



Report 97-202/203

Restricted-Limit Passenger Ferry *Te Waka o Kapanga*

groundings

Waiheke Island and Coromandel Harbour, Hauraki Gulf

1 February and 29 June 1997

Abstract

On Saturday, 1 February 1997, at about 1030, the restricted-limit passenger ferry *Te Waka o Kapanga*, while en route from Waiheke Island to Rotoroa Island, struck rocks off the point between Little and Sandy Bays on Waiheke Island. None of the 53 passengers and four crew was injured but damage to the two rudders and propulsion systems was substantial.

On Sunday, 29 June 1997, at about 2230, the *Te Waka o Kapanga*, on its approach to Coromandel Harbour in poor weather conditions, ran aground on Cow Island near the entrance to the harbour. None of the five passengers or two crew was injured, but damage to the hulls, rudders and propellers was substantial.

Fatigue, lack of training and experience, and absence of documented procedures and work instructions were the main factors which contributed to errors in judgement by both skippers. Safety recommendations were made regarding training, documentation of procedures, and safe ship management.

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Te Waka o Kapanga on the hard

Transport Accident Investigation Commission

Marine Accident Report 97-202^a/203^b

Vessel Particulars:

Name:	<i>Te Waka o Kapanga</i>
Type:	“Cougar Cat” catamaran ferry
Class:	IV (Passenger ship not plying beyond extended river limits that has or requires a certificate of survey as a ship plying within restricted limits)
Limits:	Auckland and Coromandel Extended River Limits
Passenger capacity:	70
Length (overall):	16 m
Breadth:	4.5 m
Construction:	Glass Reinforced Plastic (GRP)
Built:	In Australia by Atlay Cats PTY Ltd in 1989
Propulsion:	Two 336 kW Detroit 6V92 diesel engines each driving a fixed-pitch propeller
Service speed:	20 knots
Operator:	Coromandel Ferry Services Ltd
Location:	a. Off the headland between Little and Sandy Bays, Waiheke Island, Hauraki Gulf b. Cow Island, approaches to Coromandel Harbour, Hauraki Gulf
Date and time:	a. Saturday, 1 February 1997 at about 1030 ¹ b. Sunday, 29 June 1997 at about 2230 ²
Persons on board:	a. Crew: 4 (including the skipper) Passengers: 53 b. Crew: 2 (including the skipper) Passengers: 5
Injuries:	a. Nil b. Nil
Nature of damage:	a. Minor to hull, substantial to rudders, propellers, shafts and gearboxes b. Substantial to hull, rudders and propellers
Investigator-in-Charge:	Capt. Tim Burfoot

¹ All times in 97-202 are NZDT (UTC + 13 hours) and are expressed in 24 hour mode.

² All times in 97-203 are NZST (UTC + 12 hours) and are expressed in 24 hour mode.

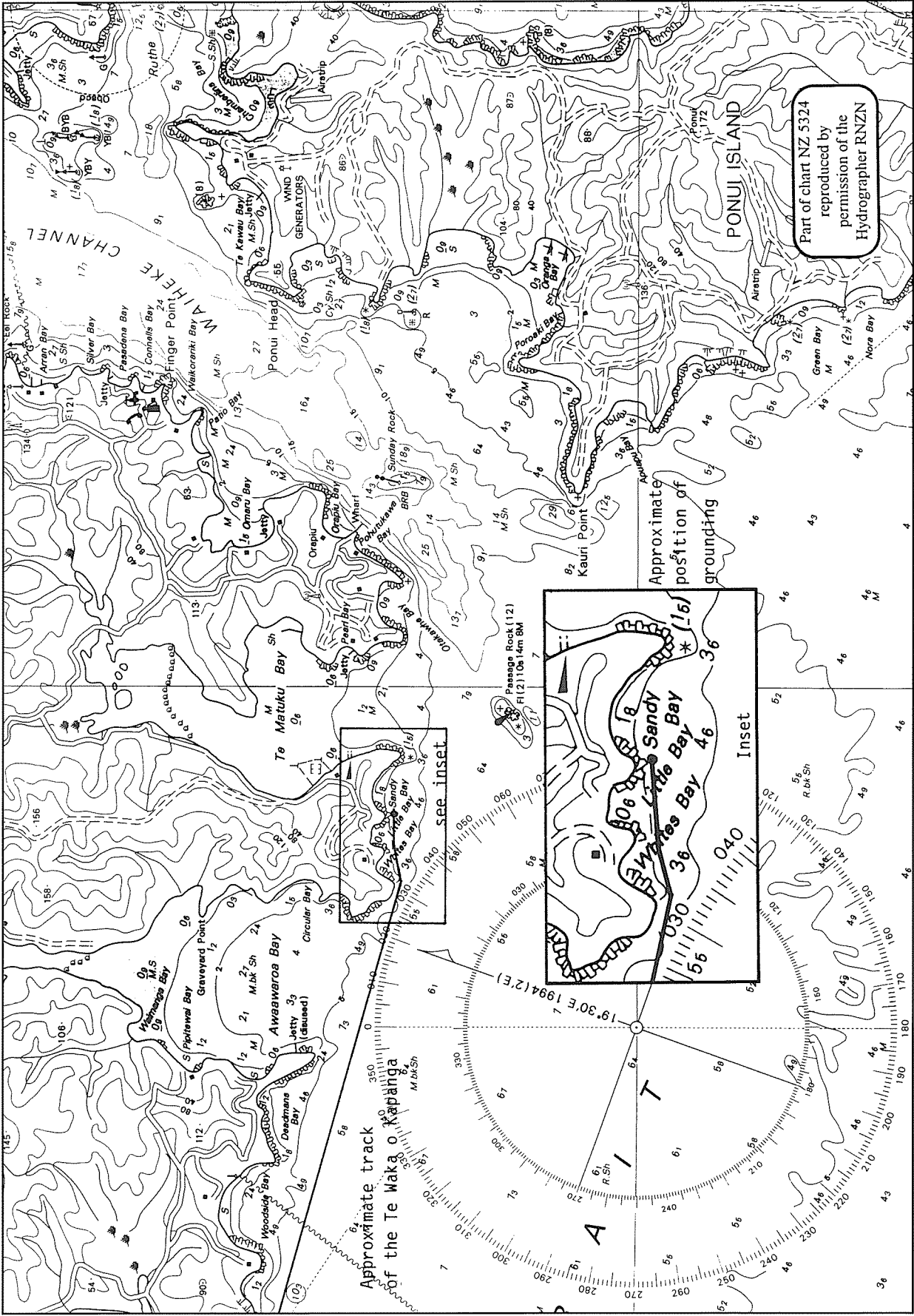


Figure 1
Part of chart NZ 5324 showing approximate track of the Te Waka o Kapanga (97-202)

1. Factual Information

1.1 History of the voyage (97-202)

- 1.1.1 At about 0930, on 1 February 1997, the catamaran passenger ferry *Te Waka o Kapanga*, left the ferry terminal at Princes Wharf in Auckland bound for Coromandel. On board were 47 passengers, the skipper and three crew.
- 1.1.2 The *Te Waka o Kapanga* was scheduled to make three stops on the way to Coromandel: Kennedy Point on Waiheke Island, Rotoroa Island and Pakatoa Island.
- 1.1.3 The *Te Waka o Kapanga* arrived at Kennedy Point Jetty at about 1015, picked up six passengers and departed for Rotoroa Island a few minutes later. About 15 passengers were seated on the top deck, behind the skipper's conning position.
- 1.1.4 The skipper kept the *Te Waka o Kapanga* close to the shoreline as the vessel tracked along the south coast of Waiheke Island giving the passengers "a scenic tour". He was hand-steering the vessel at an indicated speed of 19.5 knots.
- 1.1.5 Visibility was excellent and a 10-knot south-west wind was creating a slight sea. The skipper said he preferred to navigate by eye so the radar was not switched on.
- 1.1.6 The Global Positioning System (GPS) navigation unit was switched on but the skipper was not using it to navigate. According to him the GPS had a permanent position error which normally fixed the position of the vessel 500 m north of its true position, on the land in this case.
- 1.1.7 As the *Te Waka o Kapanga* crossed the end of the Peninsula where Whites, Little and Sandy Bays are located the skipper steered closer to the shoreline than he would normally. Some of the passengers had asked the skipper to go close in to White Bay where they knew a property was for sale. (See Figure 1)
- 1.1.8 The *Te Waka o Kapanga* passed within 100 to 200 m of the shoreline in Whites and Little Bays and approached the point at the western extremity of Little Bay inside the line which would have taken the vessel clear of the submerged rocks off the point.
- 1.1.9 According to the skipper he was about to adjust the course of the *Te Waka o Kapanga* to pass outside the rocks when the cellular telephone near his console rang. He reached across, picked up the telephone and had just started speaking when the *Te Waka o Kapanga* struck the rocks. The vessel yawed to starboard and its momentum carried it over the rocks into deeper water.
- 1.1.10 The skipper disengaged both engines immediately and called the crew to emergency stations. While the crew reassured the passengers and distributed life-jackets to them, the skipper checked the bilge of each hull for any ingress of water. Finding none he returned to the wheelhouse and tried to engage the starboard engine ahead, but it would not engage. He engaged the port engine but even at low RPM the vibration from the propeller and shaft was severe.
- 1.1.11 The skipper allowed the *Te Waka o Kapanga* to drift into Sandy Bay and anchored the vessel close to the shore. He tried to raise the Coastguard on the VHF radio but there was no response. A passing vessel took the *Te Waka o Kapanga* under tow to a sheltered bay on Ponui Island where the passengers were transferred to a variety of other craft and taken to their destination. There were no injuries to passengers or crew.
- 1.1.12 Subsequently the *Te Waka o Kapanga* was towed to Auckland and slipped for inspection and repair.

1.2 Damage to the vessel (97-202)

- 1.2.1 The depth of water over the rocks which the *Te Waka o Kapanga* struck appeared to have been close to the draught of the hulls when the vessel was travelling at speed, up on a semi-plane. The propellers and rudders protruded well below the hulls and it was these which took the brunt of the impact.
- 1.2.2 The starboard keel was scored along its entire length where it had made contact with the rocks. The port hull was unmarked. Both propellers were damaged beyond repair and their shafts bent. Both rudder stocks were bent back and the rudders distorted.
- 1.2.3 The rear and upward forces on the starboard propeller and its shaft sheared the shaft support A-bracket off and forced it up into the GRP hull. A water-tight bulkhead immediately forward of the hull intrusion prevented other hull compartments from flooding.
- 1.2.4 The rearward forces split the casing of the starboard gearbox leaving half of it still attached to the engine.
- 1.2.5 Both propeller shafts were bent and spiral score marks found on the starboard shaft were consistent with that engine being at near full power when compared with a speed over the ground of 19.5 knots.
- 1.2.6 The *Te Waka o Kapanga* was out of service for two weeks undergoing repair.
- 1.2.7 The skipper was dismissed shortly after the accident.

1.3 Subsequent incident not investigated by the Commission

- 1.3.1 On 4 June 1997, at about 0835, the *Te Waka o Kapanga* was en route from Coromandel to Auckland when it struck an underwater object reportedly in the Motukorea Channel, north-west of Browns Island shortly after having rounded the beacon located on the reef off the north-east tip of the island.
- 1.3.2 The charted depth at the position of contact reported by the skipper was about 5.5 m with about 1.5 m of tide above that. The draught of the *Te Waka o Kapanga* was about 1.4 m. As this appeared to be an uncharted hazard to navigation which was under investigation by the Maritime Safety Authority (MSA) the incident was not investigated by the Commission.
- 1.3.3 Subsequent underwater surveys of the area failed to find any uncharted navigation hazards in the area, or any floating objects large enough to cause the damage sustained by the propellers and shafts.
- 1.3.4 The *Te Waka o Kapanga* was out of service for about three weeks. This was due partly to additional work being required, particularly to the tailshafts, to correct repairs made after the first grounding.

1.4 History of the voyage (97-203)

- 1.4.1 At about 1600 on 29 June 1997, the *Te Waka o Kapanga* left Hanafords Jetty in Coromandel Harbour and travelled to Auckland, making several scheduled stops en route, arriving in Auckland at about 1810. The senior skipper for the company was in command and a temporary deckhand (one of the company directors) was employed, as none of the regular deckhands were available that day. The sea conditions in the open-water part of the trip were described by the skipper as slight to moderate from the north-east.

- 1.4.2 At about 1840 the *Te Waka o Kapanga* departed from Auckland for the return trip to Coromandel with four passengers on board. The vessel berthed at Matiatia on Waiheke Island, having encountered “moderate” weather from the north-east for most of the trip and “quite rough” weather as the vessel approached Matiatia Bay.
- 1.4.3 Four passengers boarded the *Te Waka o Kapanga* at Matiatia. While the vessel was berthed there a resident of the Island sought refuge on the boat, apparently having been the victim of domestic violence. The skipper contacted the Police and kept the *Te Waka o Kapanga* at the berth until they arrived, eventually departing from Matiatia one hour behind schedule.
- 1.4.4 The *Te Waka o Kapanga* then proceeded to Pakatoa and Rotoroa Islands where three passengers were disembarked. The skipper had experienced difficulty in berthing the *Te Waka o Kapanga* throughout the day, as the temporary deckhand was not familiar with the mooring procedures at each wharf and appeared to be unfamiliar with basic seamanship skills required for handling mooring lines. Berthing at Pakatoa and Rotoroa was made even more difficult due to the dark, and deteriorating weather conditions.
- 1.4.5 The *Te Waka o Kapanga* left Rotoroa with five passengers on board. The skipper headed south and then east, entering the Firth of Thames via Ruthe Passage between Rotoroa and Ponui Islands. From past experience in strong north-east weather conditions the skipper was expecting the seas to be rough in Ruthe Passage. (See Figure 2)
- 1.4.6 The skipper was hand-steering by compass and navigating by radar and GPS as the vessel negotiated Ruthe Passage. True to expectations the sea conditions were rough in Ruthe Passage and the *Te Waka o Kapanga* dipped into a large wave which washed up the foredeck, past the bridge windows and was later found to have broken the glass on the masthead light on top of the bridge. Loose articles were thrown about the wheelhouse and at the same time the skipper noted that the radar had stopped working. His attempts to restart it were unsuccessful.
- 1.4.7 The skipper considered aborting the trip either by returning back through Ruthe Passage or by turning south, running with the seas and re-entering the Tamaki Strait south of Ponui Island; however, both passages are fraught with navigational hazards and he decided not to attempt either without the aid of the radar. Instead he headed the *Te Waka o Kapanga* south-east by east so that the seas were on the port bow rather than right ahead. His intention was to hold that course until the seas abated in the lee of the Coromandel Peninsula.
- 1.4.8 Once clear of Ruthe Passage the seas abated slightly and steady progress was made in the direction of Wilson Bay. The skipper estimated the average wave height was about four metres near Ruthe Passage, three metres across the Firth and two metres near the Coromandel Coast. As the *Te Waka o Kapanga* came “within about two miles³ of the coast” the skipper said he was able to identify the shore lights in Kirita Bay.
- 1.4.9 As the seas had abated in the lee of the Coromandel Peninsula the skipper turned the *Te Waka o Kapanga* north, heading for the Cow Island Light and turned his attention to the radar, which he assumed had sustained antenna damage in Ruthe Passage. He found that the circuit breaker had tripped so he reset it and radar operation was restored.

³ “miles”, where used in this report, refer to nautical miles unless otherwise stated

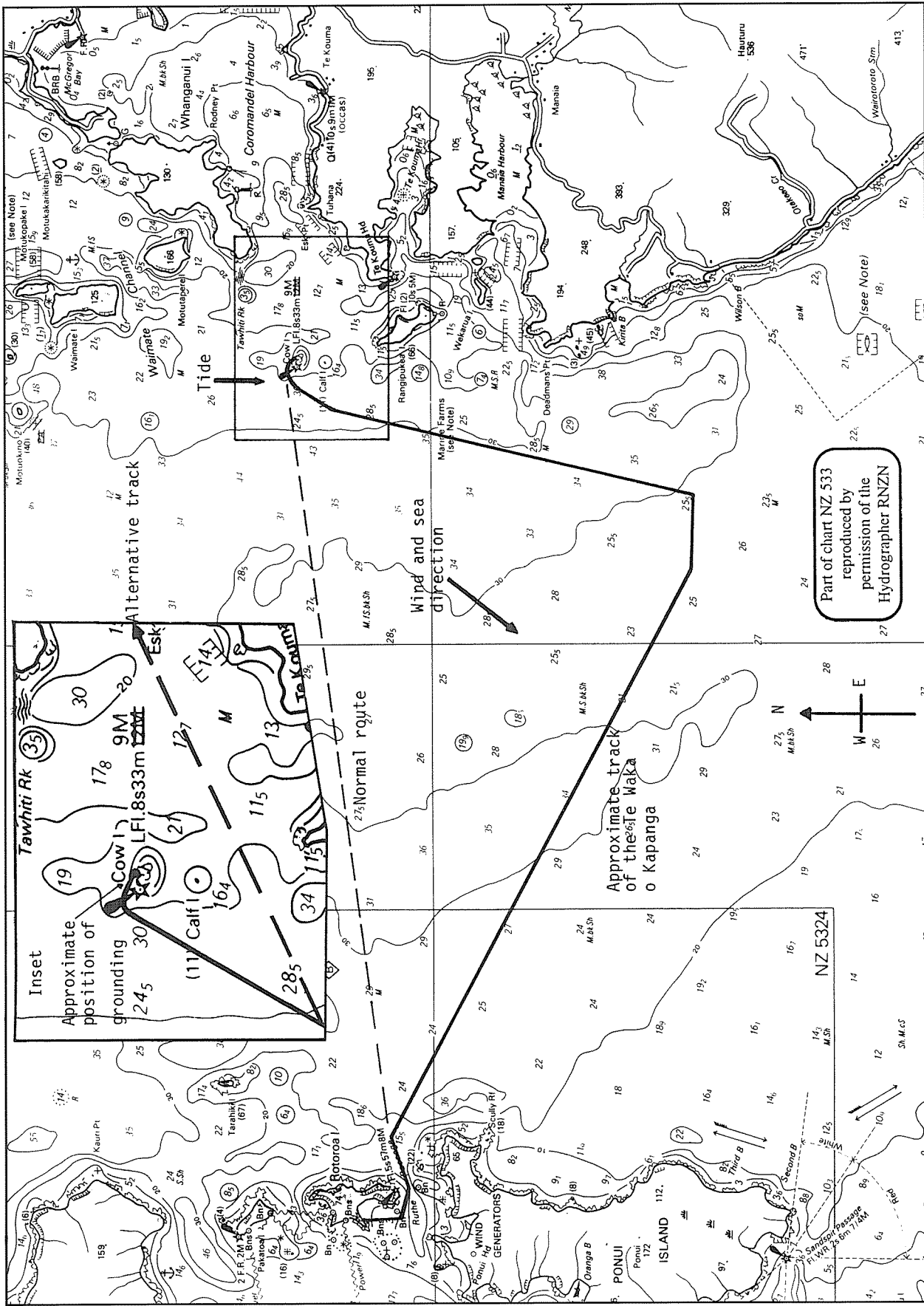


Figure 2
Part of chart NZ 533 showing approximate track of the Te Waka o Kapanga (97-203)

- 1.4.10 At night, the skipper's normal direct route between Pakatoa or Rotoroa Island and Coromandel took the vessel to the north of Cow Island. On the night of the accident the weather deviation took him to the south, off Kirita Bay, from where the shortest route into Coromandel Harbour was via the channel south of Cow and Calf Islands. In spite of this the skipper chose to enter by his usual route, north of Cow Island because:
- he was used to passing north of Cow Island,
 - the light on Cow Island is close to the north-west side of the island, with few off-shore dangers in that direction,
 - he was used to judging his distance off Cow Island by the angle of the light above him,
 - he was familiar with the radar picture presented as the vessel approached from the north-west,
 - other than the Cow Island Light, there were no navigation lights to guide a vessel entering the harbour until it was inside the harbour, and
 - he had never entered the harbour via the south-west channel at night in north-east weather conditions.
- 1.4.11 The skipper was using the radar to keep the *Te Waka o Kapanga* on a northerly track that would pass about half a mile to the west of Cow Island. The GPS was operating but, as no tracks or way-points had been programmed into it, it was only showing the position of the *Te Waka o Kapanga* in relation to the basic outline of the land on the chart plotter. The skipper had reduced the speed of the vessel to 12 knots due to the rough sea conditions.
- 1.4.12 The skipper said that the state of the tide was "getting near low water" when they were approaching Coromandel Harbour, which it would have been if the *Te Waka o Kapanga* had been on schedule; however, the *Te Waka o Kapanga* rounded Cow Island about two hours behind schedule, when the tide would have been two hours into the flood. The time of low water was predicted for 2033 on 29 June 1997.
- 1.4.13 As the *Te Waka o Kapanga* approached Cow Island the skipper switched the radar to the half-mile range and began to adjust the course to starboard progressively to round the island. At about this time a strong wind and heavy rain squall came through from the north-east. The skipper looked up at the Cow Island Light and judged that it was "at about the right angle" and, believing that he had reached his normal approach line, he completed his turn into the harbour.
- 1.4.14 The skipper later described conditions off Cow Island as worse than out in the Firth of Thames. The rain was heavy and "horizontal". As he completed his turn into the harbour he switched the radar to the 1.5 mile range scale, as he normally did, and noted that the south-west tip of Wanganui Island was "outside the 1.5 mile range ring and right on the edge of the screen", as it normally was. Before increasing the range scale he noted the distance off the edge of Cow Island Reef as a quarter of a mile. The skipper then relaxed believing that the familiar sight on the edge of the radar screen meant that he was "on the home run".
- 1.4.15 The final turn to starboard onto "the home run" placed the wind sea and swell on the port side of the *Te Waka o Kapanga*. A few minutes later, at about 2230, the *Te Waka o Kapanga* ran aground on the northern side of the reef that extends out to the east of Cow Island.

- 1.4.16 The skipper sent a Mayday to the Auckland Coastguard on VHF channel 88 and also made a 111 call to the Police in Coromandel. The Police co-ordinated local rescue services and by 2400 the passengers were transferred to rescue craft and taken ashore where one was treated for seasickness and mild shock, otherwise there were no injuries to passengers or crew.
- 1.4.17 Local barges and fishing trawlers were used to tow the *Te Waka o Kapanga* off the reef and into the harbour where it was secured to Hanafords Wharf at about 0230 on 30 June. The *Te Waka o Kapanga* had spent about three hours against the reef being pounded by the seas.
- 1.5 Damage to the vessel (97-203)**
- 1.5.1 Each of the hulls of the *Te Waka o Kapanga* is divided into seven water-tight compartments. Three compartments of those in the starboard hull, and two in the port hull were breached. (See Figure 3 below)
- 1.5.2 Both propellers, their shafts and the rudders needed replacement. The starboard propeller had been pulled back displacing the starboard engine by about 20 mm.

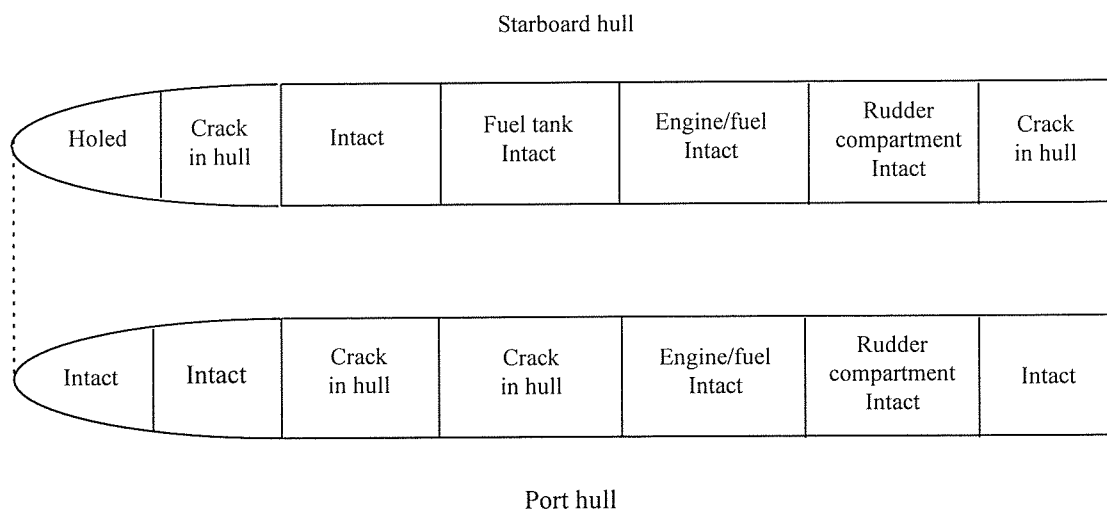


Figure 3
Schematic diagram showing damage to hulls of the *Te Waka o Kapanga*
Diagram not to scale

1.6 Company and personnel background information (97-202/203)

- 1.6.1 Coromandel Ferry Services operation was conceived by several Coromandel local business people. Once the proposal had been researched, the company was registered and the *Te Waka o Kapanga* purchased.
- 1.6.2 Five directors were named, each of whom purchased shares in the company. One of the directors was designated the managing director for the start-up phase of the company.
- 1.6.3 Another of the directors was designated the senior skipper and was responsible for the operation of the *Te Waka o Kapanga*. He was one of two skippers who would alternate to command the vessel on successive days.
- 1.6.4 Apart from the senior skipper, none of the management had any appreciable maritime expertise, and none had any previous experience in operating a passenger ferry.
- 1.6.5 The senior skipper grew up in an environment where small boats were a part of his life. Ever since his childhood he had built, owned and operated a variety of small boats. His trade was shore-based general engineering. In 1981 he obtained his Inshore Fishing Skipper Certificate and operated several inshore fishing boats in and around the Manukau and Auckland Harbours.
- 1.6.6 The skipper of the *Te Waka o Kapanga*, when it grounded in February, had 10 years' experience as a deck hand on a variety of inshore fishing vessels around the Hauraki Gulf, during which time he had become familiar with the sea area around Waiheke Island and the Coromandel Peninsular. With the exception of one, most of the fishing vessels on which the skipper had been employed were capable of about 7 to 10 knots only, the exception being a six-metre Shark Cat driven by twin outboard motors, seven years prior to the accident.
- 1.6.7 In early October 1996 the skipper applied for the position of second skipper with the Coromandel Ferry Service. He was employed mainly because of his local knowledge of the area in which the *Te Waka o Kapanga* was to operate.
- 1.6.8 To command the *Te Waka o Kapanga* in Extended River Limits required a minimum qualification of a current Local Launchman Licence (LLL). A holder of an LLL was restricted to operating designated craft less than 20 m in length, and those craft only in designated areas.
- 1.6.9 A Commercial Launchmaster Certificate (CLM) allowed a holder to operate any craft less than 500 gross tonnes within Extended River Limits or any craft less than 20 m in length operating in Extreme Limits.
- 1.6.10 The minimum prerequisite sea service for obtaining an LLL was six months, of which at least one month was to be served on board the type of vessel which was to be endorsed on the licence, and of which at least one month was to be served in the area endorsed on the licence.
- 1.6.11 The minimum prerequisite sea service for obtaining a CLM was 18 months, of which at least six months was to be served on a commercial vessel, and of which at least two months was to be served on a launch.
- 1.6.12 The senior and second skipper both had the prerequisite sea service so they attended a two-week CLM course at nautical school in October 1996, sat and passed the examination and were issued with their CLM certificates on 16 February 1997 and 13 December 1996 respectively.
- 1.6.13 Over the months following their attendance at nautical school both skippers spent their time preparing the *Te Waka o Kapanga* for service, discussing operational matters and conducting sea trials after each phase of the refit of the *Te Waka o Kapanga*.

- 1.6.14 It had been planned that one week would be spent on route training for the skippers and crew before the *Te Waka o Kapanga* entered service; however, due to delays in the delivery and refit of the *Te Waka o Kapanga* the pre-service training did not take place.
- 1.6.15 On 17 December 1996 the senior and second skippers picked up the *Te Waka o Kapanga* in Auckland and delivered it direct to Coromandel under the command of the senior skipper.
- 1.6.16 The following day the *Te Waka o Kapanga* completed its first commercial voyage from Coromandel to Auckland. The senior skipper had the con and the second skipper was on board in the capacity of deckhand and consequently had little opportunity to observe events on the bridge.
- 1.6.17 The return voyage saw the second skipper in command and the senior skipper as one of the deckhands. On this voyage the senior skipper attended the bridge for each arrival and departure.
- 1.6.18 The second skipper completed the second return trip to Auckland that day accompanied by a trainee skipper who, it was intended, would relieve from time to time. The trainee skipper was the Area Safety Inspector for Maritime Management Services (MMS).
- 1.6.19 According to the senior skipper he accompanied the second skipper for “at least five more trips over the following week”. The second skipper refuted that he received any further training from the senior skipper. Log book entries were sporadic in the first week of operation which made it difficult to establish the complement of the crew for each trip. There was however an entry made on 23 December 1996 which showed that both the senior and second skippers were on the *Te Waka o Kapanga* together. The second skipper completed about 60 return trips to Auckland prior to commencing the trip on which the first accident occurred.
- 1.6.20 The second skipper later stated that he felt comfortable with the service speed of the *Te Waka o Kapanga* and familiar with the approaches to the various wharves en route; although he said familiarity was gained by trial and error, rather than by instruction. He also attributed the grounding in part to the depth sounder not working and the distraction of the cellular telephone.
- 1.6.21 Before the first grounding, differences in opinion on financial and operational matters had caused a rift within Coromandel Ferry Services management. After the June incident, which put the *Te Waka o Kapanga* out of action for a further three weeks, the managing director and two other share holders resigned and withdrew their financial support.
- 1.6.22 Their shares were bought by one of the remaining shareholders but the time out of service, coupled with the normally slack winter period, placed considerable financial pressure on the company.
- 1.6.23 Management restructuring saw the senior skipper take on the responsibilities of the managing director in addition to his existing responsibilities as operations manager and senior skipper. Most of the other staff were released to seek temporary employment until the *Te Waka o Kapanga* was back in service. This was why one of the remaining directors was acting as deckhand when the *Te Waka o Kapanga* resumed service on Friday 27 June, three days before the second grounding.

- 1.6.24 The senior skipper felt under considerable pressure having to fill several management roles as well as organising the *Te Waka o Kapanga* re-entering into service. In addition he still had unresolved issues to attend to with the authorities investigating the first grounding and the June incident. He had slept an average of 5.5 hours each night for the four nights prior to the second accident trip on which he was in command.
- 1.6.25 The senior skipper admitted to feeling “physically tired” on the night of the second grounding, and “concerned” about the events of the previous two months, in particular with the contents of the company balance sheets that had just been released.
- 1.6.26 Coromandel Ferry Services operated in a culture where time was not critical. Although their ultimate objective was to transport passengers from point to point, maintenance of the scheduled times, while preferred, was not rigidly enforced by management.
- 1.6.27 It was not unusual for the ferry to slow or stop for passengers to photograph marine life on the way, or for the ferry to delay a departure to wait for late passengers. The skippers were not put under pressure to maintain the schedule and, if ahead of schedule, deviations were often made en route through the more scenic passages between various islands.
- 1.6.28 Coromandel Ferry Services had not produced an operations manual, nor were they required to have one under MMS’s safe ship management system (see Section 1.8). Much of the day-to-day operational requirements were passed between management and staff orally.
- 1.6.29 Weather forecasts were not obtained routinely by either skipper before embarking on each trip. According to the senior skipper the forecasts provided by Metservice were not accurate for the Firth of Thames. They preferred to use the “Nowcasting service” which provided them with actual weather conditions recorded at key locations around the Hauraki Gulf, one of which was Passage Rock in the Tamaki Strait.
- 1.6.30 When asked what the cut-off point for weather conditions was, the senior skipper replied “The safety of the passengers”. If they found conditions too rough in the Firth of Thames then they would turn back and bus the passengers to their destination. The call was left to the judgement of the skipper on the day.
- 1.6.31 The company had not identified any recommended routes or routes that should not be used. The management preferred it that way, leaving it up to the discretion of the skipper to perform each trip “safely” and with “the passengers’ comfort in mind”. They were “to use their seamanship to do that”. The route taken often depended on the sea conditions.
- 1.6.32 The managing director for Coromandel Ferry Services (who subsequently left the company) stated, “We are the new boys on the block and we need to learn and the best advice we had been given so far is that we should be part of a safe ship management system. We are doing what we understand to be the correct thing and they (MMS) have given us, so far, good educational advice. They have helped us in instigating safe ship management policies. If there is something else that we should be doing, we don’t know what that is . . . we are new to this, I guess as we are told these things we will understand them and change in to them a lot quicker. We are barely 90 days on the sea at this stage”.

1.7 Vessel information

- 1.7.1 The *Te Waka o Kapanga* was a 16 m Cougar Cat catamaran constructed mainly from GRP. Propulsion was by two 336 kW Detroit 6V92 diesel engines each driving a fixed-pitch, four-bladed propeller. A semi-balanced single-plate Spade rudder was located behind each propeller.

- 1.7.2 The *Te Waka o Kapanga* was designed so that the water entry space between the hulls was bigger than the exit space at the back. Water passing between the hulls was constricted thus causing the vessel to semi-plane on a layer of aerated water.
- 1.7.3 For better efficiency the propellers and rudders extended below the keel-line where the water flow was less disturbed. The arrangement rendered the rudders and propellers more vulnerable to underwater objects or contact with the sea bed.
- 1.7.4 Maximum speed was about 24 knots, but speed was kept to about 20 knots to reduce fuel consumption.
- 1.7.5 A maximum of 70 passengers could be accommodated within a two-deck superstructure. The lower deck accommodated most of the passengers; the upper deck providing seating for about 15 passengers directly behind, and common with, the wheelhouse.
- 1.7.6 The skipper conned the vessel from a chair mounted on the centreline. The steering was hydraulic and a rudder angle indicator was provided at the helm position. The engines were handled using dual sets of Morse control levers.
- 1.7.7 Navigation equipment included the following:
- one radar,
 - one GPS navigation receiver interfaced with an electronic chart plotter,
 - one magnetic compass (plus a second fluxgate compass associated with the autopilot system),
 - one VHF radio,
 - one depth sounder.
- 1.7.8 The GPS receiver was operating within the accuracy expected from the system but at the time of the first grounding an off-set was apparent at the interface with the chart plotter resulting in a permanent error in the position displayed on the plotter. This off-set had been rectified before the June incident.
- 1.7.9 The depth sounder gave correct readings when the vessel was stationary or at speeds below 10 knots; however, at high speed the aerated water under the hulls interfered with the signal, rendering the unit ineffective.
- 1.7.10 No magnetic compass deviation card could be found on board the *Te Waka o Kapanga* when the vessel was purchased. The missing card was identified by a safety inspector as a deficiency at the time of initial inspection. A compass adjuster was employed to swing the compass and produce a deviation card; however, he condemned the compass as the wrong type for the vessel, so a new compass was purchased which complied with the relevant regulations for the *Te Waka o Kapanga*. The new compass was installed and adjusted on 9 May 1997, about four weeks before the June incident.
- 1.7.11 The fire and lifesaving equipment on board the *Te Waka o Kapanga* was inspected by the MMS Coromandel Safety Officer and found to have complied with that required for a vessel of its class.
- 1.7.12 The *Te Waka o Kapanga* was surveyed in April 1995 and the Certificate of Survey issued by the MSA in September 1995. The certificate was valid until April 1999 subject to an annual survey, the first of which was due in April 1996.

- 1.7.13 When the first annual survey was due the *Te Waka o Kapanga* was for sale and standing on the hard in a brokers yard. When the company subsequently purchased the *Te Waka o Kapanga* in September neither they nor the broker arranged to have the vessel surveyed as required for the Certificate of Survey to remain valid.
- 1.7.14 Coromandel Ferry Services management were unaware at the time that an annual survey was required for the certificate to remain valid.
- 1.7.15 The *Te Waka o Kapanga* had been in service for about two weeks when the intended relief skipper (the Coromandel Area Safety Officer for MMS) noticed that the *Te Waka o Kapanga* had not undergone its first intermediate survey.
- 1.7.16 Instead of having the *Te Waka o Kapanga* surveyed to revalidate the Certificate of Survey, the company applied to MMS to have the vessel entered into their safe ship management system.

1.8 Safe ship management

- 1.8.1 The MSA New Zealand Ship Safety Management Code (the code) will become mandatory on 1 February 1998. The code was established in an attempt to move away from the tradition of the authority setting the standards and then inspecting the participants in the industry for compliance on an annual basis.
- 1.8.2 The code was designed to place a greater responsibility on the operator to conform to such standards on an on-going basis. An annual survey allowed those standards to be relaxed by the ship owner until the next survey was due.
- 1.8.3 In recognising that no two shipping companies or ship owners are the same; and that ships operate a wide range of services under different conditions; the code is based on general principles and objectives which are as applicable to a single small ship organisation as to a ship owner with a fleet of large ships.
- 1.8.4 The code states that:
- 1.8.4.1 The safety management objectives of the company should include:
- providing for safe practices in ship operation and a safe working environment,
 - establishing safeguards against all identified risks, and
 - continuously improving safety management skills of personnel ashore and aboard ships, including preparing for emergencies related to both safety and environmental protection.
- 1.8.4.2 The safety management system should ensure:
- compliance with mandatory rules and regulations, and
 - applicable codes and standards prescribed or recommended by the MSA are taken into account.
- 1.8.5 The code applies to, among others, restricted-limit vessels such as the *Te Waka o Kapanga*.
- 1.8.6 The MSA exempted vessels from being under survey prior to 1998 if they were operating satisfactorily under an approved safe ship management system.

- 1.8.7 An operator could provide their own safe ship management system or they could enter into a contract with a safe ship management provider company. The operator or the safe ship management company had to be certified to International Standards Organisation (ISO) standards by a body recognised by the MSA. Certification had to be ISO 9002 if the company owned the vessels, or to ISO 9001 if the company managed the vessels.
- 1.8.8 ISO certification was to ensure that the operator or safe ship management company had appropriate management systems in place, and that they were aware of any rules, standards or other legislation to which their end product (Safe Ship Management) had to conform. ISO certification did not monitor the quality of the end product. This was the role of the MSA.
- 1.8.9 To achieve ISO certification, a safe ship management company configured its system to conform with the standards and requirements set out in the code. It was then audited by the MSA to gain approval as a safe ship management provider.
- 1.8.10 Once approved the safe ship management company could enter into contracts with operators who were required to install a safe ship management system. Once the operator complied, the safe ship management company would issue to each vessel under its safe ship management umbrella, a maritime document. The code stated that “this maritime document should be accepted as evidence that the operating company and its shipboard management operate in accordance with the approved safety management system”.
- 1.8.11 At random intervals, not exceeding one year, the code intended that safe ship management companies would conduct safety and systems audits on their clients’ safe ship management system. The safe ship management company was intended to report back to MSA with a “risk factor” for each of its clients so that MSA could monitor safety trends for any operator. MSA could withdraw any operators’ maritime document if the risk factor level became unacceptable and showed no trend of improvement. The reporting system was to be computer based; however, it was not operating at the time of either accident involving the *Te Waka o Kapanga*.
- 1.8.12 One safe ship management company was MMS, a quality assured supplier certified to ISO 9001 in late 1993. MMS had been audited by its ISO certifying body (Standards New Zealand) every six months for compliance with its own Quality Assurance Manual, the last audit being completed in February 1997. In addition, under the auspices of the MSA they became an “MSA approved” safe ship management provider. MMS was contracted by a number of small ship operators (clients) to design and help implement safe ship management systems for their ships. One such operator was Coromandel Ferry Services.
- 1.8.13 MMS objectives were listed as follows:
- To provide assurance to the MSA of client compliance with the new legislation (the code),
 - to provide Land Based Safety Management for client vessel operations,
 - to implement the New Zealand Ship Safety Management Code to client vessels,
 - to monitor and record maintenance and safety practices,
 - to provide Quality/Safety Management Policy Manuals and a Safe Ship Management Certificate for client vessels and thereby satisfy the requirements of the law, and
 - to conduct normal Safety/Quality inspections.

1.8.14 MMS had a number of safety and quality officers for each area in New Zealand where their clients were based. The area safety officers, or in some cases a competent person⁴, conducted inspections similar to those which would normally have been required for an annual survey. The quality officers conducted systems audits to ensure each vessel was being operated in accordance with its “Safety Management Policy Manual”.

1.9 Coromandel Ferry Services Ltd/Maritime Management Services Ltd

1.9.1 The sequence of events surrounding the *Te Waka o Kapanga* being entered into the MMS safe ship management system was as follows:

- 29 December 1996: The MMS Coromandel Area Safety Officer inspected the *Te Waka o Kapanga* and completed a MMS Safety Equipment Inspection form.
- 30 December 1996: Coromandel Ferry Services applied to the MSA for an exemption from survey.
- 31 December 1996: The Safety Equipment Inspection form was forwarded to MMS.
- Some time in January 1997: MMS provided a sample Safety Management Policy Manual for Coromandel Ferry Services to edit/adapt for their own operation.
- 17 January 1997: Coromandel Ferry Services entered into an agreement with MMS for the supply of a safe ship management system.
- 20 January 1997: A Safe Ship Management Certificate for the *Te Waka o Kapanga* was issued by MMS (maritime document)
- 27 January 1997: The MSA granted an exemption from survey for the *Te Waka o Kapanga*.
- 1 February 1997: Day of the first grounding.
- 14 February 1997: The Safety Management Policy Manual was placed on board the *Te Waka o Kapanga*.

1.9.2 Two conditions of the MSA exemption from survey were:

- There was to be a continuing satisfactory operation of the safe ship management system by MMS, and
- The *Te Waka o Kapanga* was to enter and remain satisfactorily within the safe ship management system operated by MMS.

1.9.3 Section four of the code (Designated Person) stated:

To ensure the safe operation of each ship and to provide a link between the company and those on board, every company, as appropriate, should designate a person ashore having direct access to the highest level of management. The responsibility and authority of the designated person or persons should include monitoring the safety and pollution protection aspects of the operation of each ship and to ensure that adequate resources and shore based support are applied, as required.

⁴ A person recognised by the MSA to conduct surveys of ships

1.9.4 The section of the Safety Management Policy Manual for the *Te Waka o Kapanga* which related to section four of the code stated:

Shipboard: The designated person with the authority to ensure safe management of the vessel is the ship's master.

Land based: The designated person with the authority to ensure safe management of the vessel is the Area Safety and Quality officers for the Maritime Management Services Limited.

1.9.5 Section six of the code (Resources and Personnel) includes:

The company should ensure that the master is:

- properly qualified for command,
- fully conversant with the company's safety management system,
- given the necessary support so that the master's duties can be safely performed.

The company should establish procedures to ensure that new personnel and personnel transferred to new assignments related to safety and protection of the environment are given proper familiarisation with their duties. Instructions which are essential to be provided prior to sailing should be identified, documented and given.

The company should ensure that all personnel involved in the company's safety management system have adequate understanding of the relevant mandatory rules and regulations.

The company should establish and maintain procedures for identifying any training which may be required in support of the safety management system and ensure that such training is provided for all personnel concerned.

1.9.6 The section of the Safety Management Policy Manual for the *Te Waka o Kapanga* which related to section six of the code stated:

- All ship personnel on board the vessel shall be adequately trained in the execution of the tasks they are required to perform
- Operational training is the responsibility of the business (Coromandel Ferry Services)
- Advising on, and monitoring of, safety training standards is the responsibility of MMS.

1.9.7 MMS did not require Coromandel Ferry Services to have an Operations Manual (work instructions) nor did they require that work instructions be included in the Safety Management Policy Manual for the *Te Waka o Kapanga*.

1.9.8 When asked how they monitored the qualifications, training and level of experience of the skippers of the *Te Waka o Kapanga* MMS stated that their responsibilities under the code did not extend to checking qualifications or to monitoring the daily operation of the vessel. They stated that operational matters were the concern of Coromandel Ferry Services.

2. Analysis

2.1 The first grounding (97-202)

- 2.1.1 On any voyage the safety of the *Te Waka o Kapanga*, and its passengers and crew was the responsibility of the skipper.
- 2.1.2 The skipper was in the habit of keeping the *Te Waka o Kapanga* close to the south coast of Waiheke Island when en route to the next stop. On the accident trip he succumbed to pressure from the passengers and proceeded closer to the shoreline than he would normally so that the passengers could view the property for sale in Whites Bay. It was reported by both skippers that it was not outside the policy of the company to deviate en route to enhance the scenic value of a trip, a view that was not shared by the managing director (who subsequently left the company).
- 2.1.3 By proceeding so close to the shore at full speed the skipper placed his vessel, passengers and crew at unnecessary risk. If such sightseeing deviations were the policy of the company (it was not written in the Safety Policy Manual) it would have been prudent for the skipper to have slowed the vessel to an appropriate speed. Once closer than 200 m from the shore the skipper was required by the Water Recreation Regulations 1979 to reduce the speed of his vessel to a maximum of five knots.
- 2.1.4 The largest scale marine chart available for the accident area had a scale of 1: 40 000. The scale of the chart did not lend itself to giving detailed information so close into the shore. The shore line was marked with the symbol for rocks that cover and uncover with the tide. It is not practicable to determine from the chart how far off shore the rocks extend.
- 2.1.5 Most of the Tamaki Strait is relatively shallow (less than 10 metres above chart datum). The grounding happened inside a five-metre depth contour. No other depth information was displayed on the chart near the position of the grounding. The position of the rocks that the *Te Waka o Kapanga* struck was known to the skipper from his past experience as deckhand on fishing vessels operating in the area. By his own admission the skipper misjudged the position of the *Te Waka o Kapanga* in relation to the rocks until the last minute.
- 2.1.6 The skipper claimed that he was about to turn the *Te Waka o Kapanga* to seaward to avoid the rocks but was distracted by the cellular phone call. For the skipper to recognise that he was in danger of running his vessel aground at close to 20 knots with 57 passengers and crew on board, and then to ascribe a higher priority to answering an incoming cellular telephone call, displayed a less than adequate depth of experience, appreciation for the speed of his vessel, and show of responsibility for the safety of the passengers and crew.
- 2.1.7 It is not uncommon on planing or semi-planing craft for the performance of the depth sounder to be affected by aerated water caused by the hull(s) at speed. If the skipper had the *Te Waka o Kapanga* down to a speed appropriate for its close proximity to the shoreline the depth sounder would have been working and the skipper would have had ample time to realise the depth of water under the keel and take corrective action.
- 2.1.8 Without forward scanning capability even if the depth sounder had functioned with the *Te Waka o Kapanga* travelling at 20 knots, it is unlikely that it would have given the skipper sufficient warning to avert the grounding.
- 2.1.9 There was no evidence to suggest that mechanical or equipment failure contributed to the grounding. The *Te Waka o Kapanga* was travelling too fast, on a line too close to the shore with insufficient under-keel clearance.

- 2.1.10 Inshore fishing often involves finding and working close to rocks or other dangers to navigation, but doing so at slow speeds. Over a short period of time, and with limited training, the skipper of the *Te Waka o Kapanga* made the transition from being deck hand on such vessels to being the skipper of a relatively high speed passenger ferry who should avoid such areas.
- 2.1.11 The limited training, the absence of effective route guidelines and the easy-going culture of the company did little to assist the skipper in making a satisfactory transition.
- 2.2 The second grounding (97-203)**
- 2.2.1 The forecast for the day of the second grounding was for north-east winds increasing throughout the day to gale force by evening. If the senior skipper had obtained and heeded the forecast, he should not have proceeded on the trip.
- 2.2.2 The sea conditions reported by the senior skipper on the night were, at best, marginal for the *Te Waka o Kapanga* to operate in safety. The skipper was aware that the wind was blowing from the north-east and knew that it was going to be a rough crossing of the Firth of Thames, particularly in Ruthe Passage and in the initial stages of the Firth crossing. The sea conditions experienced on the approach to Matiatia Bay earlier in the trip should have been enough to forewarn the skipper of pending weather conditions in the Firth of Thames.
- 2.2.3 As stated by the senior skipper, the wind and sea conditions in the Firth of Thames may not be indicative of the forecast for the Hauraki Gulf; however, the company had been operating the *Te Waka o Kapanga* on that route long enough to have sufficient local knowledge to correlate the conditions in the Firth with the forecast for the Hauraki Gulf. These conditions could have been documented and guidelines drawn up to assist skippers in deciding when not to proceed on a trip.
- 2.2.4 The following factors are considered to have influenced the senior skipper in making his decision to continue with the voyage from Matiatia:
- the desire to complete the trip having only just recommenced service after some considerable time off the water (commercial pressures),
 - the inconvenience to the passengers and the disruption to the service if he aborted the trip at that stage,
 - the absence of guidelines concerning permissible weather conditions,
 - the delays experienced in Matiatia, and
 - fatigue and the will to get home for a good nights' rest.
- 2.2.5 Having decided to proceed across the Firth of Thames to Coromandel, and having committed the *Te Waka o Kapanga* to Ruthe Passage the senior skipper was wise to continue on the passage. To turn back in Ruthe Passage in the rough sea conditions and without the use of the radar would have placed the *Te Waka o Kapanga* and the passengers and crew at greater risk than that to which they were already exposed.
- 2.2.6 Considering the severity of the sea in Ruthe Passage and the effect it had on the *Te Waka o Kapanga*, it was understandable that the senior skipper thought the radar set had been damaged. As his full attention was on hand steering the *Te Waka o Kapanga* in the rough sea he had little spare time to investigate the cause of the radar failure.

- 2.2.7 Once the sea conditions had abated in the lee of the Coromandel Peninsula and the senior skipper identified and turned towards the Cow Island Light, he was able to take time to find and rectify the simple cause of the power loss to the radar.
- 2.2.8 Having established an approach to Coromandel Harbour the senior skipper had to decide which route he was going to take. The wave height was still about two metres and the wind strength “quite strong” and there was a lot of spray restricting his visibility.
- 2.2.9 There were two reasonably safe options open to the skipper; one was the option which he chose of rounding Cow Island and using the familiar approach; the other was to approach from the south-west passing south of Calf Island. Both passages had ample room for the *Te Waka o Kapanga* to pass in safety.
- 2.2.10 From the direction the *Te Waka o Kapanga* approached, passing south of Calf Island would have been the shorter route, would have avoided placing the wind, sea and tide on the beam, would have provided slightly more sheltered conditions and, under the circumstances, would have been the better option.
- 2.2.11 The skipper chose the north route because that was the way he normally entered Coromandel at night and he was familiar with the picture which the radar presented when approaching from that direction. If the senior skipper had been more familiar with the use and limitations of radar, and had planned, documented and practised contingency routes, he may have chosen the south-west approach.
- 2.2.12 As the *Te Waka o Kapanga* approached Cow Island from the south the senior skipper kept on a course that he judged would keep the *Te Waka o Kapanga* about half a mile west of the island. Broadly the *Te Waka o Kapanga* would have been stemming the wind, sea and tide on that heading. As he neared the island the senior skipper began adjusting the course to starboard so as to round the island keeping about a quarter of a mile by radar off its outer edge. With the radar on the half-mile range, a quarter of a mile would have looked a reasonable distance on the screen. This may have misled him into believing he was well clear of the island. A quarter of a mile is not a safe distance to pass off a lee shore at night and in the reported weather conditions encountered.
- 2.2.13 The skipper recalled being a quarter of a mile off the island just before he switched the radar to the 1.5-mile range. He stated that the south-west tip of Wanganui Island was “just on the edge of the screen, outside the 1.5-mile range ring”. This would have placed the *Te Waka o Kapanga* in a position somewhere north-west of Cow Island. If the senior skipper then made his final adjustment of course to enter the harbour based on the relative position of the tip of Wanganui Island on his radar screen, his vessel would have passed inside the quarter-mile mark on the radar. This may not have been readily apparent to him with the radar on the 1.5-mile range scale. (See Figure 4)
- 2.2.14 The *Te Waka o Kapanga*, with its high superstructure and relatively shallow draft was highly susceptible to leeway. The severe rain squall that was passing as the *Te Waka o Kapanga* rounded Cow Island would have caused a considerable amount of leeway down towards the island. This combined with the effect of the tide that would have been running broadly with the wind and sea, and the reduced speed of the *Te Waka o Kapanga* as it rounded the island, produced a resultant drift angle large enough to carry the *Te Waka o Kapanga* onto the reef that extended eastward of Cow Island.

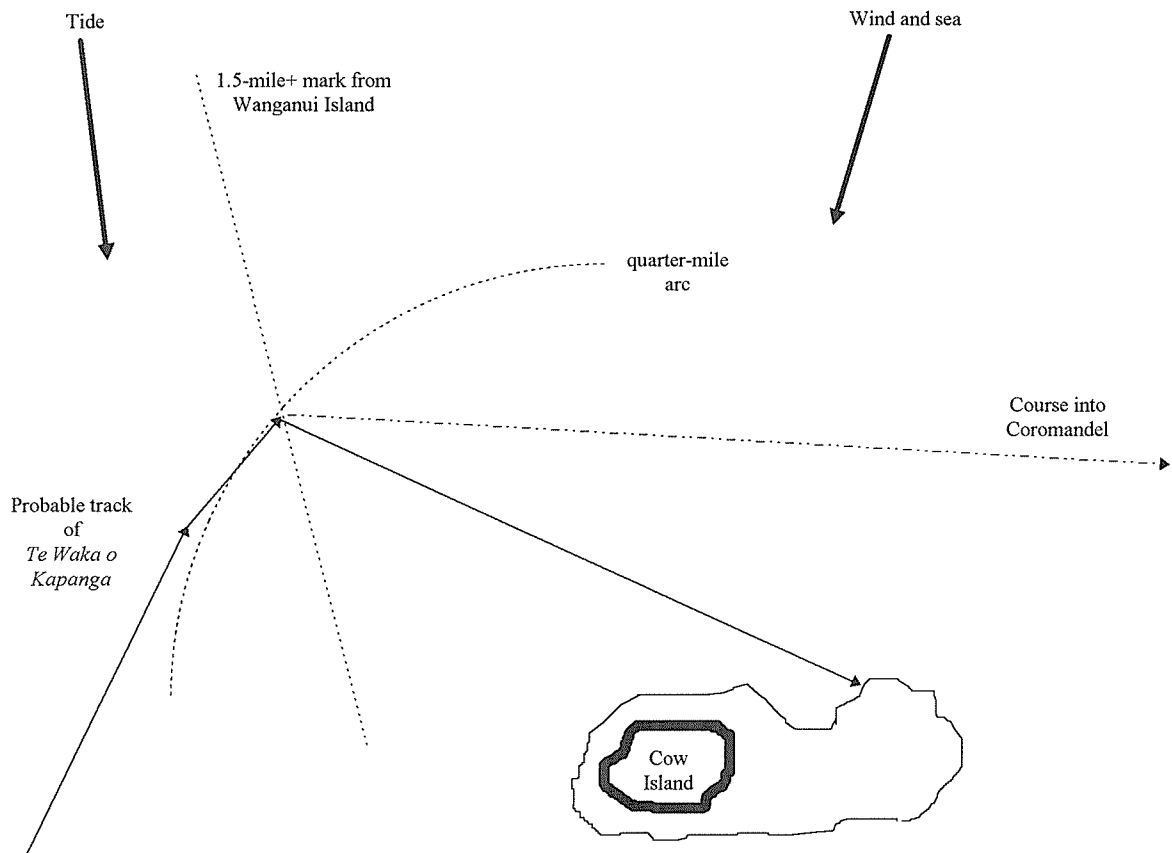


Figure 4
North-up diagram showing probable track of the *Te Waka o Kapanga*
(Diagram not to scale)

- 2.2.15 The “horizontal rain” was a cue as to the wind strength and should have alerted the senior skipper to the probability that his vessel would be making significant leeway in those conditions. A leading light to guide the skipper in his approach would have been of significant value to him. Apart from the flashing lights on Cow Island and the base jetty there were no other harbour navigation aids to assist the skipper in his approach.
- 2.2.16 As the radar was not compass stabilised the skipper should have been continually cross-referencing the radar and the compass to determine when he was on the course which would take the *Te Waka o Kapanga* into the harbour and clear of the island. To achieve this at the same time as increasing the amount of set and leeway required to counter the elements as the vessel changed course, at such close range to the island, would have required continuous concentration. The skipper’s ability to process the information from his compass and radar, and respond to the cues from outside the vessel, was likely to have been reduced significantly by fatigue and the reaction to the events of that day, and indeed the previous months.

2.2.17 Once the senior skipper had turned on to a course that he believed would take the *Te Waka o Kapanga* clear of Cow Island Reef he “relaxed” at a time when the risk to the vessel was at its highest, and he lost situational awareness.

2.3 Safe ship management

2.3.1 Although the direct causes and contributing factors were different for each grounding of the *Te Waka o Kapanga*, there were factors common to each accident which, if recognised and acted upon earlier, would have reduced the likelihood of either accident occurring.

2.3.2 Each skipper was accustomed, if not encouraged, to make deviations to improve the scenic value of daylight trips, or to improve passenger comfort in rough sea conditions.

2.3.3 In the first grounding the skipper was making one of these deviations at the request of the passengers when he ran his vessel aground in daylight and in good visibility. Although this skipper held the required certificate to command the *Te Waka o Kapanga* and had successfully made about 60 return trips, the company culture, the lack of initial training, and the lack of documented guidelines meant that the potential for the grounding was higher than it should have been.

2.3.4 In the second grounding the senior skipper had proceeded on a trip for which the weather conditions were marginal. In the absence of set weather criteria he allowed other factors to affect his judgement in deciding to undertake the trip.

2.3.5 Having made the deviation to the south due to the weather, the senior skipper had to make his approach to Coromandel from the south, a route with which he was not familiar at night. His limited experience in using radar meant that he was unable to use the radar to its full potential and consequently chose the more difficult approach for those conditions. Again, had route guidelines and contingency plans been documented, and training been established and practised earlier, the senior skipper may have been able to make a more appropriate decision.

2.3.6 It was reported by the senior skipper that the need for documented procedures incorporating work instructions, and the need for training in the use of electronic navigation aids had been identified by him at the inception of the company; however, time constraints and management intervention precluded this being effected before the ferry service started. Once in service, the daily routine of operating the *Te Waka o Kapanga* combined with the workload increase caused by subsequent events left little time for him to implement his intentions.

2.3.7 When Coromandel Ferry Services commenced their operation the management appeared to have limited knowledge of the Maritime Transport Act and the requirements of the Act. Such knowledge can be researched, or the appropriate expertise can be employed to ensure compliance. An understanding of their obligations should have been achieved before the company started operating.

2.3.8 It was the company’s responsibility under the Maritime Transport Act to ensure that the skippers were in possession of the appropriate marine qualification to operate the *Te Waka o Kapanga*. Additionally, prior to joining a safe ship management system, the company had a moral obligation to ensure that the skippers not only were duly certificated, but also that they were sufficiently trained and/or had sufficient experience to operate the *Te Waka o Kapanga* in safety. By opting into a safe ship management system, the moral obligation became a requirement under the New Zealand Ship Safety Management Code, and thus under the Act. (See paragraph 1.9.5)

- 2.3.9 The terms of the contract between MMS and Coromandel Ferry Services were at variance with those described in the Safety Policy Manual on board the *Te Waka o Kapanga*. The Policy Manual stated that the land based management system for the safety of the maritime operation was contracted to MMS, and yet the contract stated that the safe ship management system was to be installed by Coromandel Ferry Services, with what appeared to be minimal help from MMS.
- 2.3.10 The *Te Waka o Kapanga* was operating out of survey for the first two weeks of commercial operation. Once the MMS safety officer had inspected the vessel, and MSA had granted an exemption from survey for the *Te Waka o Kapanga*, the vessel technically met standards equivalent to those required if it was still in survey.
- 2.3.11 The exemption from survey given by the MSA was subject to a number of conditions, one of which was that the *Te Waka o Kapanga* was to enter and remain satisfactorily within the safe ship management system operated by MMS. Although both MMS and Coromandel Ferry Services were working to implement the MMS safe ship management system from the time of the initial inspection of the *Te Waka o Kapanga*, this had not been achieved at the time of the accidents.
- 2.3.12 The code required instructions and procedures to ensure safe operation of ships and protection of the environment in compliance with the relevant New Zealand legislation, but a Safe Ship Management Certificate was issued for the *Te Waka o Kapanga* by MMS before the vessel Safety Management Policy Manual was finalised and placed on board. Without the manual MMS's quality officers could not conduct a systems audit effectively. Thus the certificate should not have been issued.
- 2.3.13 The Safety Management Policy Manual for the *Te Waka o Kapanga*, which was based on MMS's standard skeleton manual, adapted by Coromandel Ferry Services, and reproduced by MMS was merely a document stating what was intended to be done and by whom. Nothing in the manual actually told whoever was responsible how to do the task (work instructions), nor was there any other document, such as an operations manual or other form of work instructions, which did.
- 2.3.14 It is of concern that the safety policy manual placed all the responsibility for the safe ship management on the skippers of the *Te Waka o Kapanga*, yet neither MMS nor Coromandel Ferry Services appeared to have a procedure for ensuring that the skipper was qualified to, capable of, or suitably guided for implementing and maintaining the system.
- 2.3.15 To rely solely on a crew member's qualifications and past experience to operate a vessel is not advisable in an operation such as the Coromandel Ferry Service, where up to 70 passengers may be carried and several skippers and crew members may be employed. In such circumstances additional guidance and training is often required.
- 2.3.16 Under the safe ship management system which Coromandel Ferry Services had entered into with MMS, the shore "designated person" referred to in the New Zealand Ship Safety Management Code was the Area Safety and Quality Officer for MMS.
- 2.3.17 The responsibilities of the designated person under the code were to ensure the safe operation of each ship and to provide a link between the company and those on board. "The designated person should have direct access to the highest level of management ashore. The person should monitor the safety and pollution protection aspects of the operation of each ship and ensure that adequate resources and shore based support are supplied as required".

- 2.3.18 Ideally the designated person should have been a shore employee of the company who was familiar with the day to day operations of the *Te Waka o Kapanga* and the company. If MMS's area safety officers were to assume that role (as they did with MMS's other clients also) they would have needed to have an intimate knowledge of all aspects of the company's operation. As this was not practicable, MMS's concept of a designated person was flawed.
- 2.3.19 To conduct an effective systems audit the auditor needed to have access to some form of operations manual. In the absence of a dedicated instruction manual, much of this information should have been provided in the safety policy manual.
- 2.3.20 The complexity of a client's operation would dictate whether two separate manuals are required. For a one-ship operation such as Coromandel Ferry Services, one combined manual might suffice.
- 2.3.21 As a provider of safe ship management systems MMS had the responsibility for ensuring that at the time of entry into the system, and at regular intervals thereafter, a vessel, its operator and crew were complying with the New Zealand Ship Safety Management Code, and for reporting operators' "risk factor" back to the MSA. Such feedback to the MSA will take time to accumulate. Until it does this important defence will be missing from the safety loop.
- 2.3.22 When MMS issued a Safe Ship Management Certificate for a vessel, that certificate should have been evidence that the vessel and its operator were already complying with the code. In practice MMS could not know whether an operator was complying with the code until a full systems audit had been conducted. Under MMS's system that may not have been done for up to six months after the maritime document had been issued. Thus the certificate should not have been issued in the first place.
- 2.3.23 A new operator, or a current operator whose situation changed, initially would require closer monitoring than one who had been operating successfully for a number of years. Coromandel Ferry Services was a new operator with a new (to them) type of vessel.
- 2.3.24 The operator was responsible for ensuring that their vessel was "fit for purpose" at all times. MMS, as the provider of the shore designated person, shouldered some of that responsibility. "Fit for purpose" means in all respects, including being crewed by persons appropriately qualified and trained for the tasks. When this comment was put to MMS they indicated by their reply that they would be willing to take on a number of the tasks described above providing that the same standards were imposed on other safe ship management providers.
- 2.3.25 MMS's comments raised some concern as they indicated that there is a potential for competition between providers of safe ship management systems to cause a consequent reduction in service supplied to their clients. If not monitored closely, this could undermine the concept of the New Zealand Ship Safety Management Code. The MSA needs to review its system of auditing safe ship management provider companies to ensure that the companies' own systems are fulfilling the requirements of the code before they be allowed to supply safe ship management systems to vessel operators.
- 2.3.26 MMS has a substantial number of clients under its safe ship management umbrella. If current trends are a reliable indicator, the number is set to increase significantly as the date for compulsory safe ship management nears. In view of the minimal input that MMS's "competent" surveyor had in the inspection of the *Te Waka o Kapanga* before the first grounding, and the substandard repairs which were ratified by him after the grounding, it appeared that MMS did not have at the time the resources to cope with the predicted workload.

3. Findings

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

- 3.1 The *Te Waka o Kapanga* was crewed as required by the shipping (Manning of Restricted-Limit Ships) Regulations 1986 at the time of both groundings.
- 3.2 There is no evidence to suggest that either grounding was caused by the malfunction of any equipment.
- 3.3 The first grounding occurred on rocks that were marked on the chart in an area not suitable for the *Te Waka o Kapanga* to have been operating above five knots.
- 3.4 The skipper was aware of the rocks but misjudged the track of the *Te Waka o Kapanga* and caused the vessel to ground.
- 3.5 The skipper exceeding the five-knot speed restriction within 200 metres of the shore by a considerable margin, contributed to the grounding.
- 3.6 The relaxed culture of the company together with the lack of initial training and performance monitoring for the skipper allowed him to continue with past practices which were not compatible with the safe operation of a passenger ferry such as the *Te Waka o Kapanga*.
- 3.7 The lack of documented company procedures, work instructions and guidelines did little to encourage the skipper to make the transition from deckhand on inshore fishing vessels to skipper of the *Te Waka o Kapanga*.
- 3.8 The safe ship management system that the *Te Waka o Kapanga* was entered into did little to ensure the skipper was appropriately trained and experienced to operate the *Te Waka o Kapanga* in safety.
- 3.9 The second grounding occurred on rocks that were clearly marked on the chart and were known to the senior skipper.
- 3.10 The senior skipper misjudged the changing effect of set and leeway on the track of the *Te Waka o Kapanga* as the vessel rounded Cow Island and caused the vessel to ground.
- 3.11 The approach path which the senior skipper took into Coromandel Harbour on the night of the accident was unfamiliar to him and this, combined with the severe weather conditions and his limited experience with radar, contributed to the second grounding.
- 3.12 The Coromandel Harbour navigation aids were inadequate to ensure vessels entering or leaving the harbour could do so safely.
- 3.13 The weather conditions on the night of the second grounding were marginal for the *Te Waka o Kapanga* to be operating in safety.
- 3.14 Fatigue and commercial pressure affected the senior skipper's unwise decision to proceed with the trip in poor weather conditions. If documented company instructions setting maximum weather criteria were available to the senior skipper, he may not have proceeded with the trip.
- 3.15 Fatigue and his reaction to events that occurred on and prior to the accident trip adversely affected the senior skipper's decision making and judgement at the time of the accident.

- 3.16 The approach to Coromandel Harbour the senior skipper chose was not the safest route for the conditions on the night.
- 3.17 Contingency route planning and training would have assisted the senior skipper in selecting the more favourable approach to Coromandel Harbour.
- 3.18 The *Te Waka o Kapanga* did not have the required valid Certificate of Survey when the vessel first entered service.
- 3.19 The requirement for a Certificate of Survey was superseded when the *Te Waka o Kapanga* was entered into a safe ship management agreement with MMS. A condition was that MMS maintained a satisfactory safe ship management system and that the *Te Waka o Kapanga* remained satisfactorily in that system.
- 3.20 Although the *Te Waka o Kapanga* had been issued with a Safe Ship Management Certificate by MMS, a safe ship management system had not been installed effectively at the time of the first grounding.
- 3.21 The safe ship management system for the *Te Waka o Kapanga* had been installed by the time of the second grounding, but still did not comply fully with the New Zealand Ship Safety Management Code.
- 3.22 Because the safe ship management system for the *Te Waka o Kapanga* did not meet the requirements of the code, the vessel could not be considered “fit for purpose” at the time of either grounding.
- 3.23 MMS’s policy regarding their safe ship management system, as applied to the *Te Waka o Kapanga*, did not meet the requirements of the New Zealand Ship Safety Management Code.
- 3.24 The MSA’s involvement in “recognising” MMS as a safe ship management provider did not ensure that MMS were complying with the code before being permitted to ply for business as a safe ship management provider.

4. Safety Recommendations

- 4.1 It was recommended to the General Manager for Coromandel Ferry Services Ltd that he:
- 4.1.1 Provide training for all company masters in the use of radar and other electronic aids. (015/97)
- 4.1.2 Review the charted area in which the *Te Waka o Kapanga* operates, combine this with the experience and local knowledge of the area staff have, and produce a set of guidelines to show into which areas skippers may go, and any restrictions on such areas including recommended minimum passing distances off known dangers. (062/97)
- 4.1.3 Produce guidelines for skippers detailing the procedure for obtaining weather forecasts and weather minima applicable for proceeding on any trip. (063/97)
- 4.1.4 Produce an Operations Manual to cover all aspects of the company and craft operation and establish a procedure to ensure all staff are familiar with its contents. (064/97)

- 4.1.5 Liaise with Maritime Management Services and review the Safety Management Policy Manual for the *Te Waka o Kapanga* critically to ensure it contains all of the relevant safety information from the Company Operations Manual necessary to comply with the New Zealand Ship Safety Management Code. (065/97)
- 4.2 The General Manager for Coromandel Ferry Services Ltd responded in part as follows:
- 4.2.1 **015/97** - The Coromandel Ferry Service accepts this recommendation. We will be arranging radar courses with the New Zealand Maritime School. It is anticipated that all of our masters will have been trained to a Restricted Radar level (that equivalent to a Coastal Masters Certificate) by winter 1998.
- 4.2.2 **062/97** - The new Operations Manual and amended Safety Management Policy Manual will include routes that are required for a given voyage, and the dangers and reporting procedures if a master has to deviate for weather or other reasons. This is being developed in consultation with the ship masters.
- 4.2.3 **063/97** - Guidelines are being developed in consultation with the ship masters. These will be included in the Ship Operations Manual.
- 4.2.4 **064/97** - The Operations Manual is being produced in consultation with company staff. The manual will be submitted to MSA and MMS before the *Te Waka o Kapanga* enters into service.
- 4.2.5 **065/97** - This process has already started and will be complete before the *Te Waka o Kapanga* enters service.
- 4.3 It was recommended to the Chief Executive of Maritime Management Services that he:
- 4.3.1 Liaise with Coromandel Ferry Services and review the Safety Management Policy Manual for the *Te Waka o Kapanga* critically and ensure it contains the relevant operational and safety instruction necessary to comply with the New Zealand Ship Safety Management Code. (066/97)
- 4.3.2 Ensure that the Safety Management Policy Manual for each vessel under MMS's safe ship umbrella, together with any other manuals, contains all relevant operational and safety instruction necessary to comply with the New Zealand Ship Safety Management Code. (067/97)
- 4.3.3 Review MMS's role in the safe ship management critically and, where necessary, change its policy and practice to ensure each of its clients operate under an effective safe ship management system. (068/97)
- 4.3.4 Change MMS's policy and procedures to ensure that when a client is a new operator, or an existing operator whose situation changes significantly, a systems audit be conducted on the vessel and any unsatisfactory feature corrected before he issues a Safe Ship Management Certificate. (069/97)
- 4.3.5 Ensure MMS's resources are adequate for present and predicted workloads. (070/97)

4.4 The Chief Executive for Maritime Management Services responded in part as follows:

- 4.4.1 **066/97** - We have been working closely with Coromandel Ferry Services Ltd since their accident, and our suspension of their Safe Ship Management Certificate, to reformulate their Safety Management Policy Manual and help them to develop their Operational and Safety Procedures Manual to fully cover the requirements of the Code. The lifting of their Safe Ship Management Certificate Suspension will not be made until we, and the MSA, are satisfied that their systems are fully in place and that the vessel is "Fit for Purpose". We expect this to be completed somewhere around the beginning of October 1997.
- 4.4.2 **067/97** - A draft Safety Management Policy Manual including all changes agreed with the MSA and a new Draft Operations Manual, for every vessel in our system is currently being presented to all owners. Both manuals have guidelines for completion as attachments. We anticipate that the revisions should be completed and signed off by MMS within four months.
- 4.4.3 **068/97** - MMS has reviewed its role in safe ship management in light of your recommendations in consultation with the MSA. We believe that with the expansion of the Safety Management Policy Manual, the appropriate guidelines and instructions and subsequent systems audits of the vessels, a step forward in safe ship management will be taken.
- 4.4.4 **069/97** - MMS's policy for the future in issuing Safe Ship Management Certificates will be to consider, prior to entry into our system, the operating intentions, parameters and safety procedures of any new operator, or those whose situation alters significantly. This will embrace any vessel whose ownership and land based designated person changes.
- 4.4.5 **070/97** - MMS has, as a matter of policy, had a continuing review of its resources and no change is envisaged. As an outcome of these reviews the company has isolated those areas where sufficient resource is available and has restricted its operations to them. At no time has the company's policy been to be "all things to all people". For this reason, and whilst it wishes to expand and assist the MSA to bring vessels into safe ship management, it will do so only as it is able.

4.5 It was recommended to the Director of Maritime Safety that he:

- 4.5.1 Ensures Maritime Management Services are fulfilling the requirements of a safe ship management provider under the New Zealand Ship Safety Management Code. (071/97)
- 4.5.2 Ensures that all safe ship management providers meet or exceed the same minimum standards. (072/97)

4.6 The Director of Maritime Safety responded as follows:

4.6.1 **071/97** - The Maritime Safety Authority (MSA) will ensure that Maritime Management Services (MMS) are fulfilling the requirements of a safe ship management provider immediately. An audit of MMS has been conducted under section 54 of the Maritime Transport Act 1994. Final approval of MMS as a safe ship management provider has not yet been granted. The company is presently restricted to the level of 'recognition' by the MSA within our approval process. The MSA will proceed further with approval of this Safe Ship Management company under the requirements of Part 21 of the Maritime Rules if they satisfactorily address our audit findings and recommendations and close out any non-conformance reports that may be received from a scheduled audit of their ISO system by Standards New Zealand in November.

4.6.2 **072/97** - Maritime Rule 21.12 (Safe Ship Management Systems) requires that, from 1 February 1998, safe ship management providers have a valid certificate issued by a recognised accreditation body. This indicates that they have implemented a quality assurance system. In addition, safe ship management providers must meet or exceed the minimum standard by acquiring an assured supplier status in terms of AS/NZS ISO 9001 or 9002 as appropriate. It is by closely administering this rule and by conducting audits under section 54 of the Maritime Transport Act that the Maritime Safety Authority intends to ensure that the safe ship management providers meet the minimum standard.

4.7 It was recommended to the Coromandel/Thames District Council Harbourmaster that he:

4.7.1 Assess the suitability and, where necessary, upgrade the Coromandel Harbour navigation aids to allow passenger ferries such as the *Te Waka o Kapanga* to enter and leave the harbour in safety. (073/97)

4.8 The Coromandel/Thames District Council Harbourmaster responded in part as follows:

4.8.1 A solar panel light was installed at the Sugarloaf Point, Coromandel Harbour on Tuesday 14 October 1997. The Maritime Safety Authority, Wellington have been advised of the light characteristics and I anticipate this information will appear shortly in Notices to Mariners. In addition I intend to investigate the possibility of a site being established on Preeces Point (Coromandel Harbour) where power is available.

15 October 1997

Hon. W P Jeffries
Chief Commissioner

Glossary of marine abbreviations and terms

AC	alternating current
aft	rear of the vessel
beam	width of a vessel
bilge	space for the collection of surplus liquid
bridge	structure from where a vessel is navigated and directed
bulkhead	nautical term for wall
bus	an arrangement of copper conductors (Bus bars) within a switchboard, from which the circuits are supplied
cable	0.1 of a nautical mile
chart datum	zero height referred to on a marine chart
command	take over-all responsibility for the vessel
conduct	in control of the vessel
conning	another term for “has conduct” or “in control”
DC	direct current
deckhead	nautical term for roof
dog	cleat or device for securing water-tight openings
draught	depth of the vessel in the water
EPIRB	Emergency Position Indicating Radio Beacon
even keel	draught forward equals the draught aft
freeboard	distance from the waterline to the deck edge
free surface	effect where liquids are free to flow within its compartment
freshet	term used to describe an increase of water level in the river due to rain in the mountains
focsle	forecastle (raised structure on the bow of a vessel)
GM	metacentric height (measure of a vessel’s statical stability)
GoM	fluid metacentric height (taking account the effect of free surface)
GPS	Global Positioning System
GS	general service
heel	angle of tilt caused by external forces
hove-to	when a vessel is slowed or stopped and lying at an angle to the sea which affords the safest and most comfortable ride
Hz	Hertz (cycles)
IMO	International Maritime Organisation
ISO	International Standards Organisation
kW	kilowatt
list	angle of tilt caused by internal distribution of weights
m	metres
MSA	Maritime Safety Authority
NRCC	National Rescue Co-ordination Centre

point	measure of direction (one point = 11¼ degrees of arc)
press	force a tank to overflow by using a pump
SAR	Search and Rescue
SOLAS	Safety Of Life At Sea convention
sounding	measure of the depth of a liquid
SSB	single-side-band radio
statical stability	measure of a vessel's stability in still water
supernumerary	non-fare-paying passenger
telegraph	device used to relay engine commands from bridge to engine room
ullage	distance from the top of a tank to the surface of the liquid in the tank
V	volts
VHF	very high frequency
windlass	winch used to raise a vessels anchor