



**Report 97-206**

**tug *York Syme***

**grounding**

**Maria Island, Hauraki Gulf**

**13 November 1997**

### **Abstract**

On Thursday 13 November 1997, at about 2130, the tug *York Syme* with six persons on board and with a loaded barge *H7* in tow, grounded on a reef north-east of Maria Island in the Hauraki Gulf. *H7* passed partly through the reef and grounded. The trailing towline fouled the propeller of *York Syme* while its engine was going astern. There were no injuries.

Safety issues identified were poor watchkeeping practices, failure to keep a proper lookout and working routines leading to fatigue.



Tug *York Syme* and barge *H7* at Captain Cook Wharf

# Transport Accident Investigation Commission

## Marine Incident Report 97-206

### Tug particulars:

Name: *York Syme*  
Registry: Panama  
Type: Tug  
Class: Coastal  
Limits: Not further than 20 miles from shore  
Length (overall): 28.96 m  
Breadth (overall): 7.54 m  
Draft (half loaded): Forward 2.08 m Aft 3.76 m  
Gross tonnage: 149 t  
Built: In Australia by Adelaide Ship Construction Proprietary Limited in 1961  
Construction: Steel  
Propulsion: One six-cylinder, 805 kW Ruston and Hornsby diesel engine driving a fixed-pitch propeller  
Speed: 10 knots maximum (8 knots in normal operations)  
Owner: Maritime Dredging and Maintenance (Panama) Incorporated.  
Operator: Maritime Dredging and Maintenance Limited

### Barge particulars:

Name: *H7*  
Registry: New Zealand  
Type: Hopper barge  
Class: Non-self-propelled unmanned barge  
Limits: Home Trade  
Length (registered): 47.64 m  
Breadth (registered): 8.07 m  
Gross tonnage: 100.77 t  
Owner: Ports of Auckland Limited

**Location:** Maria Island, Hauraki Gulf

**Date and time:** Thursday 13 November 1997, at about 2130<sup>1</sup>

**Persons on board:** *York Syme*: Crew : 5  
Supernumerary: 1 (son of the mate)

*H7*: Nil

**Injuries:** Nil

**Nature of damage:** Minor to hulls of tug and the barge

**Investigator-in-Charge:** Captain Tim Burfoot

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<sup>1</sup> All times are NZDT (UTC +13 hours) and are expressed in the 24 hour mode.

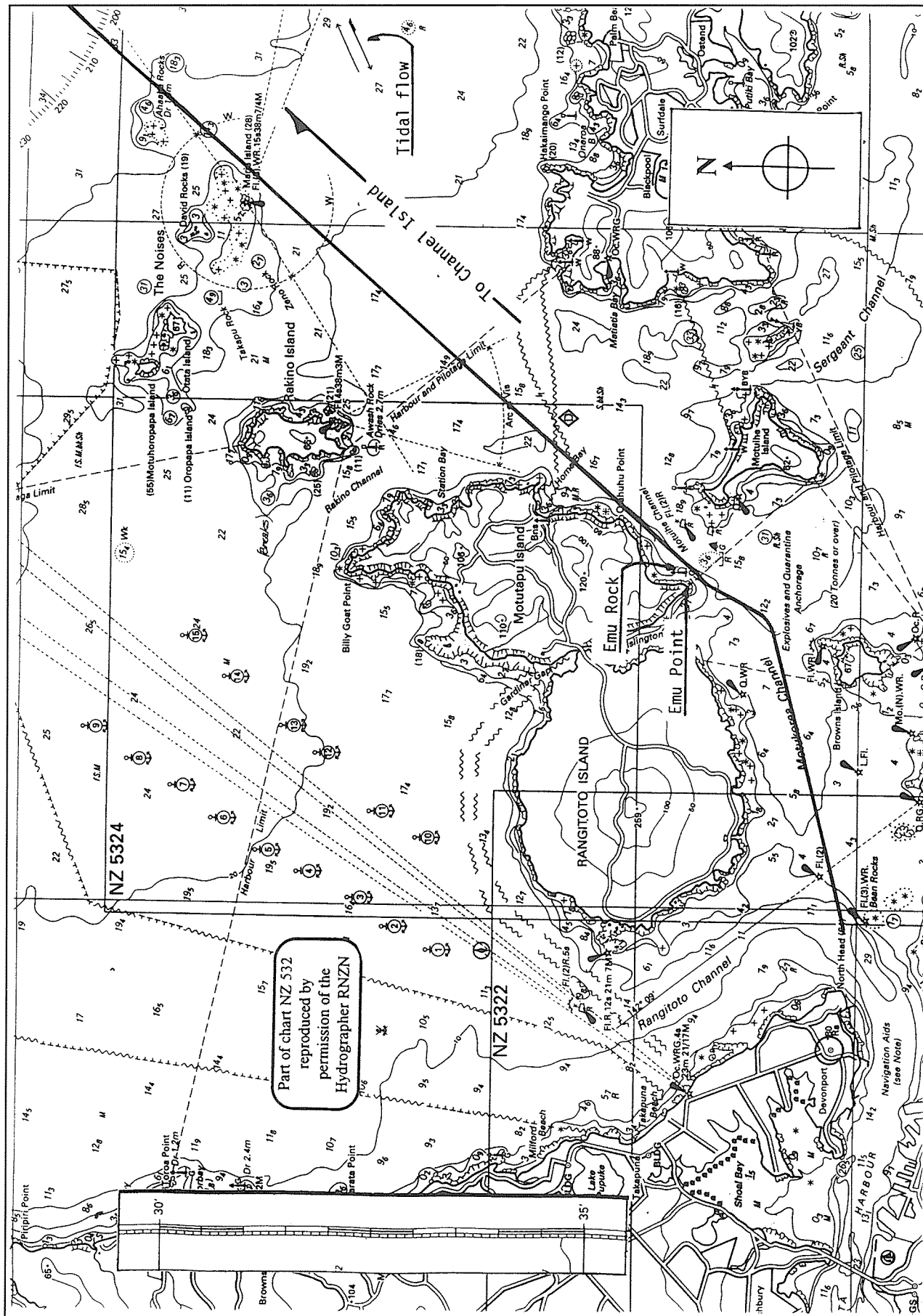


Figure 1  
Part of Chart NZ532 showing intended track of York Syme

# 1. Factual Information

## 1.1 History of the trip

1.1.1 Maritime Dredging and Maintenance Limited was contracted by Ports of Auckland Limited for dredging operations in the harbour area. The contract had been running for about three years and at the time of the incident dredging was being carried out in the Princess Basin with the vessels based at Captain Cook Wharf. The company operated a self-propelled grab dredger, *Tasman Bay*, and the tug *York Syme*. Two hopper barges, *H7* and *H8*, owned by Ports of Auckland Limited, were used to take the dredgings out to a dumping ground about 25 nautical miles to the east of Cuvier Island.

1.1.2 The planned route (see Figure 1) from Auckland to the dumping ground was:

- through the harbour channels to Bean Rocks
- through the Motukorea Channel
- through the Motuihe Channel, passing close to Emu Rock off Motutapu Island
- from Emu Rock to Channel Island passing close to Maria Island in the Noises Group and
- from Channel Island to the Cuvier Island dumping ground.

Note: Channel Island and the course to Cuvier Island are not shown on Figure 1 due to distance and the scale of the chart.

1.1.3 The skipper of *York Syme* estimated he had made the passage to the dumping ground 400 to 500 times. The route had evolved over the three year period of the contract, initially involving a greater number of courses but had been simplified in use. (See Figure 2)

1.1.4 In clear conditions it was the skipper's practice to navigate by visual means only. Course changes were made as *York Syme* passed each alteration point, at which time the next alteration point was normally in view. The position of *York Syme* at any particular time was estimated only, and not plotted on a chart. Logbook entries were made for times of passing some prominent points but no distances off were noted to give an actual position. The logbook entries prior to the grounding consisted of the times of departure from Captain Cook Wharf and of passing Emu Point.

1.1.5 At about 1900 on 13 November 1997, the *York Syme* left Captain Cook Wharf with the loaded barge *H7* in tow and commenced passage out to the dumping ground. When loaded *H7* was estimated to weigh about 750 t. In the initial stages of leaving the berth and navigating through the inner harbour channels, the tow was undertaken using a short towline to afford greater manoeuvrability.

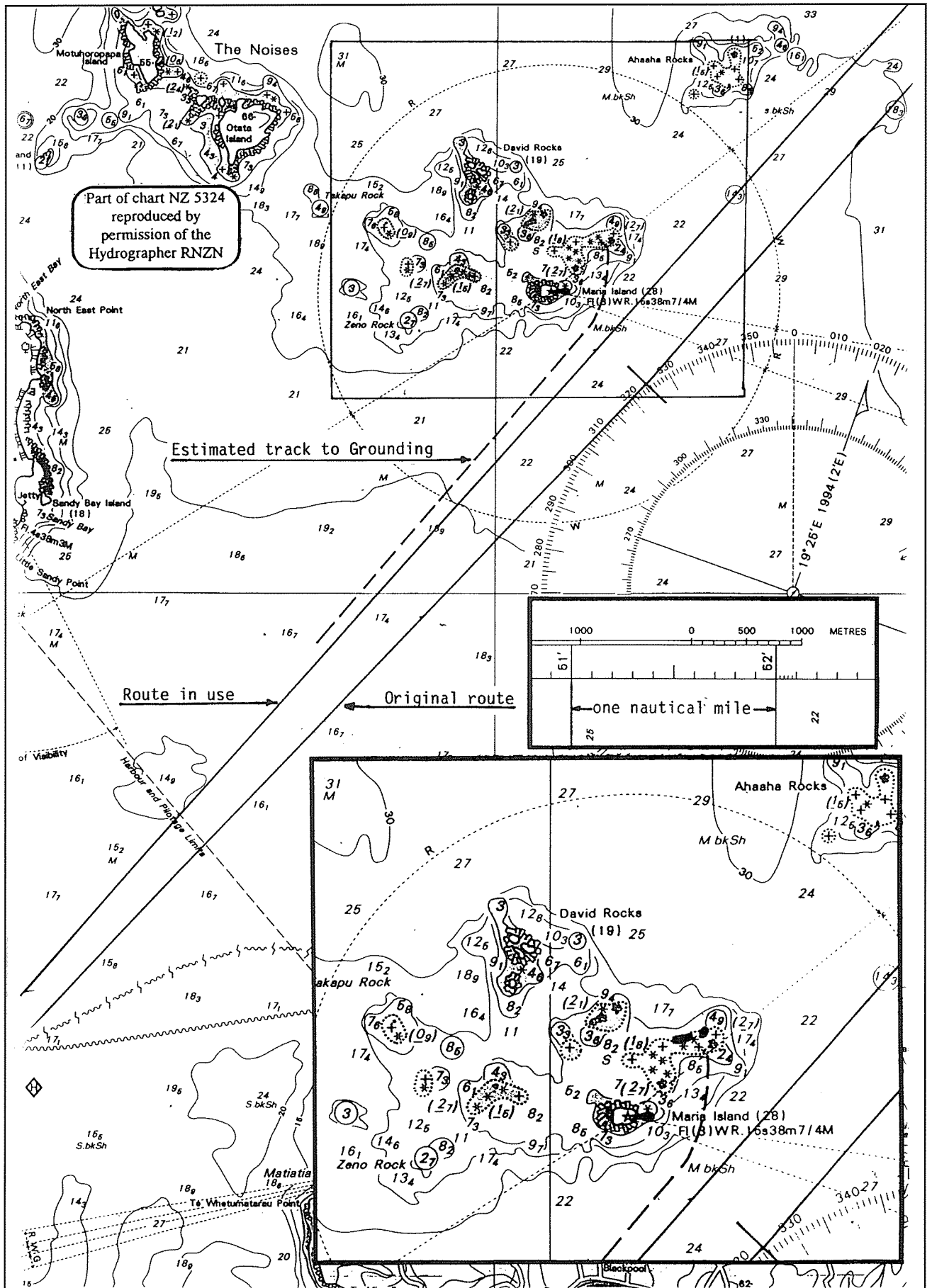


Figure 2  
Part of Chart NZ5324 showing original and simplified planned routes and the estimated track of *York Syme*.

- 1.1.6 Once clear of the harbour the towline was paid out to a length of 200 m. The towing rig consisted of the 200 m towline attached to a bridle<sup>2</sup> on the barge and to a stretcher<sup>3</sup> near the stern of *York Syme*. The bridle and stretcher were both 26 mm diameter wires and the towline was 65 mm diameter polypropylene rope. At the stern of *York Syme* a goblin<sup>4</sup> was used to keep the stern of the tug towards the tow and prevent the possibility of girding<sup>5</sup>. This rig, which was supplied and maintained by Maritime and Dredging and Maintenance Limited, had been used by the skipper to tow either *H7* or *H8* throughout the period of the contract with Ports of Auckland Limited.
- 1.1.7 According to the skipper the deck lights of *York Syme* were switched off but it was showing side and stern navigation lights, and towing lights on the mast. He stated that *H7* and the towing rig were clearly visible from *York Syme* at the time of the incident.
- 1.1.8 The sea was calm with a slight swell. There were light variable winds and the skies were clear with an almost full moon giving good visibility. Moonrise was at 1824 and sunset was at 2005. High tide was at 1907 and the predicted low tide was at 0108, 14 November 1997. The ebb tide in the area of Maria Island is shown on chart NZ5324 to run in an east-north-easterly direction (see Figure 1). The skipper opined that the tidal flows were usually close to those shown on the chart.
- 1.1.9 At about 2030 the *York Syme* passed Emu Rock, which was marked by an unlit green beacon. The skipper later stated that he saw the beacon and estimated it to be 100 to 200 m distant. At this time he was able to see the flashing white light on Maria Island and brought *York Syme* around to the course for Channel Island. On that course the passing distance off Maria Island should have been a quarter of a nautical mile (see Figures 1 and 2).
- 1.1.10 At that stage of the passage the duty personnel were the skipper, who was on the bridge, and the Integrated Rating (IR), who was mostly in the engine-room. The rest of the crew and the mate's son were sleeping.
- 1.1.11 The skipper was hand steering the *York Syme* and estimated that helm adjustments were required about every two to three minutes. He later stated that in calm conditions it was not unusual for either the tug or the barge to veer off course because they "had nothing to work against".
- 1.1.12 According to the skipper, all of the bridge equipment was available to him. However, the radar was only in stand-by mode; the hand-held global positioning system (GPS) unit was not turned on as it was normally only used to determine and record the position of dumping the dredgings and the depth sounder was not switched on. *York Syme* did not have a speed log fitted but the skipper estimated the speed at about 8 knots.
- 1.1.13 At about 2130 *York Syme* approached Maria Island. The skipper left the wheelhouse unattended while he went outside to secure a loose halyard which was making a noise as it banged against the mast. While he was out of the wheelhouse he noticed another line was loose and he secured that also. He estimated that he was away from the wheelhouse for "three or four minutes".

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<sup>2</sup> Wires attached to either side of a towed object and coming together to a single towing fixture. The arrangement affords greater control of the tow.

<sup>3</sup> A short length of towline (usually wire) between the main towline and towing hook of the tug stretching across the afterdeck. The use of a stretcher keeps the working deck more clear of obstruction than if the main towline is attached directly onto the towing hook and also minimizes chaffing of the main towline.

<sup>4</sup> A short line at the stern of a tug passed over the towline and pulled tight. This transfers the effective towing point from the towing hook to the stern.

<sup>5</sup> Girding occurs when a towline under stress leads directly abeam from the tug. The tug is unable to turn and in extreme conditions may capsizes.

- 1.1.14 On his return to the wheelhouse the skipper realised that *York Syme* had sheered off course to port and was heading for the reef on the north-east side of Maria Island. He stated that there had been a combination of observations that alerted him to the problem. *York Syme* was swinging quickly to port, Channel Island and the Moehau Mountain Range were broad on the starboard bow and the orientation of moonlight on the water was changing. He later stated that *York Syme* had probably been closer to Maria Island than the quarter of a nautical mile clearance dictated by the planned route.
- 1.1.15 The skipper attempted to steer out of the turn but was not successful. When in hand steering a large number of turns of the wheel are required to achieve maximum rudder angle and in the little time available he “could see that it wasn’t going to work”. He then engaged the engine astern to take the way off *York Syme* in an attempt to increase the time available to him to “try and drive [his] way out of the situation”. As a result of the astern movement of the engine, the weight came off the towline and it fouled the propeller. The skipper disengaged the engine. The astern movement had reduced the forward momentum of *York Syme* but not of *H7*.
- 1.1.16 The *York Syme* struck a rock and drifted into the reef area. *H7* followed into the reef, passing down the port side of *York Syme*. As *H7* continued through the reef the towline fouled on rocks, became taut and pulled the stern of *York Syme* around. The *York Syme* and *H7* came to rest on the northern side of the reef with the towline fouled among the rocks, (see Figure 2).
- 1.1.17 According to the skipper, both vessels appeared to be moving slightly in the low swell. He did not cut the towline because he did not want to set *H7* adrift and run the risk of it grounding further or of it clearing the reef and drifting away.
- 1.1.18 The skipper said that he first ascertained there were no injuries to the crew and then appraised the situation. He considered that there was no immediate danger to the crew and that *York Syme* and *H7* were reasonably stable and unlikely to capsize. He next had the crew try to clear the propeller but they were not successful so he decided that no attempt could be made to get off the reef without assistance.
- 1.1.19 The skipper called Auckland Maritime Radio, advised them of the grounding and requested a tug to be sent out to tow both vessels clear of the reef. The message was a Pan Pan urgency call<sup>6</sup>. In this first call the skipper advised the grounding position as being on the Ahaaha Rocks (see Figures 1 and 2).
- 1.1.20 Records show that communication proved to be difficult between *York Syme* and Auckland Maritime Radio due to poor reception on very high frequency (VHF) radio channel 16. At 2154 Auckland Maritime Radio passed the communications and co-ordination to Auckland Harbour Radio. Radio reception on VHF channel 16 remained poor and all messages were passed using VHF channel 12, the normal working frequency for Auckland Harbour Radio. In the initial communications, the skipper confirmed that there were no injuries on board, but again advised that *York Syme* was on Ahaaha Rocks.
- 1.1.21 A fishing vessel, *Serenity II*, was returning to Auckland and was in the general vicinity of Maria Island. The skipper heard the Pan Pan call from *York Syme* and advised Maritime Radio of his availability to assist. *Serenity II* proceeded to Maria Island, anchored and stood by to render assistance.
- 1.1.22 The skipper of *York Syme* elected to wait for the arrival of another tug before attempting to re-float either *York Syme* or *H7*. He decided that the mate, his son and the cook were not required for the salvage operation and transferred them to *Serenity II* using the small boat that *York Syme* carried.

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<sup>6</sup> A call advising that urgency is required for safety of a ship or personnel. It is one stage down from a Mayday call where imminent danger exists or immediate aid is required.



- 1.1.23 The Auckland Harbour Board tug, *Tika*, was made ready and left Queens Wharf at about 2250. As the *Tika* proceeded out of the harbour poor visibility in moderate fog was encountered. Without radar the *Tika* had to proceed slowly but the skipper said he had a contingency plan to follow the tug *Mahia*, which had also been requested to proceed to the scene and was leaving Auckland about 30 minutes later. The poor visibility cleared after passing Motuihe Island and *Tika* was able to continue without waiting for *Mahia*.
- 1.1.24 Meanwhile, the skipper of *York Syme* contacted the skipper of *Tasman Bay*, informed him of the situation and requested that a diver be sent out to assist with clearing the fouled propeller. Three crew of the *Tasman Bay* went out to Maria Island in their crash boat with diving equipment.
- 1.1.25 While waiting for assistance, the skipper of *York Syme* checked the watertight integrity of all the underdeck areas within the tug and found no ingress of water.
- 1.1.26 The skipper of *Tika* estimated that he arrived at the scene at about 0045, on 14 November. At this time the *Serenity II* left for Auckland with the transferred personnel.
- 1.1.27 The skippers of *York Syme* and *Tika* agreed that the *Tika* would take charge of *H7* and the *York Syme* would take assistance from the *Mahia*.
- 1.1.28 The skipper of *Tika* assessed the situation and approached *H7* from the north. According to the skipper and the crew of *Tika*, although it was almost low water, the *York Syme* and *H7* were still moving gently in the slight swell and the minimum depth of water encountered when alongside *H7* was 3 m. The crew of the *Tika* attached a towline from the bow of *Tika* to the bow of *H7*. Once the *Tika* had taken up the weight of *H7* the skipper of *York Syme* cut the main towline. The *Tika* towed *H7* and the remains of the main towline clear of the reef. According to the skipper of *Tika*, he was able to pull *H7* free “very easily”.
- 1.1.29 The *Tika* had *H7* under tow by 0100 and requested permission from the Auckland Harbour Master to dump the contents of *H7*. Permission was refused and *Tika* was instructed to return *H7* to Captain Cook Wharf. By this time the tug *Mahia* had arrived at the scene and was standing by to take the *York Syme* in tow if required. The *Tika* was no longer needed at the scene and therefore commenced the tow back to Auckland.
- 1.1.30 According to the witnesses, the cutting of the main towline seemed to release the tension holding the *York Syme* onto the reef and the crash boat from *Tasman Bay* was able to tow it clear.
- 1.1.31 The dredging company’s diver cleared the remains of the fouled towline from the propeller and inspected the hull. He said that he found superficial damage only and the propeller was undamaged.
- 1.1.32 Once the diver was clear of the water, the skipper of *York Syme* tested the engine and it found to be in good order. At 0150 he reported to Auckland Harbour Radio that *York Syme* was off the reef and able to return to Auckland under its own power.
- 1.1.33 At 0200 Auckland Harbour Radio reported to Maritime Radio that the urgency situation was over.
- 1.1.34 The *Tasman Bay* crash boat left the scene and returned to Auckland. *York Syme* was escorted back to Auckland by *Mahia*. Both tugs arrived back at Captain Cook Wharf at about 0400.

## 1.2 Tug information

- 1.2.1 *York Syme* was built in 1961 by Adelaide Ship Construction Limited of Birkenhead, South Australia as a harbour tug for the port of Melbourne.

- 1.2.2 The *York Syme* was acquired by Maritime Dredging and Maintenance Limited in 1994. At the time of purchase *York Syme* was registered in Australia and remained so until such time as surveys became due. In November 1995 it was registered with the Republic of Panama. The *York Syme* was operating under survey rules for vessels of less than 500 t and had not been entered into a New Zealand Safe Ship Management system, although the documentation was being processed to do so.
- 1.2.3 *York Syme* was restricted to 20 nautical miles offshore until such time as a rescue boat was added to the life saving equipment which otherwise allowed coastal service limits up to 100 nautical miles offshore.
- 1.2.4 *York Syme* was fitted with one 805 kW Ruston and Hornsby 6ATCM unidirectional 6-cylinder diesel engine driving a four-bladed fixed-pitch propeller through a reversing reduction gearbox. The engine was operated either from bridge control through the telegraph or directly from the controls in the engine-room.
- 1.2.5 The propulsion plant gave *York Syme* a service speed of 8 knots, and a maximum bollard pull<sup>7</sup> of 14.5 t
- 1.2.6 Steering was by a telemotor system, operated by the steering wheel in the control pedestal on the bridge. A 5.2 kW electric motor in the engine room gave power steering. In this mode, rudder angles were achieved quickly by a small number of turns of the steering wheel. Alternatively, with the electric motor turned off, the steering wheel operated a manual hydraulic pump in the control pedestal to give manual steering. In this mode, the same rudder angles could be achieved but required more turns of the steering wheel. When using manual steering, about thirty turns of the wheel were necessary to move the rudder from amidships to hard over on either side.
- 1.2.7 There was no autopilot fitted within the steering system so *York Syme* had to be steered by hand. When manoeuvring in harbour areas with a barge on a short towline the skipper used power steering and when towing in open waters with a barge on a long towline he used manual steering.
- 1.2.8 Lifesaving equipment:
- one 12 person liferaft
  - six lifebuoys: two with lights, two with lines and two with neither
  - eight life jackets.
- 1.2.9 Navigation and radio equipment:
- one magnetic compass
  - one radar
  - one hand-held GPS (normally used only to verify and record the dumping position)
  - one depth sounder
  - one single side band radiotelephone
  - one VHF radio
  - one 2182 Hz distress monitor
  - one emergency position indicating radio beacon (EPIRB).

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<sup>7</sup> The force exerted by a tug on a towline attached to a single point.

- 1.2.10 About two weeks after the grounding the *York Syme* was put onto a slip in Auckland for inspection and an annual survey. The area of damage was slightly aft of the bow with the starboard side being set in and the port side set out where it appeared as if an internal frame had been struck from the starboard side and set across. Otherwise the hull structure was sound. The transducer for the depth sounder was damaged. The frame and transducer were both renewed.

### **1.3 Barge information**

- 1.3.1 *H7* was registered in Auckland and owned by Ports of Auckland Limited. The Certificate of Completion for *H7* approved it to ply within New Zealand Home Trade limits.
- 1.3.2 *H7*, together with barge *H8*, was used by Maritime Dredging and Maintenance Limited to transport dredgings from Auckland to the dumping ground near Cuvier Island.
- 1.3.3 *H7* was of steel construction and of hopper design. Forward of the aft deckhouse in way of the cargo hopper, the two sides of the hull were hinged at deck level in the fore and aft line allowing the bottom of the barge to open and thus dump the contents. The hopper opening was operated remotely from the towing tug by radio control.

### **1.4 Personnel and company information**

- 1.4.1 The crew of the *York Syme* on 13 November consisted of the skipper, the mate, the chief engineer, an IR and a cook. It was not routine to carry a cook. Also on board on the night of the incident was the mate's son as a supernumerary.
- 1.4.2 The skipper and the mate both held Foreign Going Master Certificates; the chief engineer held Third Class Steam, Second Class Coastal Motor and Engine-room Watchkeeping Certificates and the IR held an IR Certificate.
- 1.4.3 The mate was not a regular employee of Maritime Maintenance and Dredging Limited and was making his first trip as a temporary relief on *York Syme*.
- 1.4.4 The skipper had been at sea since 1970. He had served an apprenticeship with the Union Steam Ship Company of New Zealand Limited and then sailed with various overseas companies on deep-sea cargo ships. He gained his Masters Certificate in 1979.
- 1.4.5 The skipper had left cargo ships and been working in dredging and towing operations for the 16 years prior to the grounding. He and his brother formed Maritime Dredging and Maintenance Limited in 1990.
- 1.4.6 At the time of the formation of Maritime Dredging and Maintenance Limited the company's only vessel was the *Tasman Bay*, a self-propelled grab dredger. Any towing that was required was undertaken using this vessel. The *Tasman Bay* was registered in New Zealand and at the time of the incident was operating under a Safe Ship Management certificate issued by Marine and Industrial.
- 1.4.7 The *York Syme* was Australian registered when purchased in 1994 and the company operated it under dispensation while trying to re-register it in New Zealand. For various reasons, but mainly the lack of full vessel plans and the cost of tracing them for a thirty year old vessel, the attempt to re-register in New Zealand was abandoned in favour of Panamanian registry.
- 1.4.8 The *York Syme* was owned by Maritime Dredging and Maintenance (Panama) Incorporated and was registered in the Republic of Panama. Maritime Dredging and Maintenance Limited were the operators and agents in New Zealand and were based in Auckland.

- 1.4.9 There were no policy and procedure manuals in place for the *York Syme*. The operating methods employed had evolved with experience since its purchase and over the course of the contract with Ports of Auckland. The company used a book titled “The Primer of Towing” as a reference manual. In preparation for the issue of a Safe Ship Management certificate, manuals were being drawn up by Plunket and Falconer Limited of Auckland. Plunket and Falconer had been surveying the vessel on behalf of the Panama Bureau of Shipping since the vessel had been registered in Panama.
- 1.4.10 The *Tasman Bay* was employed dredging as required by Ports of Auckland and utilised barges *H7* and *H8* for the dredgings. The *York Syme* towed each full barge out to the dumping ground. Generally one barge was being filled while the other was being towed out for emptying. The dredging and dumping operation was normally carried out over five-and-a-half days of the week. On average the operation required that *York Syme* make four return trips to the dumping ground each week.
- 1.4.11 The round trip to the dumping ground from Captain Cook Wharf took about 22 hours. During the passage, watches were worked on the basis of six hours on duty, followed by six hours off duty. The skipper and the IR kept the 6 to 12 watch and the mate and chief engineer kept the 12 to 6 watch. With the engine being operated by bridge control, the main duty of the second man in the watch was to monitor the engine-room equipment, but he was also expected to make periodic deck patrols and visits to the bridge.
- 1.4.12 At the dumping ground the duty watch were able to complete the dumping operation without disturbing the off-duty personnel as the hopper was operated remotely from *York Syme*.
- 1.4.13 According to the skipper, he always tried to sleep between midnight and 0600 and when possible had a two hour rest period in his afternoon off-duty period. However, he stated that in poor weather the movement of the tug, which made sleeping and eating difficult, was uncomfortable and tiring.
- 1.4.14 On arrival back at Auckland the empty barge was positioned as required. There was usually a full barge waiting. If the weather was suitable and no urgent maintenance or repair work was required, *York Syme* would immediately take it under tow to the dumping ground. The operation to position the empty barge and pick up the full barge required all of the crew, including those off watch.
- 1.4.15 In the days preceding the incident, *York Syme* had made a trip to the dumping ground on 10, 11 and 12 November, returning to Captain Cook Wharf at about 0700, 13 November. Engine maintenance was carried out during the day and the skipper also took the time to catch up on some paperwork required by the Panamanian registry. He was unable to take any rest on the afternoon of 13 November.
- 1.4.16 If bad weather conditions were encountered while the tug and barge were on the way to the dumping ground, the company’s contingency plan was to berth in Tryphena at the southern end of Great Barrier Island rather than continue to Cuvier Island. The conditions encountered on 10, 11 and 12 November were not considered sufficiently bad to shelter at Tryphena. The winds recorded by MetService were south-westerly up to 50 knots on 10 November, south-westerly veering to north-westerly up to 20 knots on 11 November and north-westerly up to 40 knots on 12 November.

## **2. Analysis**

- 2.1 The *York Syme* was of adequate size and power for the purposes of the dredging and dumping contract. Survey and certification by the Panama Bureau of Shipping was up to date and valid with respect to the required statutory documentation.

- 2.2 The towing equipment for the barges was adequate and of appropriate sizes. The towing rig was adequate and consistent with normal towing practices. The equipment and the way it was used are not considered to be contributory factors in the incident.
- 2.3 The barge *H7* appeared to be fit for the purposes of the contract and the area of operation was within its plying limits. It was not unusual for a loaded barge, such as *H7*, to have poor directional stability when under tow and would account for the frequent adjustments required to be made by the skipper to the helm of *York Syme*.
- 2.4 The planned route from Auckland to the dumping ground that evolved over the period of the dredging contract reduced the original clearance off Maria Island from 0.6 nautical mile to only 0.25 nautical mile. Changing the passage from Emu Rock to Channel Island from two courses to only one course did not save any appreciable distance.
- 2.5 Within the confines of Auckland Harbour and in the area of Emu Point there is no option but to traverse close to navigation marks and points of land but once past Emu Rock to the north-east, there was no need for the skipper of *York Syme* to follow courses that took his vessels as close as 0.25 of a nautical mile. However, if he chose to pass close to charted hazards, the same high level of vigilance and thorough position monitoring was required as when operating in confined waters.
- 2.6 The two-man watch system operated on *York Syme* was not unusual. Unless otherwise occupied with a priority task, the second man on watch would have been available to assist or relieve the bridge watchkeeper if required.
- 2.7 As there was no autopilot fitted on *York Syme*, the bridge watchkeeper was committed to the steering of the tug by hand. Tasks which had to be performed within the wheelhouse, such as monitoring of the navigational equipment and the progress of the vessel, could be carried out quite safely by the bridge watchkeeper. When he needed to vacate the wheelhouse for any reason, it was necessary to arrange a relief, either by calling the other duty watchkeeper or any of the off-duty crew.
- 2.8 As the planned route meant that *York Syme* would come close to points of land at various stages all the available navigational equipment should have been used to monitor its progress closely.
- 2.9 When in stand-by mode, the radar screen did not show a picture. It would have been appropriate for the skipper to have had the radar operating normally in order to monitor the progress of *York Syme* and *H7* when navigating as close to land as when on the course past Maria Island.
- 2.10 The skipper did not switch on the GPS unit as he considered its primary use was to record the position at which the barge contents were dumped. The unit was a hand-held model and there was no chart monitor. The indicated positions had to be transferred to a paper chart for the skipper to use it as a navigational aid. This would have been a valuable check on *York Syme*'s position but it would have had to be used with caution. Correction for any known errors and cross-checking with other navigational equipment was essential if it was to be relied upon when operating so close to navigational hazards.
- 2.11 It is doubtful if the depth sounder would have been of any significant help in determining the position of *York Syme* as the seabed in the area of the normal route was generally gently shelving and therefore any sounding would act more as confirmation of other data than as a primary source of information. The use of the depth sounder alone would not have alerted the skipper in time to avoid the grounding as the seabed surrounding Maria Island shelves steeply up to the reef area.

- 2.12 In the confined waters by Emu Rock, the skipper's estimation of being 100 to 200 m off the beacon gave him a reasonably accurate position as he made for Channel Island, keeping the flashing light of Maria Island on the port bow.
- 2.13 With the small angle of approach to Maria Island, a gradual drift off the course line to port would not become apparent by visual means alone. Even though the skipper was used to passing close to the island and the off-lying reef he was not alerted to the fact that he was closer than he intended because he was not using any of the electronic navigational aids available to him. Had he been plotting positions on a chart or recording positions in a logbook, his situational awareness would have been at a more appropriate level.
- 2.14 The natural lighting during the approach to Maria Island would have made visual navigation alone difficult, with the rising moon casting a reflection in the water ahead of *York Syme* and a gradually deepening twilight.
- 2.15 At the time of the grounding, the skipper had worked 15.5 hours from 0600 that day. The tasks performed by him during that time included arrival in Auckland, port duties and official paperwork and departure from Auckland. While all those tasks were familiar to him, some would have required a high level of concentration.
- 2.16 The weather conditions experienced over the three preceding days would have made the trips out to the dumping ground more demanding than in good weather. The difficulty in sleeping and eating in poor weather would also contribute to the cumulative fatigue.
- 2.17 The 400 to 500 trips that the skipper had made along the same route, would have induced in him a high degree of familiarity, which could have led to a lowering of vigilance and a degree of boredom.
- 2.18 The skipper's working routine over the preceding days, the uncomfortable conditions of the previous trips and the routines on the day of the incident would have left him tired. He was distracted by the banging of the loose halyard at a time when his full attention should have been on the passage of *York Syme* past Maria Island. The distraction and his fixation on such a minor detail were symptomatic of fatigue.
- 2.19 The IR was on watch and could have been called to the bridge to either relieve the skipper or to secure the halyard.
- 2.20 Although it would still have been poor watchkeeping practice to leave the wheelhouse unattended, the skipper could have waited a further 15 to 20 minutes for the tug and barge to pass Maria Island and the outlying Ahaaha Rocks and secured the halyard himself while in open waters and hence with less danger to his vessel and crew.
- 2.21 When he returned to the wheelhouse and discovered *York Syme* veering off course, the skipper's action in initially attempting to steer away from the rocks was appropriate, but too late. His vessel travelling at 8 knots would cover 0.2 of a nautical mile in 1.5 minutes and he would have taken up most of this time making the large number of turns of the wheel required to put the rudder fully over to starboard. It is doubtful if the power steering could have been activated in time to have been of any assistance in avoiding the grounding.
- 2.22 The skipper's action in putting the engine astern probably minimised the damage to *York Syme*, even though the action caused the towline to foul the propeller.
- 2.23 Although *York Syme* and *H7* may have drifted over the reef without the hindrance of the towline connecting them, it would have been inappropriate to cut the towline and abandon what little control of *H7* remained.

- 2.24 The skipper made no use of anchors to slow the progress of *York Syme*. This was appropriate as he was fully occupied in his attempts to avoid the grounding and it is doubtful that the IR could have been summoned in time to let go the anchors before the grounding. Had the anchors been available to stop *York Syme*, they would have had no effect on the progress of *H7* and *York Syme* may have been further endangered by the approach of *H7* from astern.
- 2.25 Once *York Syme* and *H7* had grounded, the skipper's actions in ascertaining that his crew were uninjured, that the vessels were in no imminent danger and reporting the grounding to Maritime Radio with a Pan Pan urgency call were all appropriate, even though he initially reported his position to Maritime Radio and later to Harbour Radio as Ahaaha Rocks. This discrepancy with his true position indicates a lack of situational awareness, prior to the grounding, that was caused by poor monitoring of the progress of the vessel exacerbated by fatigue.
- 2.26 Nevertheless in asking for a tug to assist in getting his own tug and the barge off the reef, requesting the assistance of a diver to clear the propeller, organising his crew to check the tug and evacuating three persons to the fishing boat the skipper demonstrated that he was by this time fully alert, aware of his situation and able to evaluate his limitations and the dangers to his crew and vessels.

### 3. Findings

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

- 3.1 At the time of the incident the *York Syme* was covered by the statutory certificates required by the Panamanian Registry for vessels under 500 t.
- 3.2 The *York Syme* was crewed as required at the time of the incident, with all personnel holding appropriate and valid certificates.
- 3.3 The navigational lights along the route taken by *York Syme* were operating normally on the night of the incident.
- 3.4 Weather conditions at the time of the incident were good and unlikely to have contributed to the grounding.
- 3.5 There was no mechanical failure that contributed to the grounding.
- 3.6 The towing rig utilised was consistent with normal practice for the task and all components were of adequate size for the expected load.
- 3.7 There was no failure in any part of the towing rig which may have contributed to the grounding.
- 3.8 In not using any of the navigational aids available to him to monitor the progress of the tow, the skipper was not acting responsibly.
- 3.9 The skipper did not maintain a prudent level of vigilance when passing close to navigational hazards.
- 3.10 The grounding was caused by inadequate monitoring of the vessels position and the failure to keep a proper lookout.
- 3.11 The skipper's situational awareness would have been at a more appropriate level had he been plotting the progress of *York Syme* on a chart or recording courses and positions in a logbook.

3.12 Fatigue and familiarity with the route lulled the skipper into a false sense of security, which contributed to the grounding.

#### **4. Safety Actions**

4.1 To minimise the risk of a similar occurrence, the skipper and manager of Maritime Dredging and Maintenance Limited have taken the following actions since the grounding incident:

- Reinforced the practice of calling engine-room staff or the watch below when assistance is required by the bridge watchkeeper.
- Replaced the radar with one which has an audible guard zone alarm to ensure that a minimum safe distance off any danger is properly monitored rather than estimated. The new radar was fitted by 19 November 1997 and is of the 'daylight viewing' type which allows the screen to be monitored from the steering position.
- Undertaken to install an autopilot fitted with an audible off-course alarm that will monitor the course steered. This will negate the need for constant hand steering and therefore will allow the bridge watchkeeper to attend more fully to other watchkeeping functions or any other duties that previously distracted his attention from steering. Installation of an autopilot into the steering system is planned to be completed by 31 March 1998.

4.2 Policy and procedure manuals for the *York Syme* were being drawn up at the time of the incident. This was in preparation for the entry of *York Syme* into a Safe Ship Management system. Appropriate policies and procedures should address the safety concerns highlighted in the Findings of this report.

4.3 The requirement to keep a full deck logbook with records of times, positions and courses is included in Draft Rule Part 23, which is under consultation within the industry.

#### **5. Safety Recommendations**

5.1 In view of the safety actions taken by the company, its impending entry into safe ship management and the future requirement to keep full logbook records, no recommendations have been made.

15 April 1998

Hon W P Jeffries  
**Chief Commissioner**



## Glossary of marine abbreviations and terms

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
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”
deckhead	nautical term for ceiling
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
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
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
VHF	very high frequency
windlass	winch used to raise a vessels anchor