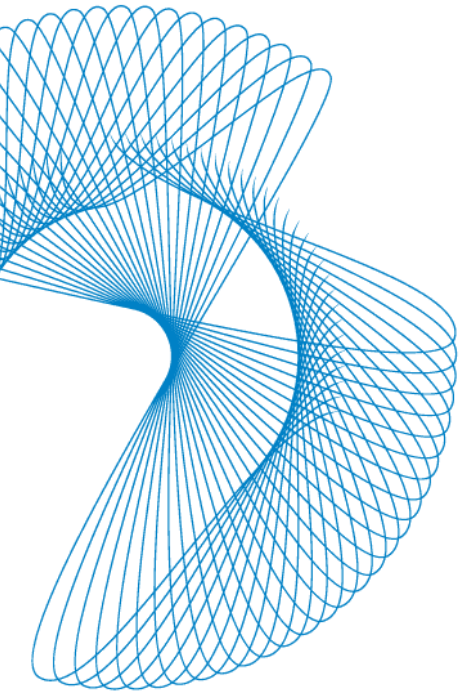
MARITIME NEW ZEALAND



Accident Report

Serious Harm

Kawau Kat III

16 September 2005

Class A

Kawau Kat III

REPORT NO.: 96 458

VESSEL NAME: *KAWAU KAT III*

Ship Type:	Passenger Ferry
Certified Operating Limit:	Auckland Inshore, Barrier Restricted Inshore
Port of Registry:	Auckland
Flag:	New Zealand
MSA No.:	105992
Built:	1996
Construction Material:	Aluminium
Length Overall (m):	17.26
Gross Tonnage:	107
Registered Owner:	Kiwi Kat Limited
Ship Operator/Manager:	Phil Andrew
SSM Company:	Maritime Management Services
Accident Investigator:	Ian Howden

SUMMARY

At 1055 hours on 16 September 2005 New Zealand Standard Time (NZST), the commercial passenger vessel *Kawau Kat III* was approaching her loading berth at Gulf Harbour Marina on the Whangaparaoa Peninsula in the Hauraki Gulf. On board was the Master and one Crewmember.

As the Crewmember attempted to secure the spring line from the wharf to the vessel she sustained serious harm injuries to two of her fingers. One was degloved and the other was crushed. An ambulance was called and she was hospitalised.

Maritime New Zealand immediately commenced an investigation. The Crewmember, Master, Operations Manager and other company employees were interviewed. Documentation and equipment was obtained from the vessel and the vessel was inspected.

This report outlines the obligations of employers to ensure the safety of employees on board vessels and makes recommendations to prevent accidents of this type from occurring in the future.

NARRATIVE

On Friday 16 September 2005 at approximately 1055 hours NZST (New Zealand Standard Time), the commercial passenger vessel ***Kawau Kat III*** was approaching the commercial vessel berthing wharf known as Z Pier in Gulf Harbour Marina. The vessel had unloaded passengers at Tiri Tiri Matangi Island and was returning with the Master and Crewmember on board. A strong southerly was blowing. This caused the vessel to be blown off the face of the wharf during berthing *(See Figure 1 - Berth and approach (not to scale))*.

Initial attempts to secure the spring line on the wharf were unsuccessful due to the inability of the Crewmember to secure the loop end of the spring line to the cleat on the starboard bow of the vessel. This was due primarily to a defective boat hook.

After a series of approaches, the Crewmember managed to secure the loop end of the line over the forward horn of the cleat. Whilst she was doing this vessel was blown off the face of the wharf and tension started coming on to the line. She attempted to secure the loop over the aft horn of the cleat. The Master shouted at her to remove her hand. The line tightened and her fingers were caught between the line and the cleat causing serious injuries.

On realising the nature of her injuries she wrapped her hand in a towel and secured the line around the cleat. The Master rendered first aid. An ambulance was called and she was taken to hospital. She was admitted and underwent surgery. As a result of the accident the tip of one finger was amputated and another was severely lacerated.

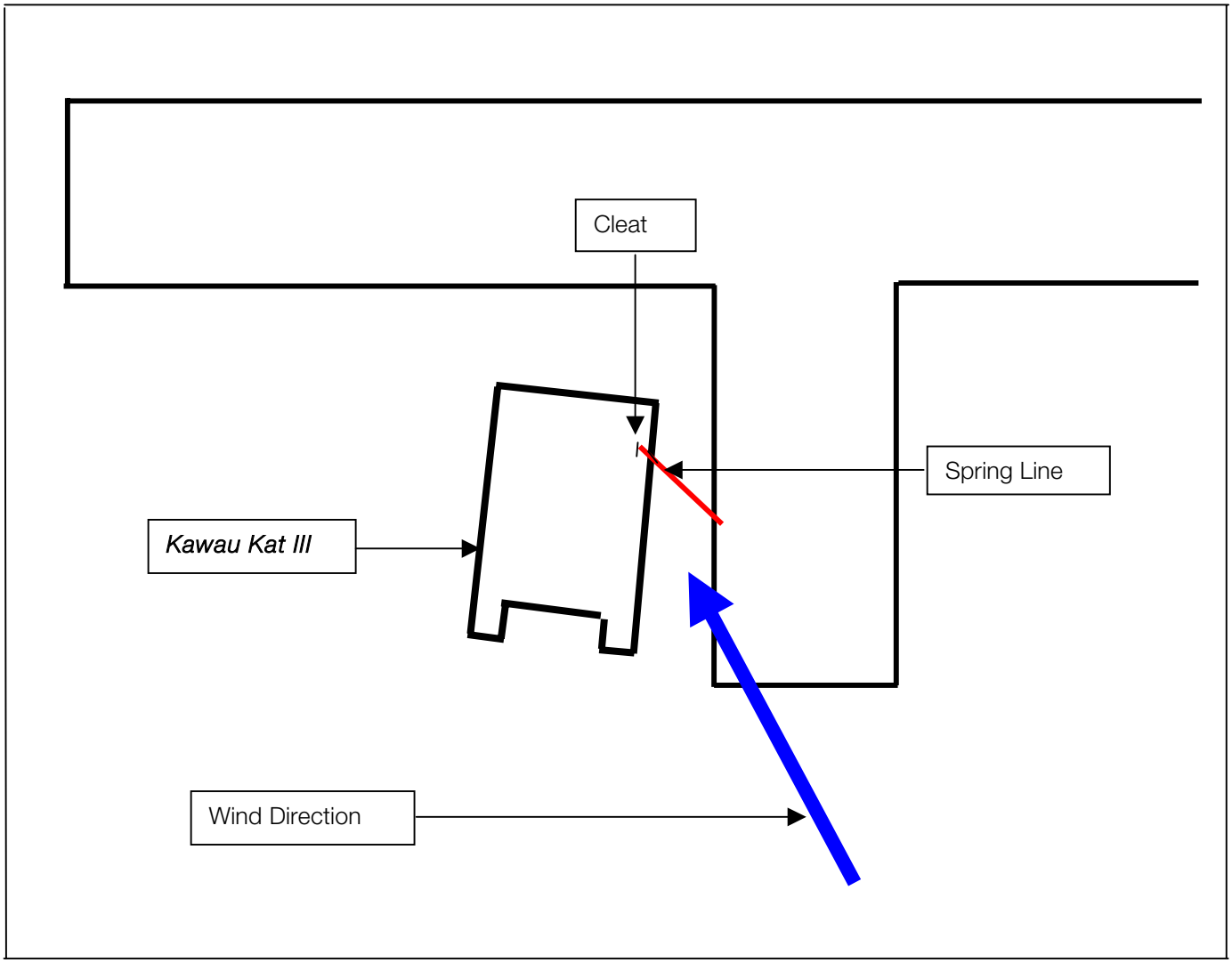


Figure 1
Diagram of Berth *(not to scale)*

Vessel

Kawau Kat III is a wooden catamaran owned by Kiwi Kat Limited. The vessel is a commercial inshore limits passenger vessel of 107 gross tonnes and 17.26 metres in length. She is powered by two 338.0 kW motors. Scheduled runs are made to different destinations in the Hauraki Gulf. A current Safe Ship Management (SSM) Certificate was on board and the vessel was manned in accordance with manning requirements. Good vision is offered from both port and starboard helm berthing positions.

Manning

The Master holds a Commercial Launch Master Certificate. He has over five years commercial experience and has been a master on ***Kawau Kat III*** and other company vessels for two years. He had completed a two-day medical course two months prior to the accident.

The injured Crewmember holds a Commercial Inshore Hospitality Crewmember's Certificate. She is aged 20 and had been employed by the company as hospitality hostess approximately six weeks prior to the accident.

Company Training Procedures

The owner of *Kawau Kat III* purchased the company and fleet approximately 18 months prior to the accident. This was the first accident in the fleet under new management. Since purchase, the company has put in place comprehensive safety and training procedures. A Senior Master has been appointed to review and evaluate safety systems on all fleet vessels. The Operations Manager advises new employees that personal safety is of paramount importance. New crew are required to work alongside an experienced crewmember for training. During this period the Master has overall responsibility to ensure that proper training is carried out. A crew training and sign off sheet is utilized for this purpose. After training, crew are required to confirm by signature that training has been completed in relation to specified areas. This includes the following:

- "Basic and safe rope handling"
- "Importance of safety to:

  - self
  - passengers
  - vessel"

The injured crewmember had signed off the above requirements. She stated she had been well trained by the company in relation to personal safety and that she was aware of the danger of hands or fingers being caught between lines in cleats. Whilst completing her course in maritime hospitality this hazard was also pointed out to her.

Hazard Identification

Kawau Kat III has a hazard identification sheet on board within the vessel's SSM manual. It does not refer to the danger of injury from lines whilst berthing. The Operations Manager stated that requiring hospitality staff to read and be familiar with the manual was not part of company procedure as hazard identification was addressed during hands on training through the crew training and sign off sheet procedure. Both the manager and crew stated the crew used the following procedures to identify hazards to management:

- Oral communication. Crew stated the Operations Manager was regularly on board company vessels and frequently sailed as a skipper.
- With requisition order forms. These are kept on board and sent by fax to management.
- Maintenance plan notes

The injured crew person had not sighted the hazard identification sheet on the vessel. Among other requirements the SSM manual states that crew have a responsibility to notify the master of any hazards. She was aware of the requisition order procedure. The company produced a purchase form from *Kawau Kat III* requesting a non-telescoping boat hook for the vessel but this was dated after the accident. *NB. The company is replacing all telescoping boat hooks of the type involved in this accident with purpose built non telescoping hooks.*

Berthing Equipment

Kawau Kat III was equipped with a 212 cm long boathook pole. This was removed from the vessel during the investigation and on examination found to be defective. The hook comprises two sections of aluminium pole one of which extends from inside the other. The hook section is 116 cm in length. A twist lock mechanism is intended to prevent the two sections from extending or telescoping whilst in use. It was found the locking mechanism was defective and there was nothing to prevent the hook end of the pole from detaching from the other section. The last SSM company inspection form, dated 25

January 2005, indicated the boat hook was in good order. A senior crewmember stated he recalled using the boathook one week prior to the accident and found it to be in good order *(See Figures 2 & 3 - Photographs of boathook)*. The cleat was constructed of stainless steel *(See Figure 4 - Photograph of cleat)*.

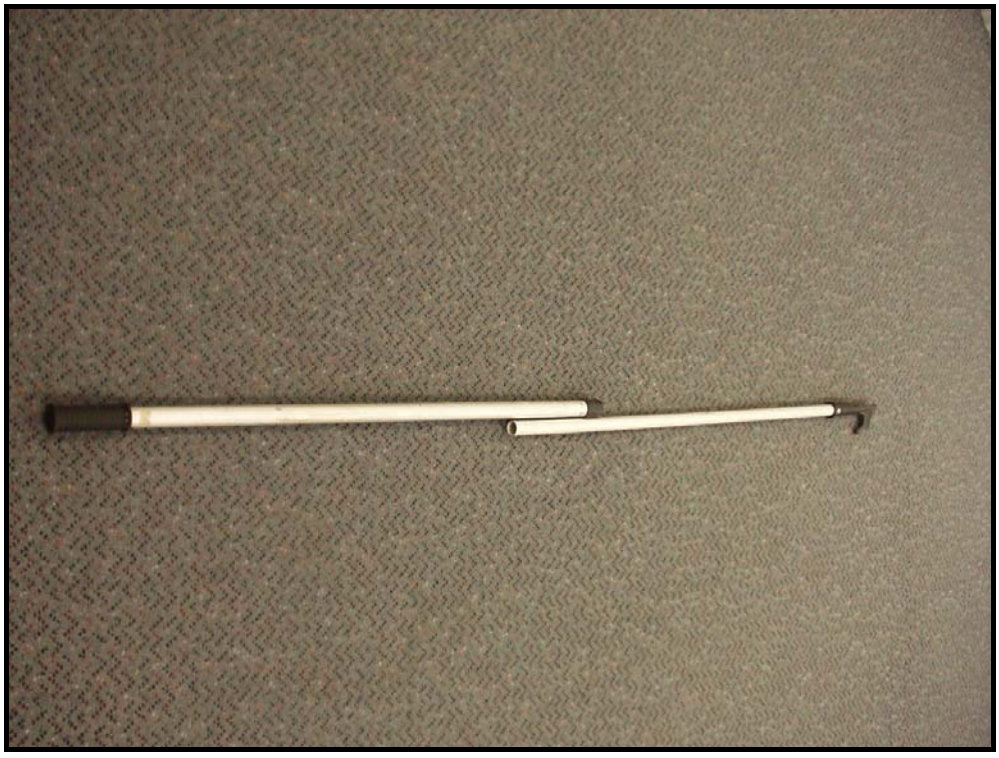


Figure 2
Photograph of Boat Hook

Figure 3
Locking Section

Figure 4
Photograph of Cleat

Evidence of the Master

He stated that strong winds were blowing from the southwest causing the vessel to blow off the face of the wharf. On the last attempt to berth prior to the accident he ordered the Crewmember to release the line from her hand due to unsafe circumstances, namely the vessel being blown off the wharf face and the slack coming out of the line. After she did this, he positioned the vessel to re-approach the wharf.

On the final attempt to berth, he positioned the vessel with the starboard quarter on the wharf face with the starboard motor in reverse. With the port engine in forward gear, he manoeuvred the starboard bow into the wharf. He instructed the Crewmember to use the hook end of the boathook and she was able to retrieve the loop end of the line and place the loop on the forward horn of the cleat. At this stage the vessel commenced to blow off the wharf face. The Master ordered her to remove her hand from the rope as he could see the slack was going out of the line. She failed to respond immediately and caught her fingers between the cleat and line and was injured. The Master immediately secured the vessel and rendered first aid. He called an ambulance and requested marina security to direct the ambulance to the berth.

This was the second time the Crewmember had sailed with the Master. He understood she had completed her crew sign off sheet and was able to perform her duties safely.

He was unaware the boat hook was defective, having recently returned from extended leave. He considered however the hook section was adequate to retrieve the line.

He considered the primary cause of the accident was the failure of the Crewmember to immediately obey his orders. He stated that after the accident the crewmember said, *"I should have listened to you".*

He agreed however that the Crewmember had very little time to respond to his orders, possibly split seconds.

Evidence of the Crewmember

She stated that she was aware of the hazards relating to handling lines whilst berthing. This was due to her maritime school training and training given as a new employee. She had observed the boat hook was defective some weeks prior to the accident and had advised a senior crew person of this in the expectation that it would be either repaired or replaced. She was aware of a requisition order book for the vessel but as a new employee was unaware if she had authority to order a new boat hook. In terms of reporting hazards to management she was unaware of any individual who was the designated person to maintain safety standards on vessels. She assumed this would be the Master and the Operations Manager.

Before being injured she made several attempts to use the boat hook whilst telescoped but found it extended further as she attempted to pull the line in. As she feared she would loose the hook end of the boathook she had to release the line. It was necessary for her to lie on her stomach to reach the line with the unextended boathook. Before the final attempt she partly extended the boat hook and bound the joining section with tape to prevent the hook end from sliding out. This was unsuccessful and she disconnected the two sections and used only the hook end section. She then succeeded in recovering the line from the water. As she was attempting to place the loop of the line over the cleat she heard the Master shout at her to get her fingers out. She stated she reacted "pretty much immediately" and attempted to pull her hand clear. When her fingers were caught she pulled hard. She stated that had she not reacted as soon as she did her injuries would have been more serious. She considered she would have been able to secure the line on the first attempt had the boat hook been working properly.

Evidence of Crew

Senior crew were interviewed both on training procedures for new crew and the specific safety training given to the injured crewmember. All stated that robust training procedures were in place for new crew. They considered she had been well trained. One had approached her the day before the accident after observing she was a bit slow at tying up *Kawau Kat III* and reinforced to her the danger of injury to her fingers whilst working with lines. He had been involved in her initial training and considered she had been thoroughly trained by the company.

The Crewmember to whom the injured Crewmember refers could not recall any communication concerning the defective boat hook but recalls one being on board the vessel some weeks before the accident and advising the master. She stated there was also a new boat hook of the same type in good working order.

Injuries

The crewmember suffered a degloved distal phalanx left little finger and crush injury to her left ring finger. The little finger was amputated at the level of the DIP J (top joint). The ring finger was dressed. At the time of writing this report the injuries were healing well.

Legislation

Health & Safety in Employment Act 1992

6 Employers to ensure safety of employees
Every employer shall take all practicable steps to ensure the safety of employees while at work; and in particular shall take all practicable steps to—
(a) Provide and maintain for employees a safe working environment; and

(b) Provide and maintain for employees while they are at work facilities for their safety and health; and
(c) Ensure that plant used by any employee at work is so arranged, designed, made and maintained that it is safe for the employee to use; and
(d) Ensure that while at work employees are not exposed to hazards arising out of the arrangement, disposal, manipulation, organisation, processing, storage, transport, working, or use of things--
(i) in their place of work; or
(ii) near their place of work and under the employer's control; and
(e) Develop procedures for dealing with emergencies that may arise while employees are at work.

15 Training and supervision

Every employer shall take all practicable steps to ensure that every employee who does work of any kind, or uses plant of any kind, or deals with a substance of any kind, in a place of work—

(a) Either—
(i) Has; or
(ii) Is so supervised, by a person who has,--
such knowledge and experience of similar places, and work, plant, or substances of that kind, as to ensure that the employee's doing the work, using the plant, or dealing with the substance, is not likely to cause harm to the employee or other people; and
(b) is adequately trained in the safe use of all plant, objects, substances, and protective clothing and equipment that the employees is or may be required to use or handle.

COMMENT & ANALYSIS

Berthing a vessel prone to windage in adverse conditions can be challenging for masters. A high level of vigilance is required on the part of a master and crew to prevent injury. After repeated attempts at berthing it is common for crew to feel pressured to take additional risks to secure lines. This is even in the absence of adverse comment from the bridge. Masters must be aware of the hazard this presents to crew.

In situations where windage is likely to compromise berthing, Masters should consider requesting assistance from the shore before berthing.

The importance of masters instructing crew to obey commands instantly in berthing situations cannot be over emphasised. Masters are better able to gauge the level of danger facing crew in berthing situations by virtue of their experience and overall awareness of the situation. A crewmember's focus is often limited to the immediate job at hand and often they are unaware of the overall situation. This is especially the case with inexperienced crew.

Clear and concise instructions should be given to crew prior to berthing with the overriding requirement for personal safety and compliance with masters commands. A split second delay where a crewmember may choose to disregard commands with the intention of completing an allotted task can have serious consequences.

FINDINGS

There is evidence that the primary cause of this accident was the failure of the Crewmember to immediately obey the Master's orders to release the berthing line.

The Company had in place robust training procedures and a hazard identification process in accordance with its obligations under the Health & Safety in Employment Act 1992.

The Crewmember received thorough training on the dangers of having hands or fingers caught between berthing lines and cleats.

The Crewmember had not attained an adequate level of competence to be handling lines in adverse conditions.

The Company failed in its obligations under the Health & Safety in Employment Act to ensure that plant commonly used in berthing operations, namely the boathook, was fully operational.

It is likely that had the boat hook been working properly the accident would not have happened.

The defective boathook, whilst it may have compromised the ability of the Crewmember to secure the berthing line, was not the immediate or primary cause of the accident.

Berthing lines and cleats pose an inherent risk to crew especially those who have limited experience with line handling. These hazards cannot be eliminated but can be minimised to a degree by thorough training and implementation of special procedures in adverse conditions.

A vessel of this type is highly manoeuvrable given the twin hulls and dual propulsion. They are however highly susceptible to windage whilst berthing.

No fault can be found in the manner in which the Master operated the vessel or instructed the crewmember.

SAFETY RECOMMENDATIONS

It is recommended that:

1. The company is severely censured for failing to ensure the boat hook was operational.

2. New crewmembers are carefully monitored even after completing training to ensure they are competent to safely operate line whilst berthing.

3. The danger of injury whilst berthing be listed in the hazard identification checklist

4. A requirement be incorporated in the crew training sign off sheet requiring all crew to read and understand the safety information in the SSM manual.

5. The company put in place procedures that provide for the utilization of wharf personnel to assist in handling lines in adverse conditions.

6. Maritime New Zealand publishes a safety bulletin on the hazards associated with crew handling berthing lines.