Report 96-211

Restricted-Limit Charter Launch *Toroa*

collision with exposed rock

Port Hardy, D'Urville Island,

11 November 1996

Abstract

On Monday, 11 November 1996, at about 0820 hours, the charter launch *Toroa* collided with a rock off Castle Head near the entrance to Port Hardy, D'Urville Island. Five of the nine passengers on board received slight to moderate injuries in the collision. Visibility was good and the sea conditions calm. The collision was caused by the inadvertent moving of the second steering wheel fitted to the boat, at a time when the progress of the *Toroa* was not being monitored adequately. A safety issue was the accessibility of the second steering wheel to unauthorised persons. It was recommended that a securing device be placed on the second steering wheel when it is not in use.

96-211

Toroa

Transport Accident Investigation Commission

Marine Accident Report 96-211

Boat Particulars:

Name:	*Toroa*
Type:	Passenger charter launch (crewed)
Class:	IV and V, passenger ship not plying beyond River Limits or Extended River Limits.
Passenger capacity:	47 (River Limits) 30 (Extended River Limits)
Length (Overall):	13.36 m
Breadth:	3.25 m
Gross tonnage:	12.85 t
Construction:	Wood
Built:	Kenepuru Sound in 1954
Propulsion:	One 82 kW Gardner 6LX diesel engine driving a single fixed-pitch propeller
Speed:	10 knots
Operator:	Kenepuru Tours Ltd
Location:	Castle Head, Port Hardy, D'Urville Island
Date and time:	Monday, 11 November 1996 at 0820 hours[1]
Persons on board:	Crew: 1 Passengers: 9
Injuries:	Crew: 1 (minor) Passengers: 5 (2 minor, 3 moderate)
Nature of damage:	Hull breached, minor damage to internal fittings
Investigator in charge:	Capt. Tim Burfoot

[1] All times in this report are NZDT (UTC + 13 hours)

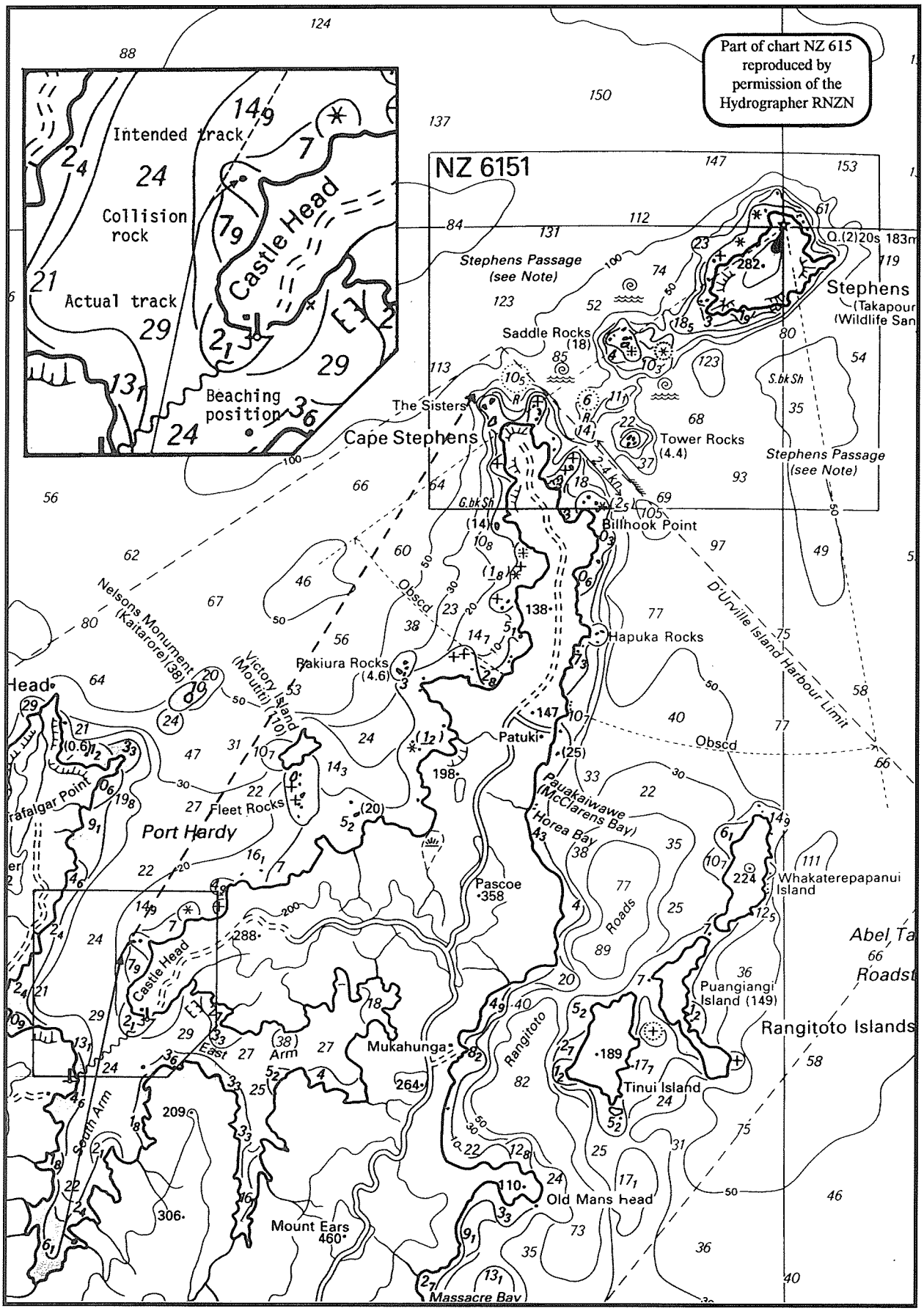

Figure 1
Part of Chart NZ615, showing approximate track of *Toroa*

1. Factual Information

1.1 History of the voyage

1.1.1 On Friday, 8 November 1996, the owner/skipper of the restricted-limit charter launch *Toroa*, serviced the boat at the company home base in Kenepuru Sound in preparation for a three-day fishing charter. He then proceeded to Havelock in the *Toroa* to pick up the group that had made the charter.

1.1.2 The group comprised nine friends who were on an annual fishing trip. One of the group was a long-time friend of the skipper, and had been on many trips on the *Toroa*. In return for a reduced fee he helped with the cooking, steering and general duties around the boat.

1.1.3 The *Toroa* left Havelock at about 1730 hours that day, steamed for about two hours, dredged for scallops, and eventually anchored in a sheltered bay at about 2230 hours.

1.1.4 The skipper gathered the group in the aft cockpit of the boat and gave them a safety talk. He explained the rules of the boat as far as cleanliness was concerned and pointed out the location, and explained the operation, of the various life-saving and fire-fighting equipment aboard the boat.

1.1.5 During Saturday and Sunday the *Toroa* travelled out of Pelorus Sound, through French Pass and up the west coast of D'Urville Island, stopping at various locations to fish on the way.

1.1.6 On Sunday night the *Toroa* sat on a mooring in South Arm of Port Hardy. The next day it was planned to return to Havelock via Stephens Passage arriving in the early afternoon so that the group would have time to drive back to Christchurch that day. (See Figure 1.)

1.1.7 The skipper retired at about 2200 hours as he wanted to start early the next day in case sea conditions in Stephens Passage slowed their progress.

1.1.8 Everyone was awake by 0700 hours on Monday. The weather was fine and the sea glassy where the *Toroa* was moored. The skipper and his friend began preparing breakfast for the rest of the passengers. At 0755 hours, due to the calm sea, the skipper decided to get under way during breakfast. The mooring was slipped and the skipper headed the *Toroa* out of South Arm with the engine running at just above idle.

1.1.9 The passengers were eating breakfast, some in the main cabin, some out in the cockpit aft. The skipper was steering the boat manually while his friend continued cooking breakfast in the galley, which was on the port side aft in the wheelhouse.

1.1.10 The *Toroa* left South Arm and rounded Castle Head. When clear of Castle Head the skipper, satisfied that the engine had warmed through, increased the engine rpm until the *Toroa* was travelling at about nine knots.

1.1.11 He adjusted the course so that the *Toroa* would clear The Sisters rocks up near Stephens Passage and left the boat to steer itself, but still kept a lookout. The sea was still glassy and there was no significant swell. According to the skipper, the *Toroa*, with its narrow beam and long straight keel, had excellent course-keeping qualities and he did not have to make any wheel adjustments to keep the boat on track.

1.1.12 At about 0818 hours the skipper's friend handed him a plate of breakfast. The skipper checked to see that the *Toroa* was on track and keeping its course. He estimated that the pinnacle of rock (un-named) off the north-west point on Castle Head was about 200 m ahead of the *Toroa*, and that their track would clear the rock by about 80 m.

1.1.13 The skipper then sat down facing aft at the forward end of the table in the wheelhouse. The steering wheel was close by his right side.

1.1.14 The friend was still standing near the stove cooking for the rest of the passengers. Although nothing was said, the skipper assumed that his friend would be keeping a lookout while he ate his breakfast. The friend sat down at the table on the port side of the wheelhouse and started eating his breakfast. From their seated positions neither could see the forward horizon over the helm and control console.

1.1.15 At about 0820 hours the skipper stood, turned and looked forward to check the *Toroa's* course. He saw the rock directly ahead of the boat but only had time to make an exclamation before the *Toroa* collided head-on with the rock.

1.1.16 The skipper sustained cuts and bruising as he was thrown forward and half way down the stairs leading into the forepeak accommodation. The friend, who was thrown forward into the steering wheel and struck from behind by the microwave oven and other debris from the galley, sustained a broken collarbone, cuts and bruising.

1.1.17 Four of the eight remaining passengers in the main cabin and aft cockpit area sustained moderate injuries which included concussion, cuts and severe bruising.

1.1.18 Shortly before the collision one of the passengers, who had been sitting next to the second steering wheel in the aft cockpit, stood up and made his way into the main cabin to start sorting out his personal belongings. He had walked to the front of the cabin, rolled up his parka top and put it in his bag, rolled up his leggings and was about to put them in the bag when the collision occurred.

1.1.19 The skipper climbed back up into the wheelhouse immediately and disengaged the engine. He looked behind the boat and noted that the wake left by the *Toroa* formed a gentle, uniform arc turning to starboard. He checked the autopilot and noted that it was still in manual steering mode.

1.1.20 The skipper looked down in the forepeak and noted that the boat was taking on water. He went aft to check on the other passengers. Seeing that the injured were being attended to by the uninjured passengers, the skipper returned to the wheelhouse.

1.1.21 The skipper backed the *Toroa* off the rock. He tried making contact with the *Intrepid* (a mussel harvester barge that was inbound into Port Hardy) on VHF radio channel 16. He could not make contact with the barge, so he turned the *Toroa* around and, keeping close to the shore, started heading back around Castle Head. He intended beaching the boat in Waiua Bay, which would offer shelter from any swell if the weather deteriorated.

1.1.22 The skipper engaged the engine-driven emergency fire and bilge pump and adjusted the valves to draw from the forepeak compartment. In spite of there being a watertight bulkhead forward of the engine compartment, the aft bilge was also filling with water, some of which was being ejected by the automatic electric bilge pump located in the engine room.

1.1.23 The skipper released a red parachute flare to try and attract the attention of the *Intrepid*; unimpressed with the daylight visibility of the flares he released a daylight orange smoke bomb from the stern of the boat.

1.2.8 The rudder could be moved by an actuator driven by any one of three hydraulic pumps, one on each steering wheel and one on the autopilot. Each pump was independent of the others but all three shared common hydraulic lines to the rudder hydraulic actuator. If the steering wheel in the cockpit was turned its pump would supply the rudder actuator, but the wheel in the wheelhouse would not move, and vice versa.

1.2.9 If the cockpit wheel was turned, a person steering from the wheelhouse would not feel the movement, but would notice the boat veer off course. If two people applied opposite helm at the same time, the one with the most turns of the wheel determined which way the rudder moved.

1.2.10 In September 1996 the *Toroa* was slipped for its four-year survey. There were no outstanding recommendations attached to the new Certificate of Survey.

1.2.11 The *Toroa* had the appearance of a clean and well maintained boat when inspected on the slipway after the accident.

1.3 Damage to the boat

1.3.1 The *Toroa* was holed near the bottom of the stem post. Some of the planks were sprung back from the initial point of impact.

1.3.2 Other damage was limited to dislodgement of equipment in the galley and wheelhouse, and the fracturing of the saltwater circulating pipe by the hot-water urn located in the engine room with consequent partial flooding of the aft bilge.

1.3.3 The skipper reported that the steering system worked well after the accident.

1.4 Personnel and company information

1.4.1 The skipper of the *Toroa* was born into the third generation of a family who had operated charter boats in the Marlborough Sounds. He grew up in the charter boat industry, gaining boating experience while very young.

1.4.2 He completed apprenticeships in automotive and marine electrical engineering, electronic instrument servicing, and servicing of outboard and sterndrive motors of all types at that time.

1.4.3 The skipper holds the following marine qualifications:

- Inshore Fishing Skipper Certificate
- New Zealand Commercial Launchmaster Certificate
- New Zealand 2nd Class Diesel Trawler Engineer Certificate.

1.4.4 Kenepuru Tours bought its first boat, the *Toroa* in 1984. Since then they have commissioned two other charter boats. The company specialises in fishing, cruises and water-taxi services in the Marlborough Sounds.

1.4.5 The skipper had a reputation within the industry for being safety conscious and, according to him, this was the first incident in which he had been involved since starting the company in 1984.

2. Analysis

2.1 The *Toroa* should have kept a reasonably straight course in the calm conditions that prevailed on the morning of the accident.

2.2 It is possible for the course of a boat to alter due to wind or waves, but neither was present on the morning of the accident. Although a current eddy may alter the course of a vessel, it is unlikely to cause a constant rate of turn such as that indicated by the wake of the boat when the skipper looked back after the collision.

2.3 The most likely cause of the starboard turn the *Toroa* made into the rock was an inadvertent movement of the aft helm. Such a movement must have occurred after the skipper last checked the course of the boat before sitting down to eat his breakfast.

2.4 The time taken for the *Toroa* to travel the estimated 220 m to the rock from the position where the skipper last checked the course would have been less than one minute, about the same time it would have taken for the passenger sitting next to the wheel to stand up, walk forward and begin packing his bag.

2.5 The passengers were unaware how the steering system on board the *Toroa* worked, and of the effect moving the cockpit wheel could have on the course of the boat. As the wheel did not move when the skipper operated the wheel in the wheelhouse, they assumed it was disconnected.

2.6 It is probable that the passenger inadvertently knocked the wheel as he stood up. Once the rudder had travelled with the movement of the wheel it would have remained in that position unless opposite helm was applied from either helm position.

2.7 Neither the skipper nor his friend was monitoring the course of the boat at the time. If they had been they would have seen the bow of the *Toroa* fall away to starboard, and applied corrective helm.

2.8 The skipper assumed that his friend would keep an eye on the progress of the *Toroa* while he ate his breakfast. He assumed this because he had been handed his breakfast which required him to sit at the table to eat with a knife and fork. The skipper did not recall his friend sitting down across from him at the table shortly after he sat down. His friend would have been sitting there for less than one minute.

2.9 The absence of a proper hand-over of the con resulted in neither person taking responsibility for monitoring the progress of the boat. The good weather and calm sea conditions are likely to have caused both the skipper and his friend to relax, knowing the good track-keeping qualities of the *Toroa* in those conditions.

2.10 It was the skipper's responsibility to either monitor the progress of the *Toroa*, or ensure somebody else was doing so. Neither was done and an unforeseen incident caused the boat to alter its course to starboard and collide with the rock.

2.11 This accident highlights the need for vigilance when conning a vessel, particularly when navigating in close proximity to navigational hazards.

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3. Findings

3.1 The Certificate of Survey for the *Toroa* was current and the boat was manned as required by the Shipping (Manning of Restricted-Limit Ships) Regulations.

3.2 The *Toroa* was a well-maintained boat.

3.3 No machinery or equipment failure contributed to the accident.

3.4 The collision with the rock was probably caused by a passenger inadvertently moving the second steering wheel in the cockpit aft, which happened at a time when the progress of the *Toroa* was not being monitored adequately.

3.5 The progress of the boat was not being monitored adequately because no proper hand-over of the con had taken place.

3.6 The failure to post a proper lookout was uncharacteristic of the skipper.

4. Safety Recommendations

4.1 It was recommended to the skipper of the *Toroa* that he:

4.1.1 Fit a device to the aft steering wheel to secure it against inadvertent operation. Such a device should be quick-release to allow instant helm control should it be required in an emergency, (012/97) and;

4.1.2 Warn passengers, as part of the safety talk, which should be given before the boat departs, not to operate either wheel unless directed to do so by the master or crew, (013/97).

4.2 The skipper of *Toroa* responded as follows:

4.2.1 012/97: A devise has been fitted to M.V. *Toroa* to stop the rear steering wheel turning when not being used by the crew.

4.2.2 013/97: Action has been taken to inform all passengers not to operate the steering controls unless advised to do so by the crew.

4.2.3 Both recommendations have been actioned and we thank you for your advise on these matters.

11 June 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