

Accident Report

# Glen Rosa Flooding

Auckland Harbour on 20 March 2004

KEEPING YOUR SEA SAFE FOR LIFE



**Maritime Safety**

MARITIME SAFETY AUTHORITY OF NEW ZEALAND  
*Kia Maanu Kia Ora*



**REPORT NO: 04 3438**

**VESSEL NAME: GLEN ROSA**

**CASUALTY DETAILS:**

**Date of Casualty:** 30 March 2004

**Time of Casualty:** 2300 hours New Zealand Standard Time (NZST)

**Casualty Type:** Flooding

**Casualty Location:** Auckland Harbour

**Weather Forecast Area:** Colville

**Investigator:** Ian Howden



**REPORT NO: 04 3438**

**VESSEL NAME: GLEN ROSA**

**VESSEL DETAILS:**

<b>Ship Name:</b>	<i>Glen Rosa</i>
<b>Date of Build:</b>	1960
<b>Ship Category:</b>	Commercial Passenger Vessel
<b>Certified Operating Limit:</b>	Enclosed & Inshore Limits
<b>Overall Length (m):</b>	15.24
<b>Registered Breadth (m):</b>	4.43
<b>Gross Tonnage:</b>	25.15
<b>Net Tonnage (t):</b>	7.99
<b>Flag:</b>	New Zealand
<b>Registered Owner:</b>	Mr Muso's Ferry Boat Cruising Company
<b>SSM Company:</b>	Dunsford Marine Ltd



# SUMMARY

On 30 March 2004 the passenger vessel *Glen Rosa's* engine room flooded whilst berthed on Auckland's waterfront. The Owner and Master were interviewed on vessel operation. In addition the vessel's Safe Ship Management system was examined to determine if there were any deficiencies in the system that could have led to the flooding. The investigation found the owner had not properly instructed the master on emergency bilge pumping procedures and that the vessel failed to comply with requirements under Maritime Rule Part 40. The Owner was censured and the vessel's Safe Ship Management Company reminded of its obligations to ensure vessels under its management complied with the Maritime Rules.

## 1. KEY EVENTS

- 1.1 On 30 March 2004 at approximately 1030 hours New Zealand Standard Time (NZST), the Master boarded *Glen Rosa* at her berth, near the Maritime Museum in Auckland Harbour. He carried out the vessel's pre-start checks and started the engine.
- 1.2 At approximately 1100 hours, the Master moved *Glen Rosa* to Pier 3 by the Auckland ferry terminal, where three passengers boarded the vessel for the 1115 hours Auckland Harbour cruise. The trip went past the Maritime Museum, Westhaven Marina, under the Harbour Bridge and across to the Naval base at Devonport.
- 1.3 Whilst off the Naval base, the Master felt that something was amiss with the vessel's handling.
- 1.4 As *Glen Rosa* started her return to Pier 3 the Master noticed that the vessel was very "sluggish".
- 1.5 At approximately 1210 hours, *Glen Rosa* was secured alongside Pier 3 and the passengers disembarked. The passengers were not aware of any problems with the vessel.
- 1.6 Once the passengers had disembarked, the Master went straight to the engine room. He opened the hatch and found water covering the engine room deck plates. There was approximately 1 000 litres of water in the engine room. The Master stopped the main engine and generator and then rang emergency services for assistance to pump out the engine room.
- 1.7 Shortly after, the Fire Service attended *Glen Rosa*. They did not have a submersible pump. However, approximately five to ten minutes later, the Maritime Police arrived with a pump.
- 1.8 The engine room was pumped dry, using the electric hand start submersible pump, supplied by the Police. No oily water was discharged into the harbour.
- 1.9 On inspection of the engine room, it was found that a reinforced plastic pipe, fitted to the discharge pump for the salt water engine cooling, had become disconnected at the point where it passed through the after engine room bulkhead.
- 1.10 The pipe was reconnected, the engine room cleaned and the vessel was able to return to service for the 1400 hours harbour cruise.

## **2. KEY CONDITIONS**

### **2.1 Vessel Details**

- 2.1.1** *Glen Rosa* is a restricted passenger vessel of steel construction built in 1960. She is 15.24 metres in length, has a breadth of 4.43 metres and a gross tonnage of 25.15. She is powered by a single Kelvin Model T 134 kW diesel engine. She is equipped with a Honda portable generator and a fixed Mitsubishi generator in the engine room (*See Appendix 1- Photograph of vessel*).
- 2.1.2** *Glen Rosa* had a valid Safe Ship Management (SSM) Certificate, issued by the vessel's Safe Ship Management company, Dunsford Marine Ltd, allowing her to ply inshore Auckland and Barrier limits (*See Appendix 2 – SSM Certificate*).
- 2.1.3** *Glen Rosa* plies the inner Waitemata Harbour regularly, completing a maximum of four one-hour sightseeing cruises a day.

### **2.2 Master and Owner Details**

- 2.2.1** Mr Muso's Ferry Boat Cruising Company owned *Glen Rosa*. The company trades under the name "Paradise Cruising". The Owner holds a New Zealand Coastal Master's Certificate of Competency. He has extensive experience in both marine engineering and skippering vessels. He completed a marine engineering apprenticeship and sailed with the Power Steamship Company, New Zealand Shipping Company and Union Steamship Company. He has owned and operated *Glen Rosa* for six years.
- 2.2.2** The Master holds a Coastal Launch Master's Certificate of Competency, obtained in 1992. He has a number of years experience skippering passenger vessels.
- 2.2.3** The day of the flooding was the Master's fourth day rostered as Master of *Glen Rosa*. Prior to this, the Owner had inducted him into the operation of the vessel. This included safety, emergency procedures and fire fighting. He was also shown how to operate the bilge pumping system. He accompanied the Owner for about 3 to 4 trips, before his first trip as Master.
- 2.2.4** The owner carried out vessel maintenance.

## **2.3 Pumping Arrangements**

- 2.3.1 The vessel is fitted with a bilge piston pump that runs off the camshaft of the main engine. The pump has three suction points, one to each of three watertight compartments.
- 2.3.2 The vessel was not fitted with a high bilge alarm, to warn the Skipper of excess water in the engine room.
- 2.3.3 The vessel is equipped with a portable 230-volt Acme Sherpa/Submersible pump. This pump was capable of running off both generators.
- 2.3.4 The Master was not aware that the vessel had a submersible pump at the time of the flooding.
- 2.3.5 The Owner stated that the vessel was usually fairly dry. He pumped the bilges about once a week.

## **2.4 Salt Water-Cooling System**

- 2.4.1 The flooding started when a reinforced plastic pipe, connected by a jubilee clip, to the salt water-cooling system, came away from an after bulkhead fitting after the jubilee clip loosened (*See Appendix 3 - Photograph of fitting*). The fitting consisted of a one-inch diameter tail pipe that passed through an aperture in the bulkhead. The reinforced plastic pipe was attached to the tail pipe with a jubilee clip, which was found, on inspection, to be free of rust.
- 2.4.2 It was the opinion of the Owner that the jubilee clip had loosened due to the vibration of the centrifugal cooling pump.
- 2.4.3 After the flooding, the tail pipe was changed to a six-inch stainless steel tailpipe, extending three inches on either side of the bulkhead. The pipe was then re-attached with two jubilee clips on either side.

## **2.5 Maritime Rules**

### **2.5.1 Rule 40A.27 – Bilge Pumping Arrangements**

*‘(1) Except as provided in rules 40A.27(2) and (5), a ship must be provided with a pumping system capable of pumping from and draining any watertight compartment in the ship.’*

*Glen Rosa* complied with **Rule 40A.27 (1)**. She had a valve chest allowing the main engine bilge pump to pump the engine room and the forward and aft compartments. Limber holes connected each compartment to ensure an adequate flow of water to suction points. Generator powered 240 volt outlets were located in the engine room and the forward and aft compartments, allowing a portable 240-volt pump to be operated from all compartments.

### 2.5.2 Rule 40A.28 Bilge Pumps

*“40A.28(1) - Except as provided in Rule 40A.28(2), any new ship that is a decked ship must be provided with the number, capacity and type of bilge pumps specified in Table 40A.6, in accordance with the associated notes.”*

**Table 40A.6** requires vessels between 15 and 45 metres operating under Inshore and Restricted Coastal limits to have two powered bilge pumps, each with a capacity of 11 kilolitres per hour (kl/hr). Both were required to be independent power pumps or one pump driven from the engine.

**Rule 40A.28(2)** – *“In any new ship of less than 24 metres in length overall, in any new multi-hulled ship’ and in any new high speed craft to which Rules 40A.66(2) and (3) apply, each watertight compartment may be drained by at least one fixed electrically driver submersible pump instead of a bilge main, if the following requirements are met . . .”*

*“(j) subject to Rule 40A.28(3), on a ship of 12 metres or more in length overall, emergency bilge pumping arrangements are provided for compartments outside the main machinery space that are fitted with only one submersible bilge pump.”*

**Rule 40A.28(3)** – *“The requirement in Rule 40A.28(2)(j) may be met by a portable submersible self-priming pump, if the pump –*

- (a) is of a capacity equal to or more than that required for the fixed submersible pumps; and*
- (b) is stored, with its suction and discharge hoses, in a locker marked “For emergency use only”; and*
- (c) is available for immediate use; and*
- (d) if an emergency switchboard is required by Rule 40A.40, has power supplied from that switchboard.”*

**Rule 40A.28(5)** – “An existing ship that was surveyed and issued with –

- (a) a certificate of survey under section 219 of the *Shipping and Seamen Act 1952* or section 143 of the *Maritime Transport Act 1994*; or
- (b) a certificate required by **Rule 21.13(2)(a)**, prior to the date of coming into force of this Part;

is not required to comply with **rules 40A.28(1) or (2)** (set out above) if, since the issue of the applicable certificate, -

- (a) the ship has not undergone major alteration; and
- (b) the ship’s operating limits have not been changed to permit the ship to proceed beyond the limits previously assigned.

*Glen Rosa* was initially issued with a Restricted Limits Certificate of Survey, under the provisions of the **Shipping and Seamen Act 1952** (See Appendix 4 – *Certificate of Survey*). Her SSM Certificate, at the time of the accident, allowed her to proceed beyond those previously assigned limits (See Appendix 2). Accordingly, she was not exempt from complying with **Rule 40A.28(1) and (2)**.

*Glen Rosa* was equipped with two independent power pumps. One pump was driven off the main engine; the other was capable of being driven off either of the two generators. Both pumps had capacities in excess of 11 kilolitres per hour.

The portable pump on board *Glen Rosa* complied with the requirements of **Rule 40A.28(2)(a) and (c)**. However, the pump was not stored in a locker marked as required (it was stored in the engine room), and was therefore in breach of **Rule 40A.28(2)(j) and (b)**.

### **2.5.3 Rule 40A.30 Bilge Alarm**

*In a ship other than an open or partially decked ship, if the space in which the main propulsion machinery is located contains through-hull fittings, the space must be fitted with –*

- (a) a bilge level device that is connected to an audible alarm located near the steering position. The power supply for the audible alarm must be available at all times when there is a person on board; or
- (b) an automatic submersible pump that complies with **Rule 40A.28(2)** and has located at the steering position a means of indicating that it is running.

*Glen Rosa* was in breach of **Rule 40A.30**. Whilst she had a through-hull fitting in the engine room, there was no bilge level device connected to an audible alarm or automatic submersible pump, at or near the steering position.

#### **2.5.4 Rule 40A.35 – Inlets, Discharges and Sea Water Piping**

*“(b) Other than for bilge piping for which **Rule 40A.29(2)(a)(i), (ii) and (iii)** applies, all pipes that carry seawater must be of marine quality metal, except that-*

- (a) in any ship of less than 24 metres in length overall that is constructed of non-metallic materials, non metallic piping may be used, and*
- (b) suitable reinforced synthetic rubber piping may be used in short lengths for vibration damping.”*

*Glen Rosa’s* overboard discharge pipe carried seawater and was constructed of reinforced plastic. The vessel was constructed of steel and accordingly was in breach of **Rule 40A.35(6)** for failing to have marine quality metal piping.

#### **2.6 Subsequent Action Taken By The Owner**

- 2.6.1** The overboard discharge line has been diverted from passing through the aft bulkhead to a through hull fitting in the main engine room.
- 2.6.2** The vessel has been fitted with bilge alarms and automatic float switches.
- 2.6.3** The Owner has written instructions on the use of the 240 volt submersible pump in the SSM manual and has given his Masters instructions on operation.

#### **2.7 Action to be taken by Maritime Safety Authority (MSA)**

- 2.7.1** MSA intends to modify Part 21 of the Maritime Rules to:

Remove confusion relating to the designated person by complying with the Code of Practice for SSM. This places functional requirements of the designated person under the owner’s responsibility.

In the above situation the owner is to be required to have a person ashore who will be responsible for search and rescue activities only.

Reference to the Designated Person for owner/skipper boats is to be removed.

- 2.8** The Fitness for Purpose certificate requires the SSM company surveyor to identify and then declare that the vessel “complies with all applicable maritime and marine protection rules”

### **3. CONTRIBUTING FACTORS**

*N.B. These are not listed in order of importance.*

- 3.1 The vessel was not fitted with bilge alarms.
- 3.2 The Skipper was not aware that there was a submersible pump onboard.
- 3.3 The use of reinforced plastic piping for the carriage of seawater in breach of Rule 40A.35(6).

## 4. CAUSE

### **Human Factor**

- |  |   |  |
|--|---|--|
| <input checked="" type="checkbox"/> Failure to comply with regulations | <input type="checkbox"/> Drugs & Alcohol              | <input type="checkbox"/> Overloading   |
| <input type="checkbox"/> Failure to obtain ships position or course    | <input type="checkbox"/> Fatigue                      | <input type="checkbox"/> Physiological |
| <input type="checkbox"/> Improper watchkeeping or lookout              | <input checked="" type="checkbox"/> Lack of knowledge | <input type="checkbox"/> Ship Handling |
| <input type="checkbox"/> Misconduct/Negligence                         | <input type="checkbox"/> Error of judgement           | <input type="checkbox"/> Other . . .   |

### **Environmental Factor**

- |  |   |                                    |  |
|--|---|------------------------------------|--|
| <input type="checkbox"/> Adverse weather | <input type="checkbox"/> Debris           | <input type="checkbox"/> Ice       | <input type="checkbox"/> Navigation hazard |
| <input type="checkbox"/> Adverse current | <input type="checkbox"/> Submerged object | <input type="checkbox"/> Lightning | <input type="checkbox"/> Other . . .       |

### **Technical Factor**

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> Structural failure | <input type="checkbox"/> Wear & tear            | <input type="checkbox"/> Steering failure                   |
| <input type="checkbox"/> Mechanical failure            | <input type="checkbox"/> Improper welding       | <input type="checkbox"/> Inadequate firefighting/lifesaving |
| <input type="checkbox"/> Electrical failure            | <input type="checkbox"/> Inadequate maintenance | <input type="checkbox"/> Insufficient fuel                  |
| <input type="checkbox"/> Corrosion                     | <input type="checkbox"/> Inadequate stability   | <input type="checkbox"/> Other . . .                        |

- 4.1** The failure of the jubilee clip holding the salt water-cooling pipe to the aft bulkhead fitting.

## 5. OPINIONS & RECOMMENDATIONS

- 5.1 The evidence of the Master and Owner conflict on whether the Master was instructed as to the existence and operation of the submersible pump.
- 5.2 The submersible pump was not stored in accordance with **Maritime Rule 40A.28(2)(b)**.
- 5.3 *Glen Rosa* was not fitted with an audible bilge alarm in accordance with **Maritime Rule 40A.30**.
- 5.4 As the vessel's SSM company, Dunsford Marine Ltd failed to fulfil their responsibilities to ensure *Glen Rosa* was operated in a safe manner namely, compliance with the requirements of the **Maritime Rule 40A.30**.
- 5.5 The Owner failed to fulfil his responsibilities to ensure *Glen Rosa* was operated in a safe manner namely, compliance with the requirements of **Maritime Rule 40A.30**. He also failed to ensure the Master was aware of the existence and location of the vessel's submersible pump.
- 5.6 It is recommended Dunsford Marine Ltd be reminded of their obligations to ensure that *Glen Rosa* and other vessels under their management comply with the provisions of **Maritime Rule 40A**.
- 5.7 It is recommended the Owner of *Glen Rosa* be censured for his failure to comply with the relevant sections of **Maritime Rule 40A** and for the failure to ensure the Master was aware of the vessel's submersible pump.
- 5.8 It is recommended that the following matters be attended to by the owner of *Glen Rosa* within 2 months of the report being finalised namely:
  - That all saltwater overboard discharge piping be constructed of metal in accordance with **Maritime Rule 40A.35(6)**.
  - The portable pump be stored, with its suction and discharge hoses, in a locker marked "For Emergency Use Only".

Appendix 1



Appendix 3

