of the vessel and its crew. A person keeping a watch should either be suitably qualified to do so, or have clear instructions to call for assistance from a person who is so qualified. Watch routines should be arranged so that each person has had sufficient rest and is not fatigued when on watch.
- 2.27 The *Wainui* was crewed to the level above that required by legislation, and the company procedures clearly laid down the circumstances under which the watchkeepers were to call the master for assistance. Neither of the deckhands held New Zealand maritime watchkeeping qualifications and although they were reasonably experienced did not appreciate the importance of the developing situation and so did not call the master in sufficient time for him to take avoiding action.
- 2.28 The watch routine on the *Wainui* was based around geographical locations and each watch duration was short. The deckhands should have been able to have been sufficiently rested before taking their watches, especially as the weather was good and not influencing their ability to sleep.
- 2.29 There was no legislation in place to dictate the number or qualifications of the crew on a yacht such as the *Toolka-T*. In the event it was crewed with sufficient people to adequately cover watchkeeping requirements, but none held any maritime qualification nor had they received any formal training in the regulations for collision avoidance.
- 2.30 The watchkeeper's perception that it was normal to pass other vessels port-to-port indicated a lack of appreciation of the full extent of the collision regulations. When she was concerned about the developing situation, it would have been prudent to have called the owner for assistance.
- 2.31 The watchkeeper had been due to go off duty at 0400 but elected to allow her relief some more time sleeping. While this may have been generous on her part, it did extend her own duty time and she was possibly more tired than she thought, particularly at that hour of the day, the low ebb of the body's natural circadian rhythm.
- 2.32 A person keeping a watch should be fit in all respects. The watchkeeper of the *Toolka-T* needed corrective spectacles for distance vision but they were broken and her eyesight was correspondingly impaired. Knowing this, it was not a prudent decision by the owner to include her on the watch roster.

Training

- 2.33 The actions taken by all watchkeepers in this situation indicate a degree of lack of training, which, had it been in place, might have avoided the accident. Although qualifications may not have been required, those persons keeping watch should have the benefit of at least some structured training from the qualified people on board.
- 2.34 It would have been prudent for the first deckhand on the *Wainui* to have remained on watch until the situation was resolved, but in handing over the watch, the second deckhand was not given sufficient information to have safely taken over.
- 2.35 Immediately after the collision, the second deckhand tried to reduce the speed of the *Wainui* but was unable to do so. While it may be appropriate that under normal circumstances only the

master adjusts the engine speed, watchkeepers should be able to adjust speed, which can be an effective means of avoiding collision. The second deckhand did not normally operate the throttle controls and consequently, with the immediacy required after the collision, he was not sufficiently familiar with their use to unerringly reduce speed.

- 2.36 Because there was no provision for calls to be made from the wheelhouse to any individual below except the master, the crew of the *Wainui* routinely left the wheelhouse to call their reliefs. Such absences would be very brief, but with a close quarters situation developing, it would be prudent for a watchkeeper to either call the master or delay calling a relief until the situation was resolved.
- 2.37 The watchkeeper of the *Toolka-T* had difficulty distinguishing lights, but even so had not understood either the meaning of those lights with regard to vessel type and its direction, or the required action between them if risk of collision existed.

Compulsory education and qualification

- 2.38 There was no requirement for the watchkeeping deckhands on the *Wainui* or the watchkeepers on the *Toolka-T* to have had any formal education and subsequent maritime qualifications. Had the various watchkeepers been qualified for their duties and responsibilities it is probable that the developing situation would have been properly recognised and the accident avoided.
- 2.39 The *Toolka-T* was registered in Australia and was not required to be registered in New Zealand. While the lack of registration in New Zealand did not directly affect the outcome in this accident, if there were a need for boat owners to register their vessels it may well prompt them to recognise the benefits of safety education as well.

3 Findings

Findings and safety recommendations are listed in order of development and not in order of priority.

- 3.1 The *Toolka-T* collided with the bow of *Sea-Tow II* after its keel fouled the towline between the *Wainui* and the *Sea-Tow II*.
- 3.2 The deckhands of the *Wainui* observed that the bearing of the *Toolka-T* was opening and deduced that it would pass clear of the tug, but appeared not to consider whether it would pass clear of the tow.
- 3.3 The watchkeeper of the *Toolka-T* did not identify the *Wainui* as a towing vessel and subsequently did not search for a towed vessel.
- 3.4 The watchkeeper of the *Toolka-T* did not correctly identify the relationship between the yacht and the *Wainui* and presumed a head-on situation existed.
- 3.5 The actions taken by the watchkeeper of the *Toolka-T* were consistent with a head-on situation, but in the crossing situation that existed they changed a close quarters situation to a risk of collision.
- 3.6 Had neither vessel taken any action, the *Toolka-T* would probably have passed clear of both the *Wainui* and the *Sea-Tow II*.
- 3.7 The deckhands on the *Wainui* held no New Zealand maritime watchkeeping qualifications and their training in vessel recognition and collision avoidance was not sufficient to equip them to correctly assess the developing situation.

- 3.8 The watchkeeper of the *Toolka-T* held no maritime qualification and had no formal training in vessel recognition and collision avoidance. Her knowledge was gained over time observing others, but was not sufficient to equip her to correctly identify other vessels or to take any corrective action to avert the risk of collision.
- 3.9 Neither of the deckhands of the *Wainui* or the watchkeeper of the *Toolka-T* took any action to alert the other vessel of their concerns. The opportunity to use the VHF radio, sound the whistle or put on additional lights was not taken. Such actions may have avoided the accident.
- 3.10 The *Wainui* was crewed to a level above that required by legislation. Explicit in the company instructions was that any unqualified watchkeepers should call for the assistance of the qualified master when faced with uncertain situations.
- 3.11 The deckhands of the *Wainui* appeared not to be fully conversant with the company procedures as set out in the safe ship management manual.
- 3.12 The *Toolka-T* was not subject to legislative crewing requirements, but the number of persons on board was sufficient to adequately cover watchkeeping duties.
- 3.13 Faced with a situation of concern, the watchkeepers of neither vessel called for the assistance of their respective persons in command.
- 3.14 The watchkeeper of the *Toolka-T* had impaired distance vision and no corrective spectacles available. Under these circumstances it was not appropriate that she keep a navigational watch.
- 3.15 The circumstances of this accident highlight the lack of a thorough knowledge of good watchkeeping practices and, in particular, the rules for the prevention of collision, that exists on some commercial and pleasure vessels, and indicates the need to critically review the legislative requirements for navigational watchkeepers in both marine fields.

4 Safety Actions

- 4.1 Subsequent to the accident, McCallum Brothers Limited implemented changes to its procedures and training regime.
- 4.2 The company employed the services of a former senior tutor at the New Zealand Maritime School to conduct a watchkeeping course. The course was compulsory for all employees who stand navigational watches aboard the company vessels. Company masters also attended the course in order that they were familiar with the extent of training given to watchkeepers.
- 4.3 The company established mandatory Crew Training Records. No person may stand a navigational watch on any of the company vessels until the record has been signed off by that person and verified by the vessel's master. The subjects covered in this crew training are as follows:
- completion of watchkeeping course
 - knowledge of collision regulations
 - operation of VHF radio
 - knowledge of standing orders
 - operation of engine throttle and gear controls
 - operation of lights and foghorn
 - ability to take compass bearings
 - ability to operate radar
 - understanding of SSM manual
 - general familiarisation with vessel

- health and safety (familiarisation with vessel hazards and safety equipment)
- man overboard procedure
- fire fighting procedure
- abandon ship procedure
- refuelling procedure
- collision procedure
- grounding procedure
- pollution control procedure.

4.4 The company recognised that it and its masters had unfortunately become over reliant on the signed “Acknowledgement of Safe Ship Management System by Seafarers” contained in the safety manual. The more comprehensive training records have replaced the acknowledgement system, which has been removed from the manual.

4.5 An additional clause was inserted in the Standing Orders for Navigational Watchkeeping, which were posted on the bridges of company vessels and contained in the safety manuals. The new clause reiterated the dangers of developing close-quarters situations and stated:

If any vessel approaches with 1 nm of the tug and barge, the Watchkeeper must be ready to follow the above instructions (call-up on VHF radio channels 16, 6 or 8, illuminate tow with floodlights, shine spotlight on other vessel, call Master etc.) as it can not be assumed the other vessel will be competently manned.

4.6 The operations manager stated, in part, that:

The Company is endeavouring to employ seafarers with recognised watchkeeping certificates. However, this will take some time to implement fully as the Company would be reluctant to jeopardise the employment of long-serving seafarers who may have academic difficulties gaining such qualifications. The Company would envisage it most appropriate that an approved qualification appropriate for safe navigational watchkeeping would be one which would be attainable by seafarers who may not have the educational confidence to attain currently recognised command certificates.

4.7 In view of the safety actions taken by McCallum Brothers Limited subsequent to this accident, no safety recommendations have been made to it.

4.8 Since the accident, the watchkeeper of the *Toolka-T* has completed a course and gained a Boatmasters certificate.

5 Safety Recommendations

5.2 On 14 February 2003 the Commission recommended to the Director of Maritime Safety that he:

5.2.1 in line with the recommendations made by the Pleasure Boat Safety Advisory Group in 1999, continue to monitor for the five-year period to December 2004, the impact of education initiatives introduced in New Zealand against set safety targets. Further, that the systems of compulsory boating safety education in the Canadian and other jurisdictions, continue to be monitored for success through the same period, with a view to implementation of such a system in New Zealand. (057/02)

5.3 On 14 February 2003 the Commission recommended to the Director of Maritime Safety that he:

5.3.1 critically review the need to ensure that all bridge watchkeepers on New Zealand registered commercial vessels are appropriately qualified. (059/02)

5.4 On 24 February 2003 the Director of Maritime Safety replied that:

The Maritime Safety Authority accepts both recommendations.

Recommendation 057/02 is a continuous action in support of other initiatives now in place to address accidents in the recreational sector.

Recommendation 059/02 is an item of scheduled work planned for commencement in mid 2003

Approved for publication 29 January 2003

Hon. W P Jeffries
Chief Commissioner



**Recent Marine Occurrence Reports published by
the Transport Accident Investigation Commission
(most recent at top of list)**

- 02-204** coastal cargo ship *Kent*, collision and flooding, Wellington Harbour, 14 July 2002
- 02-203** tug *Purau* grounding, Lyttleton Harbour, 1 March 2002
- 01-214** coastal cargo ship *Kent* and passenger freight ferry *Arahura*, close-quarters incident, Tory Channel entrance, 14 September 2001
- 01-213** commercial jet boat *Shotover Jet 21*, engine failure and collision with rock face, Shotover River, Queenstown, 31 August 2001
- 01-212** fishing vessel *Hans*, sinking, Tory Channel, 19 August 2001
- 01-211** passenger ferry *Aratere*, lifeboat incident, Wellington, 6 August 2001
- 01-210** coastal cargo ship *Spirit of Enterprise*, grounding, Manukau Harbour, 28 July 2001
- 01-208** passenger ferry *Arahura*, machinery space flooding, Cook Strait, 7 June 2001
- 01-207** passenger charter vessel, *Osprey*, swamping and manoverboard, Uawa River bar, Tolaga Bay, 14 May 2001
- 01-206** liquefied petroleum gas (LPG) carrier, *Boral Gas*, grounding, Papakura Channel, Manukau Harbour, 15 April 2001
- 01-205** coastal cargo ship *Spirit of Enterprise*, sheer and contact with channel side, Port Otago, 15 March 2001
- 01-204** tug *Nautilus III*, capsize and sinking, Auckland Harbour, 9 March 2001
- 01-203** container vessel *Nicolai Maersk*, fatality during lifeboat drill, Auckland, 13 February 2001
- 01-202** commercial jet boat *Shotover 6*, engine failure and collision with river bank, Shotover River, Queenstown, 12 February 2001
- 01-201** commercial jet boat *Huka Jet 3*, rock strike and uncontrolled departure from river, Lake Aratiatia, Waikato River, Taupo, 25 January 2001
- 00-209** fishing charter vessel *La Nina*, grounding and foundering, Rakitu Island, 17 November 2000

Transport Accident Investigation Commission
P O Box 10-323, Wellington, New Zealand
Phone: +64-4-473 3112 Fax: +64-4-499 1510
E-mail: reports@taic.org.nz Website: www.taic.org.nz

Price \$24.00

ISSN 1173-5597