



Jody F Millennium

CASUALTY DETAILS:

Date of Casualty:	6 February 2002
Time of Casualty:	2245 hours New Zealand Daylight Time (NZDT)
Casualty Type:	Grounding
Casualty Location:	Just outside entrance to Port of Gisborne
Weather Forecast Area:	Portland
Date MSA Notified:	6 February 2002
Date Investigation Started:	9 February 2002
Date Investigation Completed:	25 November 2002
Investigators:	Captain Roger Smith, Accident Investigator Captain Mike Eno, Chief Investigator of Accidents



Jody F Millennium

VESSEL DETAILS:

Ship Name:	Jody F Millennium
Date of Build:	2000
Ship Category:	Bulk Carrier
Certified Operating Limit:	International
Registered Length (m):	156
Overall Length (m):	159.84
Maximum Breadth (m):	26.0
Gross Tonnage:	15 071
Net Tonnage:	8 964
Flag:	Panama
Registered Owner:	Twin Bright Shipping Company
Ship Manager:	Soki Kisen Co. Ltd
Time Charterer:	News Maritime Ltd
Sub Time Charterer/Operator:	Hyundai Merchant Marine Company Ltd
Class Society:	Nippon Kaiji Kyokai (NKK)

Jody F Millennium - Glossary

Abeam	See beam .
Aground	Resting on the bottom.
Alongside	A ship is alongside when side by side with a wharf, wall, jetty, or another ship.
Beam: on the	An object is said to be on the beam or abeam, if its bearing is approximately 90° from the ship's head.
Bollard	A post (usually steel or reinforced concrete) firmly embedded in or secured on a wharf, jetty, etc, for mooring vessels by means of wires or ropes extending from the vessel and secured to the post.
Breakwater	A solid structure, such as a wall or more, to break the force of the waves, sometimes detached from the shore, protecting a harbour or anchorage. Vessels usually cannot lie alongside a breakwater.
Buoy	A floating, and moored, artificial navigation mark. It can be recognised by means of its shape, colour, pattern, topmark or light character, or a combination of these.
Cable	A nautical unit of measurement, being one tenth of a sea mile. See mile .
Contour	A line joining points of the same height above or depths below, the datum. cf fathom line .
Controlling depth	The least depth within the limits of a channel: it restricts the safe use of the channel to draughts of less than that depth.
Course	The intended direction of the ship's head.
Course made good	The resultant horizontal direction of actual travel. The direction of a point of arrival from a point of departure.
Depth	The vertical distance from the sea surface to the seabed, at any state of the tide. Hydrographically, the depth of water below chart datum. cf sounding .

Dredge	To deepen or attempt to deepen by removing material from the bottom.
Ebb tide	A loose term applied both to the falling tide and to the outgoing tidal stream
Fairway	The main navigable channel, often buoyed, in a river, or running through or into a harbour.
Falling tide	The period between high water and the succeeding low water.
Fetch	The area of the sea surface over which seas are generated by a wind having a constant direction and speed. Also, the length of the generating area, measured in the direction of the wind, in which the seas are generated.
Flood tide	A loose term applied both to the rising tide and to the incoming tidal stream. cf ebb tide .
Harbour	A stretch of water where vessels can anchor, or secure to buoys or alongside wharves etc, and obtain protection from sea and swell. The protection may be afforded by natural features or by artificial works. cf. artificial harbour, island harbour
Heading	Synonymous with ship's head.
Height of the tide	The vertical distance at any instant between sea level and chart datum.
High water	The highest level reached by the tide in one complete cycle.
Knot	The nautical unit of speed, i.e. 1 nautical mile (of 1852m) per hour.
Leading lights	Lights at different elevations so situated as to define a leading line when brought into transit.
Leading line	A suitable line for a vessel to follow through a given area of water as defined by leading marks located on a farther part of the line.
Leading mark	One of a set of two or more navigation marks that define a leading line.
Low water (LW)	The lowest level reached by the tide in one complete cycle.
Mean sea level (MSL)	The average level of the sea surface over a long period, preferably 18.6 years, or the average level which would exist in the absence of tides.
Moorings	Gear usually consisting of anchors or clumps, cables, and a buoy to which a ship can secure.

Passage	A sea journey between defined points; one or many passages may constitute a voyage.
Pilot	Person qualified to take charge of ships entering, leaving and moving within certain navigable waters.
Pilotage	The conducting of a vessel within restricted waters. Also, the fee for the services of a pilot.
Pitch	Angular motion of a ship in the fore-and-aft plane. cf roll , scend
Roll	The angular motion of a ship in the athwartship plane. cf pitch .
Shackle of cable	The length of a continuous portion of chain cable between two joining shackles. In British ships the standard length of a shackle of cable is 15 fathoms (27.432 m).
Ship's head or heading	The direction in which a ship is pointing at any moment.
Steerage way	The minimum speed required to keep the vessel under control by means of the rudder.
Surging	The horizontal movement of a ship alongside due to waves or swell.
Tide gauge	An instrument which registers the height of the tide against a scale.
Training wall	A mound often of rubble, frequently submerged, built alongside the channel of any estuary or river to direct the tidal stream or current, or both, through the channel so that they may assist in keeping it clear of silt.
Transit	Two objects in a line are said to be 'in transit'. cf range
Yaw	Unavoidable oscillation of the ship's head either side of the course being steered or when at anchor due to wind and waves.

KEY EVENTS

1.1 Wellington: 1 - 2 February 2002

1.1.1 On Friday 1 February 2002, at 0900 hours New Zealand Daylight Time (NZDT), (Universal Coordinated Time (UTC) + 13 hours), **Jody F Millennium** arrived off Wellington, after a voyage from Geelong, Australia in ballast. The vessel was due to load a full cargo of logs for Korea and China, part of which was to be loaded at Wellington and the balance in Gisborne.

1.1.2 At 0910 hours, the Pilot boarded the vessel. It berthed in Wellington at 1112 hours.

1.1.3 On Saturday 2 February, at 0045 hours, the vessel completed cargo work, after loading 4 690 tonnes of logs. **Jody F Millennium** departed at 1000 hours that day and on departure, gave an Estimated Time of Arrival (ETA) at Gisborne, of 1000 hours on Sunday 3 February.

1.2 Gisborne: 3 February

1.2.1 On Sunday 3 February, at 0900 hours, **Jody F Millennium** arrived off Gisborne and anchored in Latitude 38° 42.9' S Longitude 178° 00.4' E, a position with the Outer breakwater light bearing 015°(T) distant 2.3 nautical miles (*see Appendix 1 - Position A*).

1.2.2 At 2150 hours, the local Gisborne harbour Pilot boarded the vessel. Before they commenced the inward passage, the Pilot gave the Master a 'passage plan', consisting of chart extracts of the entrance channel to the port of Gisborne and the swinging basin, plus a mooring plan which included the position where the tug would make fast (*see Appendix 1a - Passage Plan*).

1.2.3 The Master gave the Pilot a Pilot Information Card listing the vessel's particulars and its handling characteristics.

1.2.4 The Pilot pointed out the leading line transit to the Master, the centre line of which was marked by fixed green lights (*see Appendix 1- Position B*).

1.2.5 The Master and Pilot discussed the weather and the surge conditions. The Pilot's evidence is that he advised the Master that the maximum departure draft was 10.2 metres on a spring high tide.

1.2.6 For the purpose of this report and to avoid confusion, the terms "surge" and "surging" refer to the movement of a vessel alongside a wharf in both the vertical and horizontal planes. This includes ranging in a fore and aft direction, the vertical lift of the vessel and its bodily displacement away from and back to the berth.

1.2.7 Mariners commonly refer to the New Zealand commercial ports of New Plymouth, Gisborne, Napier and Timaru as "surge ports," being breakwater ports at which vessels commonly experience surge conditions.

- 1.2.8** The New Zealand Nautical Almanac, 2002 Edition (NZNA), published by Land Information New Zealand (LINZ) 2000, defines storm surges as "winds blowing along a coast tend to set up long waves which travel along it, raising sea level where the crest of the wave appears and lowering it in the trough. These waves are known as storm surges."
- 1.2.9** The Master's evidence was that on the inward passage to Gisborne the Pilot expressed the opinion that the weather would be settled for the duration of the vessel's stay at Gisborne. This is disputed by the Pilot. They also discussed the limiting draught for the vessel's departure (*see paragraphs 1.2.5 & 1.2.24*).
- 1.2.10** At the time of **Jody F Millennium's** inward passage to Gisborne, the following personnel were on the vessel's navigation bridge:
- The Master - in overall command and monitoring the Pilot's orders and the general progress of the vessel.
 - The Pilot - in charge of the conduct of the vessel.
 - The 3rd Officer - operating the engine room telegraph.
 - The Quartermaster - steering the vessel manually.
- 1.2.11** The Chief Officer was in charge of the forward mooring station on the forecastle head and the Second Officer was in charge of the after mooring station on the poop deck.
- 1.2.12** To assist with the berthing of the vessel, the tug **Turihau** was made fast aft, through a centre Panama fairlead. The Pilot boat, **Turanganui**, did not make fast but stood by forward ready to push on the vessel's starboard shoulder.
- 1.2.13** **Jody F Millennium** entered the harbour between Butlers Wall breakwater and the Outer breakwater (*see Appendix 2 - Position A*).
- 1.2.14** The vessel was swung in the harbour basin with the aid of the tug and the pilot boat and then berthed 'bow out' (bow to seaward) port side to No. 8 berth (*see Appendix 2 - Position B & Appendix 2A - Position 1*). There were no problems during the berthing. Berthing a vessel 'bow out' was the normal practice at Gisborne. This was to facilitate a vessel's departure to sea from her berth. Also, because of the restricted depth of water in the swinging basin, a deeply laden vessel whose draft was in excess of 9.1 metres which was berthed 'bow in' could not be swung "short round" in the harbour prior to her departure.
- 1.2.15** At 2230 hours, the first line was put ashore and **Jody F Millennium** was all secured to her berth at 2320 hours. The vessel was moored with a combination of ship's lines and shore moorings (*see paragraph 2.14.5*), to accommodate any surge conditions in the port. The Master's evidence was that he had had no previous experience of ports where shore moorings were provided but he had been in ports that were subject to surge conditions. According to the Master none of the surge ports that he visited had any breakwaters and it was the practice of each port, when surge conditions were expected, to request vessels to leave the port until such time as the weather conditions allowed their safe return.

1.2.16 The vessel's arrival draughts at Gisborne were 4.15 metres forward and 5.13 metres aft. **Jody F Millennium's** arrival condition was provided to the voyage charterers agent, Bain Shipping Services Ltd, as follows:

Fuel Oil	638.83 tonnes
Diesel Oil	62.30 tonnes
Fresh Water	132.00 tonnes
Salt Water Ballast	3 731 tonnes

1.2.17 Before **Jody F Millennium** arrived in Wellington, Rayonier New Zealand, the voyage charterers, submitted a stowage plan to the Master from which he calculated the maximum draught of the vessel to be 10.4 metres on departure from Gisborne.

1.2.18 However, whilst the vessel was at Wellington the voyage charterers agent at Bain Shipping Services, who was based in Gisborne, told the Master that the maximum permissible draught on departure from Gisborne would be 10.2 metres.

1.2.19 The Master had questioned the stowage plan submitted by the voyage charterers (*see paragraph 1.2.18*) that would have required him to load the vessel to a maximum draught of 10.4 metres on departure from Gisborne. This was on the basis of information he had obtained from the vessel's copy of the New Zealand Pilot, NP 51, 14th edition, published in 1987. This Pilot book advised mariners that the controlling depth of water in the entrance channel to Gisborne was only 8.1 metres.

1.2.20 However, the latest edition of the New Zealand Pilot NP, 51, 15th edition, published in 2001 (which was not on board the vessel), and which was current at the time of the casualty, stated that the controlling depth was 10.5 metres. This claimed increase in depth resulted from a capital dredging programme undertaken on the instructions of Port Gisborne Ltd (PGL) and commenced in 1999 (*see paragraph 2.5.17 and 2.5.18*).

1.2.21 The current official New Zealand navigational chart for Gisborne, NZ 5613, "Poverty Bay and Approaches to Gisborne – Gisborne Harbour and Entrance", was published in April 1989 and reprinted in January 1999. The copy of NZ5613 on board the vessel was current, corrected to date and showed a least depth of 8.6 metres in the entrance channel (at a point approximately five cables from the seaward extremity of the Outer breakwater) on the leading line transit.

1.2.22 On the strength of the information available from the chart and his edition of the New Zealand Pilot, the Master was still concerned about loading to the lesser draught of 10.2 metres as advised by the voyage charterer's agent. The Master's evidence was that he expressed these concerns to the voyage charterer's agent, whilst the vessel was in Wellington. In response, the agent told him not to worry as there were up to date sounding charts, produced by PGL, which confirmed that the limiting draught of 10.2 metres was realistic and safe. The Master's evidence was that the voyage charterer's agent advised him that the information he was using was out of date. The Master confirmed the limiting draught with the Pilot on the inward passage to Gisborne (*see paragraph 1.2.5*).

- 1.2.23** During the course of his routine pilotage operations, the Pilot established that there was probably a least depth of 10.2 metres in the entrance channel (and not the depth of 10.5 metres promulgated in the New Zealand Pilot) and he used this depth as the determinant for vessels entering and departing the port.
- 1.2.24** The Master decided that he would load to a maximum draught of 10.16 metres at Gisborne, to allow for any hogging/sagging (longitudinal bending) of the vessel, or, a minimum GM (metacentric height - a measure of a ship's transverse statical stability) of 0.6 metres, whichever condition was reached first.
- 1.2.25** On berthing at Gisborne, the voyage charterer's agent boarded the vessel and discussed with the Master the loading schedule and the number of stevedoring gangs that were required. He confirmed that cargo would be worked 24 hours a day until completion.
- 1.2.26** Following discussions between the voyage charterers and the Master, it was agreed to load approximately 19 544 tonnes of logs at Gisborne for Korea and China. This would have given a combined cargo total of approximately 24 234 tonnes, including the cargo loaded at Wellington.
- 1.2.27** The Chief Executive Officer of PGL, told the Maritime Safety Authority (MSA) Investigators that the last written communication he had received from Bain Shipping, the voyage charterer's agent, in relation to **Jody F Millennium's** schedule, was over a week before her arrival at Gisborne. In that communication, dated 24 January, PGL was advised that the vessel would arrive at Gisborne on the afternoon of Saturday 2 February. Subsequently, all messages between PGL and the voyage charterer's agent were communicated verbally. Bain Shipping's evidence was that an e-mail was sent on 31 January to PGL and others advising that the vessel's ETA was Sunday 3 February to commence loading Monday 4 February at 0700 hours.
- 1.2.28** On Sunday 3 February, in his 'Notification of Arrival at Gisborne' message, the voyage charterer's agent advised his head office in Invercargill; the voyage charterers, Rayonier and Customs at Napier, that the vessel was expected to complete loading cargo during the afternoon of Wednesday 6 February. He gave an Estimated Time of Departure (ETD) of 0226 hours on 7 February, (high water on the morning of Thursday 7 February was predicted at 0226 hours). This ETD provided additional time after the completion of loading to enable the deck cargo to be lashed by the ship's crew. The ETD was confirmed in written reports to the above named parties on 5 February at 0904 hours. These confirmations of ETD and subsequent amendments were contained in routine daily written reports from the voyage charterer's agent to the above parties.
- 1.2.29** It was not the practice for the voyage charterer's agent to pass on the above information to the Pilot as he took his instructions, regarding the arrival and departure of vessels, directly from PGL, the operators of the port of Gisborne.
- 1.2.30** When **Jody F Millennium** arrived at Gisborne, the Pilot's evidence was that PGL told him that her ETD would be either 1400 hours on 5 February or possibly 0200 hours on 6 February.

- 1.2.31 The shipping schedules published by PGL during the period 31 January 2002 to 5 February 2002 contained the following information:

SCHEDULE DATE	SHIP	ETA	ETD
31.01.02	JFM	02.02.02.	
01.02.02	JFM	04.02.02	06.02.02 PM
04.02.02	JFM	03.02.02	05.02.02 PM
05.02.02	JFM	03.02.02	05.02.02 PM

1.3 Gisborne: 4 - 5 February

- 1.3.1 On Monday 4 February at 0705 hours, **Jody F Millennium** commenced loading cargo at Gisborne. Loading continued uninterrupted throughout the remainder of 4 February and 5 February.
- 1.3.2 At 0900 hours on 5 February **Asian Briar**, a refrigerated cargo vessel of 6 973 gross tonnage and 120.98 metres length overall, arrived in the port to load squash (pumpkin). It was berthed, also bow out, port side to No. 7 berth and situated immediately astern of **Jody F Millennium** (see *Appendix 2 - Position C*).
- 1.3.3 The Pilot's evidence was that during the morning of Tuesday 5 February, he was advised by PGL that **Jody F Millennium** would sail at 0200 hours on 6 February. High water was predicted at 0136 hours on 6 February when the height of tide was predicted to be 2.0 metres above chart datum.
- 1.3.4 During the afternoon of 5 February, the Pilot was further advised by PGL that the vessel's ETD had been put back to 1400 hours on 6 February because cargo loading was slower than anticipated.
- 1.3.5 It was the evidence of the voyage charterer's agent that at about 1000 hours on 5 February he sent an e-mail to his head office in Invercargill and to the voyage charterers, Rayonnier, stating that the vessel would complete loading cargo during the afternoon of 6 February and would subsequently sail, after the deck cargo had been lashed, at about 0200 hours on 7 February.

1.4 Gisborne: 6 February – Pre-departure

- 1.4.1 On 6 February, the Master woke at approximately 0600 hours. Shortly afterwards, he met the Chief Officer and the Duty Officer on board the vessel and was advised that cargo operations were progressing satisfactorily. The officers confirmed that the ETD remained at 0200 hours on 7 February.
- 1.4.2 At 0814 hours on 6 February, in the voyage charterer's agent's routine written reporting messages to interested parties, the completion of loading was estimated to be 2300 hours on the 6 February. For this reason the sailing time was amended to 1400 hours on 7 February to allow the deck cargo to be lashed. This change of ETD was passed on to the Chief Executive Officer of PGL at about 0900 hours on 6 February.

- 1.4.3** During the days preceding the casualty, the Pilot received faxed marine weather forecasts (which were also available to the Master of **Jody F Millennium** and PGL) which predicted deteriorating conditions for sea forecast areas off the east coast of New Zealand, including sea area Portland. Gisborne was situated in the centre of this forecast area (*see Appendix 15*). 6 February was a national holiday in New Zealand (Waitangi Day) and the Pilot was intending to stay at home until he was required to take **Asian Briar** and **Jody F Millennium** to sea later that day. Anticipating deteriorating weather, and in the expectation that he had two pilotages later that day, the Pilot visited the port at approximately 0900 hours on 6 February to obtain the latest weather forecast.
- 1.4.4** The latest forecast available to the Pilot (and others referred to in **1.4.3** above), at 0900 hours on 6 February for sea area Portland had been issued at 0421 hours on 6 February and was valid until midnight that day. It contained a gale warning and forecast a south west swell rising to four metres in the afternoon (*full forecast - see paragraph 2.16.4*).
- 1.4.5** The Pilot's evidence was that sometime after 0900 hours, he was advised by PGL that the sailing time of **Jody F Millennium** had been put back to an ETD of 0200 hours on Thursday 7 February. This was his first notification of a delayed departure which was due to the fact that cargo loading operations were slower than anticipated.
- 1.4.6** In summary, the relevant parties' understanding of the ETD of **Jody F Millennium** as from 3 February was as follows:

DATE	ESTIMATED TIME OF DEPARTURE (ETD)			
	PGL	THE PILOT	THE MASTER	VOYAGE CHARTERERS AGENT
3 February	PM on 6 February	1400 hours on 5 February or possibly 0200 hours on 6 February	0226 hours on 7 February	0226 hours on 7 February
4 February	PM on 5 February	1400 hours on 5 February or possibly 0200 hours on 6 February	0226 hours on 7 February	0226 hours on 7 February
5 February	PM on 5 February	0200 hours on 6 February; later changed to 1400 hours on 6 February	0226 hours on 7 February	0226 hours on 7 February
6 February	1400 hours on 7 February	0200 hours on 7 February	0200 hours on 7 February	1400 hours on 7 February

- 1.4.7** From the time of their respective arrivals at Gisborne, both **Asian Briar** and **Jody F Millennium** had been subjected to surge conditions within the harbour. These conditions, which continued into the morning of 6 February, caused them to "surge" alongside their berths but not enough to cause concern. However, one of the stevedores who was working on **Asian Briar**, stated that there was sufficient concern for those working on the vessel to ask for shore lines prior to 1200 hours to help reduce the movement of the vessel alongside the berth.

- 1.4.8** At about noon on 6 February, the Manager of Eastland Moorings Ltd (EML) at Gisborne (which was sub-contracted by Adsteam Port Services Ltd (APSL) for the supply of mooring personnel), noticed the surge conditions in the port were increasing and that the movement of both **Asian Briar** and **Jody F Millennium** had become more pronounced. The voyage charterer's agent evidence was that they were also concerned about the increasing surge conditions and passed on that concern to PGL.
- 1.4.9** The Master of **Jody F Millennium** went ashore at 1230 hours for personal reasons. He left instructions for the Chief Officer to call him on his cellphone in the event of an emergency.
- 1.4.10** Whilst ashore, the Master called at the port office for a courtesy visit but there was nobody in attendance and he returned to the vessel at about 1400 hours. The Pilot's evidence is that he saw the Master returning to the vessel at about 1500 hours.
- 1.4.11** At approximately 1400 hours, the Manager of EML telephoned the Pilot at his home to advise him that the surge conditions within the harbour were causing him concern, because **Jody F Millennium** had parted shore mooring lines. The first moorings had started to part sometime after 1200 hours (the exact time is unknown). These had been replaced with spare shore mooring lines that were kept at the port. Neither the Manager of EML nor other persons ashore, including the Pilot, could recall the number or location of shore moorings that had parted by 1400 hours. It was at about 1400 hours that two shore mooring lines were made fast to **Asian Briar** to help keep her alongside.
- 1.4.12** The Pilot immediately went to the port to check on the weather, the surge conditions within the harbour and the effect these were having on the two vessels. The Pilot read the latest weather forecast, issued at 1240 hours which stated that the gale warning was still in force for sea area Portland. The forecast gave a southerly swell rising to 4 metres with an easterly swell of one metre (*full forecast - see paragraph 2.16.4*).
- 1.4.13** On his arrival, the Pilot instructed the skippers of the two harbour tugs, **Turihau** and **Titirangi**, to attend **Asian Briar** and **Jody F Millennium**. He instructed the skippers to push on both vessels and hold them alongside whilst their respective ship and shore mooring lines were re-tensioned. The Pilot's decision to mobilise the tugs in this manner was apparently made without reference to the Master of either vessel.
- 1.4.14** The Pilot's initial intention was for one tug to push against **Asian Briar** and for the other to push against **Jody F Millennium**. In the event, both tugs were engaged pushing **Jody F Millennium** because her movement alongside the berth was significantly more pronounced than **Asian Briar**. This was because **Jody F Millennium's** berth was more exposed to the prevailing surge conditions and because she afforded some protection to **Asian Briar**, which was lying astern.
- 1.4.15** It was the evidence of the Pilot that at approximately 1400 hours, both **Asian Briar** and **Jody F Millennium** were put on immediate stand by, ready to move under their own power in the event that it became necessary to depart at short notice. Both vessels remained on stand by until their respective departures. The Master's evidence was that this instruction was not passed on to him. This is consistent with the entry in **Jody F Millennium's** log book which records that the vessel did not go on stand by until 2100 hours.
- 1.4.16** The Pilot said that whilst he was concerned about the situation, he was of the opinion that the surge conditions were unlikely to get any worse in the harbour. It was his experience that such conditions

were usually at their worst at high water (predicted at 1353 hours on 6 February), after which it generally eased. However, contrary to the Pilot's previous experience, there was no decrease in the surge conditions after the passage of high water on 6 February.

- 1.4.17** At 1500 hours, the stevedores stopped loading cargo for their routine afternoon break. When they returned at 1530 hours, **Jody F Millennium** was moving alongside her berth to the extent that loading operations could not safely continue. Cargo loading was never resumed because of the continued surge conditions. A final decision not to resume loading was made at 1900 hours.
- 1.4.18** The evidence of the Master of **Jody F Millennium** was that the shore mooring lines had parted on 6 February as a result of the shore mooring gang's failure to maintain equal tension on those lines. This claim was refuted by EML.
- 1.4.19** 'Hog' lashings on board **Jody F Millennium** were rigged at intermediate levels throughout the stow of deck cargo as loading had progressed. The Master's evidence was that the loading of deck cargo at No.1 hatch was completed before the stevedores left for their afternoon break and that the crew were engaged in fitting the final lashings after the stevedores' departure. The entries in the deck log book for 6 February did not support this (*see Appendix 3 - Deck Log for 6 February*). The Pilot's evidence was that he did not observe any cargo lashed on No. 1 hatch.
- 1.4.20** The Manager of EML's evidence was that between 1600 and 1800 hours, "both vessels were really surging badly". The Master of **Jody F Millennium** concurred with this view. It was unclear whether any further shore mooring lines parted between 1600 hours and 1800 hours.
- 1.4.21** The weather forecast issued at 1606 hours on 6 February stated that the gale warning remained in force for sea area Portland. It forecast a south west swell rising to five metres (*full forecast - see paragraph 2.16.4*).
- 1.4.22** By 1700 hours, it was the evidence of the Pilot that the surge conditions had eased within the harbour. For this reason the two tugs were stood down and they returned to their respective berths.
- 1.4.23** Because of her less exposed position, loading operations on the refrigerated cargo vessel, **Asian Briar**, were not disrupted to the same extent as **Jody F Millennium** and she completed loading during the late afternoon of 6 February. She was originally due to sail at 2000 hours that day, but at approximately 1700 hours her sailing time was brought forward by the Pilot to 1900 hours.
- 1.4.24** **Asian Briar's** departure draughts were 6.25 metres forward and 7.05 metres aft. MSA Investigators calculated from the NZNA that the predicted height of tide at 1900 hours was 0.60 metres above chart datum. On the basis that the minimum depth of water in the entrance channel was 10.2 metres below chart datum (the limiting depth used by the Pilot), this would have provided an overall depth of water of 10.80 metres. In turn, this would have given **Asian Briar** a minimum static Under Keel Clearance (UKC) – the vertical distance between a vessel's keel (when stationary) and the sea bed - of 3.75 metres, at the time of her departure.
- 1.4.25** At 1900 hours, the Pilot piloted **Asian Briar** outward. It was his evidence that there were no problems during her departure. The tug **Turihaua** attended **Asian Briar** whilst the tug **Titirangi** remained at her berth.

- 1.4.26 When **Asian Briar** sailed (during daylight hours), the Pilot's visual estimate of the swell height in the entrance channel was between two and three metres. It was his evidence that these conditions were no worse than he had experienced on numerous other occasions at Gisborne. The Pilot's evidence was that he disembarked **Asian Briar** near the seaward extremity of the Outer breakwater (see *Appendix 2 – Position F*), after the Master had indicated he was happy to complete the outward pilotage himself.
- 1.4.27 Soon after the departure of **Asian Briar**, the surge conditions within the harbour deteriorated again.
- 1.4.28 At about 1930 hours, both tugs were recalled on the instructions of the Pilot and stationed alongside **Jody F Millennium**. They were pushing against her hull with full power in an endeavour to reduce the vessel's movement alongside the berth. There was a dispute between the evidence of the tug Skippers concerning the ability of **Turihaua** to push on with full power. The evidence of the Skipper of the **Titirangi** was that the continued violent rolling motion of the vessel and the friction created between the ship's side and the tugs caused sections of the stern fendering on **Turihaua** to become partially displaced from its mounting. As a result, the amount of cushioning between the tug and the ship's side was significantly reduced and the tug was unable to apply full power. The Pilot supports this version of events. The basis of their belief was conversations overheard on VHF radio. By contrast, the Skipper of **Turihaua** stated that the damage to the fendering occurred after the grounding of **Jody F Millennium** and that the tug was able to push on with full power at all times prior to her departure.
- 1.4.29 Notwithstanding the efforts of the two tugs, the effects of the surge conditions within the harbour were such that the vessel's shore moorings continued to part.
- 1.4.30 The Pilot estimated that during the early evening of 6 February, **Jody F Millennium** was ranging some 8 – 10 metres along the wharf and lifting vertically by about one metre. This contrasted with the evidence of the vessel's Master, who maintained that she was ranging fore and aft by no more than about three metres and moving off the berth about one metre.
- 1.4.31 According to the Manager of ELM, the shore mooring lines gang was fully occupied replacing the parted moorings. He contended that the gang was hampered in its task by a shortage of crew at the forward and after mooring stations on **Jody F Millennium**. It was the evidence of the Pilot and the Manager of EML that the crew on **Jody F Millennium** did not keep proper tension on the ship's mooring lines with the result that the shore mooring lines took the strain.
- 1.4.32 The Manager of EML believed the majority of the ship's crew were preoccupied lashing cargo in preparation for departure. It was the evidence of the Manager of EML that he had to put one of his own men on board **Jody F Millennium** to assist with securing the shipboard end of the shore mooring lines.
- 1.4.33 The Master of **Jody F Millennium** disputed the above and stated there was an adequate number of ship's crew available to tend the mooring lines at all times.
- 1.4.34 Whilst shore mooring lines continued to part, the shore mooring gang expressed concern for their safety to the Manager of EML and to the Pilot. The Pilot shared their concern and believed there was a risk of personal injury or even a fatality, as a result of a mooring line failure, or, in the process of tensioning a replacement line.

- 1.4.35** Three mobile diggers, that were used for positioning cargo on board the vessel, were left on top of the deck cargo of logs when the stevedores ceased loading operations at 1500 hours. They were subsequently landed ashore, between 1900 and 2100 hours, using the ship's cranes.
- 1.4.36** Following the departure of the stevedores at 1530 hours, cargo operations were never resumed and consequently the vessel was to leave Gisborne without a full cargo. The Master calculated that he could load approximately 24 234 metric tonnes to bring the vessel to his predetermined draft (*see paragraph -1.2.27*).
- 1.4.37** At the time cargo loading operations ceased at 1500 hours, **Jody F Millennium** had the following cargo on board:

Logs loaded underdeck at Wellington	4 690 metric tonnes
Logs loaded underdeck at Gisborne	13 117 metric tonnes
Total underdeck in four holds	17 807 metric tonnes
Logs loaded on deck at Gisborne	4 268 metric tonnes
Total loaded on board at the time vessel sailed from Gisborne	22 075 metric tonnes
Total calculated by Master that vessel could load	24 234 metric tonnes
Shortfall	2 159 metric tonnes

- 1.4.38** The Pilot's evidence was that at about 1930 hours, in a discussion between himself, the Chief Officer and the voyage charterer's agent, it was agreed that because of the increase in the surge conditions it would be necessary to bring forward the time of the vessel's departure from 0200 hours on 7 February to 2400 hours (midnight) on 6 February. When the Chief Executive Officer of PGL returned to the port at around 2030 hours he was informed that the vessel's departure had been brought forward.
- 1.4.39** Shortly after 1930 hours, the voyage charterer's agent telephoned the Master and advised him of the above decision. The Master was told that his vessel could not remain alongside; that it was too dangerous on account of the weather and that he must take the vessel out to the anchorage. The Master did not question this decision because he thought he was being instructed by the "port authority". An entry in the deck log book timed at 1900 hours, stated "All cargo operations stop due to heavy weather and swell. Vessel was informed to shift to anchorage".
- 1.4.40** At about 2000 hours, shortly before darkness fell, the Master recalled observing a maximum swell height of about three metres outside the port. This was accompanied by heavy spray being blown over the Outer breakwater. The Master estimated the height of the surge inside the harbour at this time to be about one metre.
- 1.4.41** The Pilot stated that he endeavoured to contact the Master by VHF radio during the afternoon and early evening of 6 February, but received no response. The Master made no attempt to contact the Pilot or any of the employees of PGL during this period of time. However, throughout this period, the voyage charterer's agent was able to maintain contact with the Master by cellphone.

- 1.4.42** A total of eight shore mooring lines parted before the vessel sailed. The Pilot, who remained aware of the seriousness of the situation, and the effect the surge was having on the vessel, elected to stay in the port to oversee and conduct operations.
- 1.4.43** At about 2100 hours, the Manager of EML told the Pilot by VHF radio that he had only one spare shore mooring line left. This comment was overheard on the VHF radio by the Skipper of the tug **Titirangi**. The Pilot, both tugs, the pilot boat and the Manager of EML maintained communication with each other on 6 February by VHF channel 12 (the port's working channel). It was the Pilot's evidence that as a direct consequence of this comment, he decided to bring forward the time of the vessel's departure from midnight to 2200 hours. He did this because he believed that with only one shore mooring line left in reserve, the vessel was in imminent danger of breaking adrift. He believed this would result not only in damage to the vessel but to the port as well. An additional and more significant factor was his serious concern for the life and limb of the ship's crew and linesmen ashore whilst shore mooring lines were parting.
- 1.4.44** The Master's evidence was that between 2020 and 2030 hours, he was notified by the voyage charterer's agent of the revised ETD of 2200 hours. No record of this change of ETD was recorded in the deck log book provided to MSA Investigators (*see Appendix 3 - Deck Log Book*). However, additional entries in the deck log book appear to have been made subsequently, which include an entry at 1900 hours to the effect that an order to leave the port had been received "earlier". This extract of the deck log book (*see Appendix 3a - Deck Log Book, Additional Entries*) was provided to the MSA Investigators by the legal representatives of the voyage charterers. The evidence of the Pilot was that the decision to sail at 2200 hours followed a discussion involving the Pilot, the Chief Executive Officer of PGL and the voyage charterer's agent. The Pilot said there was little discussion because they all accepted the vessel could not be held alongside the wharf and there was no option but to go to sea.
- 1.4.45** When the Pilot decided to bring forward the departure of the vessel to 2200 hours, the Chief Officer went ashore to read the vessel's draughts. They were 8.9 metres forward and 9.5 metres aft. The Pilot was aware of these draughts. The Chief Officer re-calculated the vessel's draughts on the load computer after the grounding, from which he ascertained the vessel's after draught on departure would have been 9.70 metres.
- 1.4.46** Before boarding the vessel in preparation for her departure, the Pilot checked the tide gauge which was situated at the eastern corner of No. 1 wharf, on the North side of Kaiti Basin (*see Appendix 2 - Position D*). The gauge was difficult to read because of the surge conditions. However, the height of the tide was estimated by the Pilot to be approximately 0.8 metres above chart datum. This indicated that the observed height of tide was in excess of that predicted at 0.65 metres.
- 1.4.47** Based on the Pilot's assessment that the minimum depth of water in the entrance channel was 10.2 metres below chart datum and that the observed height of the tide was 0.8 metres above chart datum, there would have been a least depth of approximately 11 metres in the entrance channel shortly before the vessel's departure. Based on the maximum draught of 9.5 metres for the vessel, the Pilot's assessment was that this would have provided a static UKC of 1.5 metres, about 15 per cent of **Jody F Millennium's** draught at the time of her departure.

Assumed depth in channel	10.20 metres
Height of tide	0.80 metres
Total depth in channel	11.00 metres
Maximum draught	9.50 metres
Assumed static UKC	1.50 metres

The Pilot's evidence was that his practice was to allow a minimum UKC of 2.0 metres and accordingly the UKC of **Jody F Millennium** on departure was 0.5 metres below that figure.

1.4.48 It is widely accepted by mariners that ship manoeuvrability deteriorates when the UKC is reduced below 20 per cent of the draught. A minimum UKC of 10 per cent is recommended as safe practice only if the speed required for steering can be kept under five knots and where the charted depth is reliable through frequent surveys. These restrictions assume that the wind will not greatly affect the steering at low speed and the ship is unaffected by sea or swell.

1.5 Gisborne: 6 February - The Departure

1.5.1 The evidence of the Master was that at around 2100 hours, the Chief Officer sought to place additional ship's mooring lines ashore. According to the Master he observed persons on the wharf who would have been available to receive additional lines from the vessel but refused to do so.

1.5.2 The ship's deck log book and bridge movement book (*Appendix 3 and 3b respectively*) both record that at 2115 hours, the Pilot boarded **Jody F Millennium** via the accommodation ladder that was lowered briefly for this purpose. The accommodation ladder had previously been raised to avoid possible contact with the wharf as the vessel surged heavily alongside. The Pilot was escorted by the Third Officer to the navigational bridge where he was met by the Master. When interviewed by MSA Investigators the Pilot could not accurately recall the time he boarded the vessel. In relation to the times of material events from the time of the Pilot boarding the vessel to the grounding, MSA Investigators prefer the times recorded in the ship's bridge movement book.

1.5.3 The Pilot's evidence was that he explained to the Master that he was going to have to take the vessel to sea. He said it was too dangerous to remain in the harbour on account of the inability to hold the vessel alongside with the available shore and ship moorings; that the safety of the ship could not be guaranteed. The Master understood the instruction to sail immediately to be coming from the "port authority". It is clear from his evidence that he understood the distinction between the terms "port authority", "harbourmaster" and "pilot".

1.5.4 The evidence of the Master was that the Pilot told him he would have to go to the anchorage because it was too dangerous for his vessel to remain alongside the berth.

1.5.5 The Pilot's evidence was that he advised the Master that the vessel's UKC on departure would be 1.5 metres (*see paragraph 1.4.48*).

- 1.5.6** The Master's evidence was that he asked the Pilot about the depth of water in the entrance channel and was told a figure of 11.5 – 11.6 metres. On the basis of these figures, the Master should have calculated that with an aft draught of 9.5 metres, he would have a minimum static UKC of about 2.1 metres on departure. Precisely what UKC was in fact calculated by the Master is, however, uncertain. The Master's evidence varied as to the UKC he had calculated. Initially in his evidence the Master said he had calculated a UKC of 3 metres, but subsequently he stated he had calculated the UKC to be 2 metres.
- 1.5.7** It was the evidence of the Pilot that prior to the vessel's departure, he took the Master to the wing of the bridge and showed him the leading lights consisting of two fixed green lights; the rear being a neon light (*see Appendix 2 - Front, Position E(i), Rear, E(ii)*). These lights, which marked the centre line of the entrance channel were depicted on the vessel's chart and were drawn to the attention of the Master by the Pilot.
- 1.5.8** The Pilot told the Master he would be disembarking once the vessel was clear of the breakwater, subject to the sea conditions being suitable. He said he wanted the pilot ladder rigged on the starboard side before the vessel left the berth. It was the evidence of the Master that the Pilot did not mention where he would be disembarking until after the vessel had let go and was heading for the harbour entrance. The Master assumed that the Pilot would pilot the vessel out to the anchorage as per the inward transit.
- 1.5.9** The Pilot stated that he did not have time to produce the 'passage plan' that he had handed to the Master on the vessel's inward passage to the port (*see paragraph 1.2.2*). He said the information on this plan was applicable for both inward and outward passages.
- 1.5.10** It was the evidence of the Pilot that before leaving the berth he told the Master that there was a two to three metre swell in the entrance channel.
- 1.5.11** The Pilot's evidence was that although the tide was flooding, there was no tidal effect in the channel that would have influenced the pilotage. This suggested that no course compensation would be required to counter tidal effect so that the vessel maintained her track down the leading line.
- 1.5.12** The Pilot's evidence was that he told the Master that once clear of the berth they would be steering a course of 234° [(T) & (G)], to maintain their track down the centre line of the channel. The actual axis line of the leading line transits was $234\frac{1}{2}^{\circ}$ (T). The gyro compass error was negligible.
- 1.5.13** The Master's evidence was that he handed the Pilot the 'Pilot Card' (*see Appendix 4 - Pilot Card*) and that this was not checked by him. The Pilot rejects both of these statements.
- 1.5.14** The Master and the Pilot discussed the readiness of the vessel to depart. The Master confirmed the main engine was ready for use and that the bridge navigational equipment check list (*see Appendix 5 - Bridge Navigational Equipment Checklist*), had been completed and signed by the Master and Third Officer. All equipment was reported to be operating satisfactorily. Whilst some of the deck cargo was secured with wire lashings, the ship's crew had not completed this task before the vessel's departure.

- 1.5.15** It was the evidence of the Master that there was no discussion between him and the Pilot as to what action should be taken once the vessel had cleared the port, including whether to anchor or to remain steaming off the port. However, the vessel's deck log recorded an entry at 2115 hours "P.O.B. (pilot on board) for shifting to outside anchorage".
- 1.5.16** It was the evidence of the Master that just before they let go from the berth, there was a total of three ship's moorings remaining forward and four ship's moorings aft. He believed that no shore moorings were still attached to the vessel at this time. However, the vessel's deck log book recorded the following entry at 2120 hours - "Shore M (mooring) line let go"
- 1.5.17** In contrast to the above, the Pilot's evidence was that there were three shore mooring lines in place at each end of the vessel at this time, in addition to the ship's lines.
- 1.5.18** In accordance with conventional maritime practice, when a vessel is under pilotage the Master remains in overall command but accepts advice from the Pilot. This is recognised by the customary entry in the ship's deck log "To Master's orders on Pilot's advice" (*see paragraph 3.5*). The ultimate authority of the Master is confirmed in New Zealand Law by s19 of the Maritime Transport Act 1994.
- 1.5.19** When interviewed, the Master confirmed his understanding of this convention. The Master's evidence was that he had overridden a pilot's instruction to the helmsman or bridge personnel on five or six occasions. The last occasion on which he had overridden such an instruction was at the port of Antwerp at the beginning of the year 2000.
- 1.5.20** At the time of **Jody F Millennium's** departure, the following personnel were on the vessel's navigation bridge:
- The Master - in overall command and monitoring the Pilot's orders and the general progress of the vessel.
 - The Pilot - in charge of the conduct of the vessel.
 - The Third Officer - operating the engine room telegraphs.
 - The Quartermaster - steering the vessel manually.
- The Chief Officer was in charge of the forward mooring station on the forecastle head and the Second Officer was in charge of the after mooring station on the poop deck.
- 1.5.21** Before the vessel sailed, the Master, who anticipated that the pilotage was going to be difficult on account of the prevailing weather conditions, instructed the Second Officer to come to the bridge as soon as he had secured the after mooring station.
- 1.5.22** The tug **Titirangi** was stationed forward and the tug **Turihaua** was stationed aft for departure. Neither tug was made fast to the vessel.
- 1.5.23** The Master and Pilot both reported that at the time of departure the wind was southerly at about 20 knots and that there was a heavy southerly swell off the entrance to the harbour.

- 1.5.24** In the course of letting go the moorings, and when down to the last two head lines, considerable weight came on the lines which required them to be slacked down promptly. As soon as the weight came off the lines the vessel started to move rapidly astern due to the weather conditions.
- 1.5.25** At 2138 hours, the bridge and engine room movement books recorded that all mooring lines were 'gone and clear'.
- 1.5.26** **Jody F Millennium** came off the berth under the combined effect of the weather and her own motive power, with the main engine on dead slow ahead and the rudder hard to starboard.
- 1.5.27** After clearing the berth, the helm was put hard to port to check the swing to starboard. However, the vessel did not respond and it was necessary for the tug **Titirangi** to push on the starboard shoulder to steady the vessel and line her up for the entrance to the harbour.
- 1.5.28** This manoeuvre was successful and **Jody F Millennium** was positioned on the leading line transit lights for the harbour entrance, midway between the Outer breakwater and Butlers Wall. As the vessel moved ahead towards the harbour entrance, the two tugs took up station astern, as did the pilot boat. The distance from No. 8 berth to a point abeam of Butlers Wall was about 310 metres or approximately 1.66 cables.
- 1.5.29** The engine movements from the time of leaving the berth to 2150 hours, when the Pilot disembarked, were recorded in the bridge and engine room movement (Bell) books as follows:

Time (hours)	Bridge	Engine room
2138 - last line cast off	Dead Slow Ahead	Dead Slow Ahead
2139	Stop	Stop
2141	Dead Slow Astern	Dead Slow Astern
2142	Half Astern	Half Astern
2143	Stop	Stop
2144	Dead Slow Astern	Dead Slow Astern
2144	Stop	Stop
2145	Dead Slow Ahead	Dead Slow Ahead
2146	Slow Ahead	Slow Ahead
2150 - "P (Pilot) Off"	Dead Slow Ahead	Dead Slow Ahead
2152 - "First Bottom Touch"		
2153	Half Ahead	Half Ahead

- 1.5.30** It was the Master's evidence that at some point whilst still within the harbour (his recollection was it was that just after the vessel had left the berth), he was taken to the starboard bridge wing by the Pilot and shown the leading line transit lights. By this time, the Second Mate had secured the aft mooring station and returned to the bridge.

- 1.5.31** It was recorded in the bridge movement book that at 2150 hours, when the bridge of the vessel was approximately abeam of Butlers Wall (*see Appendix 2a - Position 2*), the Pilot informed the Master he was leaving the vessel. The Pilot's evidence was that before doing so, he asked the Master twice if he was happy for him to disembark, to which the Master answered yes. The Master denied that exchange took place and stated that he was not happy for the Pilot to disembark early but nevertheless accepted the "con" (conduct of the vessel) without challenge. The Pilot's evidence was that the vessel was further to seaward of Butlers Wall before he left the bridge. He estimated the bridge was abeam of the seaward extremity of the Outer breakwater at this time (*see Appendix 2a - Position 3*).
- 1.5.32** Before leaving the bridge, the Pilot again pointed out the leads to the Master and instructed him to maintain his track on the leading line lights. He confirmed that the course to be steered was 234°. The main engine was on dead slow ahead. The Pilot advised the Master that he would be watching **Jody F Millennium** from the pilot boat and would communicate with him on VHF radio channel 12 after he had disembarked. It was the evidence of the Pilot that he continued to watch the vessel after he left.
- 1.5.33** The Pilot then left the bridge and made his way to the pilot ladder escorted by the Third Officer. The pilot ladder had been rigged on the starboard side of the vessel as requested. The pilot boat Skipper, said that the stern of the vessel had passed the Outer breakwater light when the Pilot disembarked. The distance between a point abeam of Butlers Wall and the seaward extremity of the Outer breakwater was about 200 metres, or approximately 1.1 cables.
- 1.5.34** At the time the Pilot disembarked it was the evidence of both the Pilot and the Master that the speed of the vessel was approximately four to five knots.
- 1.5.35** The Master and the Pilot reported that when the bridge of the vessel was in the vicinity of Butlers Wall, the wind strength suddenly picked up to about 30 knots from a southerly direction. They both estimated the height of the swell, which was breaking over the Outer breakwater, to have increased to about four to five metres.
- 1.5.36** After the Pilot had disembarked, the Master conned the vessel from the centre of the wheelhouse at a point adjacent to the gyro repeater. He concentrated on ensuring that the given heading of 234° was being steered and did not go out on the wing of the bridge and check whether the vessel was maintaining her track down the leading line lights.
- 1.5.37** The Second Officer was monitoring the vessel's progress on the radar screen and utilising parallel indexing to check that she was keeping to the centre of the entrance channel.
- 1.5.38** In the haste to leave port, the bridge team omitted to switch on the echo sounder and accordingly there was no record of the vessel's UKC on the outward passage.
- 1.5.39** The Master's evidence was that following the departure of the Pilot, the vessel maintained her track down the leading line, at a speed of about four to five knots. Given the weather conditions namely, a 30 knot wind on the port bow combined with a heavy swell, the vessel may have been set bodily to starboard even though she maintained the heading of 234°.

- 1.5.40** At 2152 hours, **Jody F Millennium** was struck on the port side by a heavy swell which caused her to roll to starboard. She immediately rolled back to port at which point she made contact with the sea bed. When the vessel rolled back to starboard a second time, she landed heavily on the sea bed.
- 1.5.41** At the time of the initial grounding, the Second Officer fixed the vessel's position by radar which put her 0.4 cables (0.04 nautical miles), to the west of the seaward extremity of the Outer breakwater (*see Appendix 2a - Position 4*). At this time, the pilot boat was stationed just inside the harbour entrance. There had been no communication between the vessel and the Pilot after he had disembarked. It was the evidence of the Pilot that the vessel appeared to keep to the centre of the entrance channel after he disembarked.
- 1.5.42** On contacting the sea bed for the second time, the bow of **Jody F Millennium** slewed to starboard onto an approximately westerly heading. At the same time the Master noted from the Doppler log that the speed of the vessel had dropped to around one knot.
- 1.5.43** At the time of the above events the main engine was still on dead slow ahead.
- 1.5.44** The deck log book recorded that very shortly after the vessel contacted the sea bed for a second time, the main engine was put to full ahead in an attempt to provide better steerage. The bridge movement book showed that half ahead and then full ahead was ordered at this time, although the engine room movement book showed that only half ahead was ordered. The helm was put hard to port in an attempt to return the vessel to her original course of 234°. However, there was no response and she remained on an approximate westerly heading, whilst at the same time moving bodily to starboard and out of the entrance channel, under the influence of the weather conditions.
- 1.5.45** At 2153 hours, the Second Officer plotted **Jody F Millennium** to be in a position 1.9 cables (0.19 nautical miles) to the west north west of the seaward extremity of the Outer breakwater. The vessel was now in continuous contact with the sea bed. After the ship grounded the forecabin crew were driven to shelter by the sea breaking over the forecabin, which was some eight metres above the waterline.
- 1.5.46** From 2153 hours, the main engine movements recorded in the bridge and the engine room movement books were as follows:

Time (hours)	Bridge	Engine Room
2153	Half – Full Ahead	Half Ahead
2155	Slow Ahead	Slow Ahead
2156	Stop	Stop
2156	Dead Slow Ahead	Dead Slow Ahead
2156	Slow Ahead	Slow Ahead
2157	Stop	Stop
2159	Slow Ahead	Slow Ahead
2201	Full Ahead	Full Ahead
2207	Stop	Stop
2214	Half – Full Astern	Half Astern
2214	Stop	Stop
2215		Waiting

- 1.5.47** The Master said that from approximately 2153 hours, the vessel experienced very heavy vibration when running the main engine.
- 1.5.48** At some stage, the Master could not recall when, he called the Pilot on the VHF radio to advise him that **Jody F Millennium** had grounded and was in difficulty.
- 1.5.49** The Master's evidence was that at 2214 hours, the Pilot instructed him to go full astern. This was complied with but there was such heavy vibration that the engine was stopped after 38 seconds.
- 1.5.50** At 2215 hours, the Pilot instructed the Master to let go the port anchor. The anchor was let go to six shackles (approximately 165 metres) of cable in the water, after which the starboard anchor was let go to two shackles (approximately 55 metres) of cable in the water.
- 1.5.51** Subsequently, time unknown, both anchor cables parted and the two anchors, with sections of chain cable attached, were lost.
- 1.5.52** Both harbour tugs were instructed by the Pilot to go and stand by to assist **Jody F Millennium**. However, the sea conditions were such that the tugs could not approach close enough to render assistance and they had to stand by on the lee (starboard) side of the vessel.
- 1.5.53** The sea conditions continued to deteriorate after the vessel grounded. At its worst, the swell was estimated by the Pilot and personnel on the tugs to be about seven to eight metres in height during the night of 6/7 February. Sixty one logs were washed overboard on account of the weather conditions (*see paragraph -1.8.2*).
- 1.5.54** It is noteworthy that a large slipway shed (*see Appendix 2 - Position K*), which had stood at the head of the slipway for about 80 years, suffered severe structural damage as a result of the violent surge conditions in the harbour on 6/7 February.
- 1.5.55** The sea conditions eventually became too hazardous for the two tugs to remain in the proximity of **Jody F Millennium** and they returned to port at approximately 2300 hours and stood by inside the harbour.
- 1.5.56** The tugs remained standing by inside the harbour in case there was a lull in the weather. At 0300 hours on 7 February, it was decided that there was nothing further they could do to assist and the Pilot stood the tugs down and they returned to their berths.
- 1.5.57** Throughout the above period, **Jody F Millennium** was lying beam on to very heavy swells that were impacting along the full length of her port side. She was driven progressively further to the north west and hard aground.
- 1.5.58** The attached copy of the vessel's working chart (*see Appendix 6 – Working Chart*) shows the positions of the vessel from the point of the first contact to the point where she eventually fetched up hard aground.

1.5.59 The following positions were recorded on the vessel's chart and/or in the deck log book.

Date	Time (hours)	Latitude	Longitude
6/2/02	2152	38° 40.67' S	178° 01.07' E
6/2/02	2153	38° 40.625' S	178° 00.89' E
6/2/02	2215	38° 40.65' S	178° 00.92' E
7/2/02	0146	38° 40.54' S	178° 00.85' E
7/2/02	0715	38° 40.49' S	178° 00.79' E
7/2/02	1000*	38° 40.48' S	178° 00.74' E

The accuracy of the above positions is unknown. However, the positions plotted for 2152, 2153 and 2215 are inconsistent with the expected movement of the vessel given the conditions then prevailing.

* (see Appendix 2a - Position 5)

1.6 Post Grounding

1.6.1 In the days following the grounding, the vessel was subjected to repeated poundings by heavy southerly quarter swells. During this time, she was driven further ashore into progressively shallower water (see Appendix A(i)- Photograph).

1.6.2 **Jody F Millennium** remained aground for 18 days. She was eventually refloated at 1600 hours on 24 February.

1.6.3 The vessel suffered extensive damage to her hull particularly to the bottom plating in way of No. 4 cargo hold. This bottom damage extended forward to No. 2 hold. Further damage extended two metres up the ship's side in way of the after starboard end of No. 4 hold and one metre up the port side of this space.

1.6.4 The most severe damage extended along the starboard side of the vessel. In way of No. 5 starboard water ballast tank, there was a tear in the shell plating which measured approximately 8.5 metres in a fore and aft direction. At its widest point, the tear was 1.5 metres in width. There were a number of small penetrations in way of Nos 2, 3, 4 and 5 starboard wing water ballast tanks and it was suspected that several internal watertight bulkheads had been breached, resulting in the water ballast tanks becoming common.

1.6.5 The bilge radius on the starboard side of the vessel was inverted in places and both bilge keels were damaged to the extent that they required complete renewal. One report described them as "folded flat against the hull".

1.6.6 The shell plating was penetrated in three places in way of No. 3 centre fuel oil tank (below No. 4 hold) which resulted in an oil spill. The penetrations were in the form of intermediate splits, having a combined length of 7.5 metres but of no significant width.

- 1.6.7** The rudder sole plate was set up vertically as a result of grounding. This in turn, drove the rudder stock up into the steering flat, lifting the Pallister bearing and shearing the steering gear rams. The rudder had rotated through an arc of 120° to starboard, (the normal operating range of the rudder was limited to an arc of about 35° to port and to starboard) with the trailing edge hard up against two of the propeller blades, both of which were damaged as a result.
- 1.6.8** The Master's evidence was that the damage to the steering gear did not occur at the time of the initial grounding and was not causative of the loss of directional control when the vessel slewed to starboard onto a broadly westerly heading. He maintained that the rudder and steering gear remained operational until the vessel was hard aground.
- 1.6.9** The above account of damage was taken from divers inspection reports that were completed for salvage purposes and the vessel's Classification Society. They were made available to the MSA Investigators shortly after the vessel was refloated.

1.7 The Oil Spill

- 1.7.1** The Director of Maritime Safety initiated a Tier 3 oil spill response on 7 February 2002, before any oil spill was apparent. It was initiated as a precautionary measure in view of the likely risk of an oil spill posed by the grounding of the **Jody F Millennium** in severe onshore weather conditions, and where the vessel was situated immediately adjacent to a public beach and a shoreline with significant wildlife habitats. This was the first time in New Zealand that a Tier 3 oil spill response had been declared before any oil was spilled.
- 1.7.2** As a consequence of the loss of watertight integrity in way of No. 3 centre fuel oil tank, heavy fuel oil started to leak from the ruptured tank and became evident on the sea surface at approximately midday on Friday 8 February. In total, about 25 – 35 tonnes of heavy fuel oil (HFO) was estimated to have leaked from the vessel, the majority of which impacted on the shoreline in Poverty Bay.
- 1.7.3** In a move to mitigate the potential loss of fuel oil from the double bottom tanks to the environment, further oil was pumped from No. 1 and No. 2 double bottom centre fuel oil storage tanks to the vessel's upper wing ballast tanks. A total of 210 tonnes of heavy fuel oil was subsequently pumped from the vessel and loaded onto Lancer barges. Of this amount, 103 tonnes was transferred to **HMNZS Endeavour** and the balance to oil disposal sites ashore.

1.8 The Salvage and Tows

- 1.8.1** United Salvage Pty Limited of Australia was appointed as salvors under Lloyds Open Form. The vessel was refloated on 24 February with the aid of two tugs and ground tackle.
- 1.8.2** Preparatory to refloating **Jody F Millennium**, 520 metric tonnes of logs were lifted off the vessel by helicopter. A further 3 466 metric tonnes of logs were discharged into barges using the ship's cranes (61 logs had been washed overboard on the night of the grounding).

Towage to Tauranga

- 1.8.3 Jody F Millennium** was towed to Tauranga, to enable the remainder of her cargo of logs to be discharged and temporary repairs to be completed, preparatory to her being towed to Japan for permanent repair. The tow was undertaken by the Australian tug **Keera** of 496 gross tonnes, 4 800 b.h.p. and a 65 tonne bollard pull. The tow was escorted by the Vanuatu tug, **Sea Tow 25**.

Towage to Japan

- 1.8.4 Jody F Millennium** departed Tauranga for Japan on 19 March, under towage by the tug **Keera**. At a point, north of New Zealand, the tow was transferred to the Japanese tug, **Sieka Maru No. 2**. The tow arrived in Japan on the 18 April 2002 where permanent repairs were conducted. **Jody F Millennium** returned to service on 25 June 2002.

KEY CONDITIONS

2.1 The Vessel, Ownership and Particulars

2.1.1 Jody F Millennium was a Panamanian flagged vessel, launched in December 1999 and delivered to her owner on 24 February 2000.

2.1.2 The vessel was a conventional geared bulk carrier with four hatches situated forward of an after bridge, engine room and accommodation block. All four hatches were served by ship's cranes.

2.1.3 The registered owner was the Twin Bright Shipping Company Limited of Panama.

2.1.4 Jody F Millennium was managed by Soki Kisen of Shikoku, Japan. The vessel was time chartered to News Maritime Ltd. The sub time charterer and operator was Hyundai Merchant Marine Company Limited of Seoul, Korea. At the time of the casualty, she was on a voyage charter to Rayonier (N.Z.) Limited for the carriage of a cargo of logs to Korea and China.

2.1.5 The principal dimensions of the vessel were as follows:

Length Overall	159.84 metres
Length B.P. (between perpendiculars)	149.80 metres
Breadth	26.00 metres
Depth Moulded	13.50 metres
Draught (summer)	9.815 metres, giving a summer deadweight of 25 369 tonnes
Gross Tonnage	15 071
Net Tonnage	8 964
Maximum Speed on Trials	16.987 knots
Service Speed	14.5 knots

2.1.6 The vessel was fitted with 21 water ballast tanks comprising:

- 1 x Fore Peak.
- 2 x Full width double bottom tanks (port and starboard) in way of No. 1 hold.
- 8 x Double bottom wing tanks (port and starboard) in way of No's 2, 3 and 4 holds.
- 10 x Upper wings tanks (port and starboard) in way of No's 1, 2, 3 and 4 holds.

Total Ballast Capacity - 7 155.35 cubic metres.

2.1.7 The vessel was fitted with three fresh water tanks comprising:

- 1 x After Peak tank.
- 2 x Potable fresh water tanks (port and starboard) situated aft in way of the engine room.

Total fresh water capacity - 264.56 cubic metres.

2.1.14 The manoeuvring data of **Jody F Millennium** was as follows:

	Speed RPM	Speed (knots)	
		Loaded	Ballast
Full Ahead (Harbour)	100	11.6	12.3
Half Ahead	85	9.9	10.7
Slow Ahead	62	7.4	8.2
Dead Slow Ahead	45	5.5	6.1
Dead Slow Astern	45		
Slow Astern	62		
Half Astern	85		
Full Astern	100		

The time from full ahead to full astern was three minutes and 40 seconds

2.1.15 The vessel was fitted with a conventional balanced rudder driven by two electro-hydraulic steering motors.

Maximum Rudder Angle -35 ° Each Way

Time from Hard Over to Hard Over (with two steering motors on line) - 23 seconds

Time from 15° of helm to 15° of opposite helm (with two steering motors on line) - 18 seconds.

2.1.16 The following Certificates were on board the vessel. They all were current at the time of the casualty.

Certificate	Issuing Authority	Date of Issue	Date of Expiry
Cargo Ship Safety Construction	NKK*	19/4/00	23/2/05
Cargo Ship Safety Equipment	NKK	24/2/00	23/2/02
Cargo Ship Safety Radio (Interim)	Panama	14/12/01	13/5/02
International Tonnage Certificate	NKK	24/2/00	
International Load Line Certificate	NKK	19/4/00	23/2/05
International Oil Pollution Prevention	NKK	19/4/00	23/2/05
Safety Management Certificate	NKK	23/1/01	13/12/05
Document of Compliance (ISM)**	NKK	17/8/00	22/4/04
Minimum Safe Manning Document	Panama	20/1/00	

* Nippon Kaiji Kyokai

***International Safe Management*

2.1.17 The last Port State Inspection conducted on **Jody F Millennium** was in Geelong, Australia on 9 November 2001. No deficiencies were recorded at that time.

2.2 International Safety Management (ISM) Manual

2.2.1 A Safety Management Manual prepared by Soki Kisen Co., Ltd, the managers of **Jody F Millennium**, was published on 1 July 1998. The latest edition, current at the time of the casualty, was issued on 6 January 2001. A copy of this edition of the manual was held on board **Jody F Millennium**. The vessel's ISM Certificate was issued on 23 January 2001 by Nippon Kaiji Kyokai (NKK) Classification Society and was valid until 13 December 2005. The managing company's Document of Compliance (confirming that their safety management systems were compliant with the ISM Code), was issued by NKK on 17 August 2000 and was valid until 22 April 2004.

2.2.2 The Safety Management Manual required the Master to liaise with shore authorities in the event of an emergency whilst in port. This requirement was not followed by the Master on 6 February (see *paragraph - 1.4.42*).

2.3 Navigational Aids and Bridge Equipment

2.3.1 **Jody F Millennium** was fitted with the following bridge equipment:

Gyro Compass	Manufactured by Yokogawa – error negligible
Standard Magnetic Compass	Fitted to Monkey Island with periscope into wheelhouse
Gyro Repeaters	One on the centreline of the vessel in forepart of the wheelhouse and one on each bridge wing.
Autopilot	Yokogawa PT 500
Radar No. 1	JRC JMA 9000 Daylight viewing radar fitted with ARPA *
Radar No. 2	JRC JMA 7000 Daylight viewing radar
GMDSS	JRC NCU 324A Global Maritime Distress and Safety System, Communication Console
VHF Radio	JRC JHS 32A x 2
GPS	JCR JLR 7700 Global Positioning System (GPS Navigator)
Echo Sounder	JRC JFE 570S

* ARPA – Automatic Radar Plotting Aid

2.3.2 The following equipment had displays situated at the forward end of the wheelhouse above the bridge windows:

- Doppler Speed Log
- Main Engine tachometer, (duplicated on both bridge wings)
- Rudder Angle indicator, (duplicated on both bridge wings)
- Anemometer and wind direction
- Clinometer (measuring the vessel's angle of list/heel)

2.3.3 Subsequent to the casualty, the clinometer display showed maximum angles of heel of 28° to port and 34° to starboard. However it is not known if these figures were recorded during the vessel's departure from Gisborne. The possibility that the readings relate to a previous voyage cannot therefore be discounted.

2.3.4 The pre-sailing bridge check list showed that the following bridge equipment, as set out below, was tested and found to be functioning satisfactorily prior to departure. The check list was signed by the Master and the Third Officer (*see Appendix 5 – Bridge Equipment Checklist*).

- Whistle
- Both Radars
- Doppler Speed Log
- Engine Telegraph
- Steering Gear (with two power units operating)
- Gyro Compass
- Two VHF Radios
- GPS

2.3.5 The echo sounder was not listed on the bridge equipment test check list. The MSA Investigators were told by the Master that the echo sounder had not been turned on at the time of departure. There was no explanation for this omission. Accordingly, there was no record of the under keel clearance for the outward passage.

2.3.6 The chart in use at the time of the casualty was the largest scale chart for the area namely, NZ 5613 “Poverty Bay and Approaches to Gisborne/Gisborne Harbour and Entrance”. It was the latest edition, published in April 1989 and reprinted in April 1999. It was corrected and up to date. The most recent correction to the chart was made correctly but had inadvertently been given the wrong correction number.

2.4 Shipboard Personnel

2.4.1 The Master and crew were employed by Misuga Kaaiun, a crewing agency based in Shikoku, Japan.

2.4.2 In addition to the Master, there were 18 crew, giving a total of 19 persons on board. There were no supernumeraries or passengers. The Master and the Chief Engineer were Korean nationals. The remaining crew members were of Filipino nationality (*see Appendix 7 - Crew List*).

2.4.3 The Master was from Chusan, Korea. He was 61 years of age and had been at sea since 1968. He held a valid Korean Master’s Certificate of Competency, issued in compliance with the Standards of Training, Certification and Watchkeeping Convention, as amended in 1995 (STCW 95). This included training at a Bridge Resource Management (BRM) course. He had sailed as Master since 1975 and had been the Master of **Jody F Millennium** for 13 months at the time of the casualty. Neither the Master, nor the vessel, had visited Gisborne before.

2.4.4 The Master stated this was his first casualty in the course of his seagoing career.

2.4.5 The Chief Officer was 34 years of age. He was stationed on the forecandle head at the time of the casualty with the Bosun, two oilers and an ordinary seaman.

- 2.4.6** The Second Officer was 45 years of age and had been at sea for 17 years. He held a Filipino Chief Officer's Licence, issued in compliance with the STCW 95 convention. He had also completed a BRM course. At the time of the casualty, he had been on board **Jody F Millennium** for three months. He had not served on the vessel previously.

2.5 The Port of Gisborne

Significant Features

- 2.5.1** The port of Gisborne, in Latitude 38° 41' South Longitude 178° 01' East, is situated in the north eastern corner of Poverty Bay on the East Coast of New Zealand's North Island (*see Appendix A(vi) - Photograph*).
- 2.5.2** The port is vulnerable to severe weather through an arc of about 90° namely, from the south east to the south west quadrants of the compass, such that swell conditions from within this quarter were likely to become manifest as a surge condition within the harbour. The New Zealand Pilot stated under the heading "Local Weather" (*see paragraph 2.5.16 - • 9.174*) "with south or east swells, the harbour entrance may be difficult or even impracticable to negotiate ...".
- 2.5.3** The main commercial harbour is triangular in shape and was delineated by a training wall, Butlers Wall, an Outer breakwater and the main wharf.
- The Training Wall: (*see Appendix 2 - Position G*) ran alongside the Turanganui River on a broadly east-west axis. It formed the northern boundary of the swinging basin and the harbour.
 - Butlers Wall Breakwater: (*see Appendix 2 - Position H*) projected perpendicularly from the western extremity of the Training Wall, ran on an approximate north – south axis, and formed the seaward boundary on the western side of the swinging basin and harbour.
 - The Main Wharf, The 'Overseas' Wharf: (*see Appendix 2 - Position I*) extended over a distance of approximately 540 metres in way of Nos 6, 7 and 8 berths, ran on an approximate north east-south west axis. It created the south east boundary of the harbour.
 - Extending from the seaward extremity of the main wharf, was an Outer breakwater: (*see Appendix 2 - Position J*) which projected south westwards from the harbour into Poverty Bay, beyond the line of Butlers Wall. It measured approximately 410 metres in length. The minimum and maximum height of this breakwater above mean sea level (the average level of the sea surface that would exist in the absence of tides), was about one metre and two metres respectively.

Whilst the Outer breakwater and Butlers Wall reduced the effects of swell and hence surge within the harbour, they did not eliminate it all together. This was because of the alignment of the breakwaters which did not prevent a swell, particularly from between a south and south westerly direction, from entering the harbour (*see NZ Pilot reference - 2.5.16 - • 9.174*).

- 2.5.4** There were three deep water berths situated within the main harbour, namely, Nos 6, 7, and 8 berths, on what was known as the Overseas Wharf. No. 8 was the most seaward berth and No. 6 was the innermost berth. Following the casualty, on 25 February 2002, the minimum depth of water alongside Nos 7 and 8 berths was found by Discovery Marine Limited (DML) of Howick, Auckland, to be 10.3 metres.
- 2.5.5** The outer face of No. 8 berth was of solid concrete construction as opposed to Nos 6 and 7 berths, which were of an open pile construction. The Pilot and the ex Harbourmaster, (together with others with relevant local experience who were interviewed) were of the opinion that this type of construction magnified the movement of vessels lying alongside No. 8 berth in surge conditions.
- 2.5.6** Steel mooring bollards were centred at intervals of approximately 15 metres along the main body of No. 8 wharf decreasing to intervals of approximately 7.5 metres for the six bollards situated at the south west extremity of the wharf and the five bollards situated at the north eastern extremity of No. 8 wharf. These bollards were set into the deck of the wharf close to its outer face.
- 2.5.7** Fenders were fitted to the vertical face of No. 8 berth and centred approximately two metres below the deck of the wharf at intervals of approximately 15 metres. The fenders consisted of two metre square, rubber faced, steel pads. They projected about one metre from the vertical face of the wharf on cylindrical rubber shock absorbers, which measured about one metre in diameter. Chains that were attached to the corners of each pad, were in turn secured diagonally to the face of the wharf, so as to limit any lateral distortion of the fenders (*see Appendix A(ii) - Photograph of Fender*).
- 2.5.8** When lying alongside No. 8 berth, the parallel body (the flat side shell plating) of **Jody F Millennium's** hull was supported by five of the above fenders.
- 2.5.9** Upon arrival and before berthing, vessels were invariably swung through an arc of 180° in the swinging basin and berthed port side to the Overseas Wharf, bow out (bow to seaward). The limiting draught for vessels turning in the swinging basin was approximately 7.2 metres forward and 8.5 metres aft at high water.

Gisborne Chart NZ6513

- 2.5.10** The latest edition of the New Zealand chart NZ5613, Poverty Bay and Approaches to Gisborne, current at the time of the accident, was published in 1989 and reprinted in 2001.
- 2.5.11** The chart showed that the entrance channel measured about 0.8 nautical miles in length between a green conical fairway buoy, which marked the seaward end of the entrance channel, in the vicinity of Tokomaru Rock (*see Appendix 1 - Position C*) and a point abeam of Butlers Wall (*see Appendix 2 - Position A*).

- 2.5.12** The chart showed the leading line transits in the dredged entrance channel in the approaches to the harbour as $054\frac{1}{2}^{\circ}(T)$ and the reciprocal bearing $234\frac{1}{2}^{\circ}(T)$. This leading line was signified by two beacons with orange triangular day marks in line. By night, the leading line was marked by a rear beacon exhibiting a fixed green neon light in line with a front beacon fitted with a red, white and green, sectored light, which showed as a fixed green light over an arc of 3.2° : $052.9^{\circ}(T) - 056.1^{\circ}(T)$ (see Appendix 8 – New Zealand Light List). This fixed green light sector signified the limits of the main navigable sector of the entrance channel.
- 2.5.13** Soundings charted close to the axis of the leading line transit showed a maximum depth below chart datum of 13.8 metres and a minimum depth of 8.7 metres below chart datum.
- 2.5.14** Soundings that were charted immediately outside the fixed green sector lights showed a minimum depth of 6.2 metres below chart datum, in a position about 0.1 nautical miles to the west north west of the seaward extremity of the Outer breakwater.
- 2.5.15** The pilot boarding ground was situated approximately 1.5 nautical miles to the south of the fairway buoy and about two nautical miles from the seaward end of the Outer breakwater (see Appendix 1 - Position D).

The New Zealand Pilot NP 51

- 2.5.16** The New Zealand Pilot current at the time of the **Jody F Millennium** casualty, was the 15th edition, published in February 2001. It contained the following relevant entries with regard to Gisborne:
- **“9.165 Approach and Entry**
The harbour is approached through Poverty Bay (9.150) and entered by a dredged channel which passes north west of The Foul Grounds ($38^{\circ} 41'.3$ South, $178^{\circ} 00'.5$ East) lying to the south east of the Fairway buoy into the harbour between breakwaters.
 - **9.167 Port Authority**
Port Authority is Port Gisborne Limited (PGL), is represented by a General Manager.
 - **9.168 Controlling Depths**
*Entrance Channel: 10.5 metres - dredged over a width of about half a cable, as far as the Swinging Basin, thence 6.5 metres, in 2000.
Channel to Kaiti Basin 4.0 metres - in 1998.*

Depths in dredged areas may not be regularly maintained. The latest depths should be obtained from the Port Authority.
 - **9.170 Tidal Levels**
*Mean spring range about 1.4 metres.
Mean neap range about 1.2 metres*
 - **9.173 Maximum size of vessel handled**
Maximum length 200 metres; maximum draught 8.5 metres. A vessel drawing 9.0 metres has entered.

- **9.174 Local Weather**

With south or east swells the harbour entrance may be difficult or even impracticable to negotiate and swell may cause vessels to surge alongside, but suitable berthing hawsers are provided by the port authority. Vessels are recommended to turn in the swinging basin and berth bows south west.

- **9.175 Port Operations**

*Vessels less than 175 metres are berthed and unberthed by day or night (**Jody F Millennium** was about 160 metres in length). Those between 175 and 200 metres are berthed daylight only but may depart at night. Those drawing less than 5.6 metres are handled at any stage of the tide. The movement of deeper draught vessels depends on the berth and the height of tide. Swell sometimes causes vessels to surge alongside but suitable berthing hawsers are provided by the port authorities.*

- **9.179 Pilots**

Pilotage district is bounded seaward by the arc of a circle, radius three miles, centred on the south end of Butlers Wall (38° 40'.6 South, 178° 01'.2 East)

Pilotage is compulsory for merchant vessels of 100 grt or more, unless exempted by law. The notice for a pilot is the same as for ETA; see the relevant Admiralty List of Radio Signals.

Pilot boarding place is two miles south of the south Breakwater Head Light (38° 40'.7 South 178° 01'.1 East) on the alignment of Gisborne Harbour Leading Lights (9.183), as indicated on the chart."

Although **Jody F Millennium** did not have the latest edition of the New Zealand Pilot (15th edition) on board, the absence of this updated edition was not considered relevant to the casualty. The copy on board the vessel was the 14th edition published in 1987 which contained the following relevant entries:

- **"9.294 Approach and entry**

The harbour is approached through Poverty Bay and entered by a dredged channel which passes north west of the Foul Grounds (38° 41'.3 South, 178° 00'.5 East) into the harbour between breakwaters.

- **9.297 Port Authority**

Port Authority is Gisborne Harbour Board, represented by a Harbourmaster.

- **9.298 Depths**

Controlling Depths: Entrance channel: 8.1 metres (26½ feet) over a width of about ½ cable, as far as the turning basin, thence 6.5 metres (21½ feet) in 1986, after dredging.

Deepest and longest berth is No. 7 wharf.

Caution: Depths in dredged areas may not be regularly maintained; the latest depths should be obtained from the Harbourmaster.

- **9.299 Largest Vessel**

A vessel 174 metres in length drawing 8.2 metres can normally enter harbour at high water. A vessel drawing 9.0 metres has entered but in view of the caution above it is advisable to obtain the latest port draught in advance from the Harbourmaster.

- **9.300 Natural Conditions**

Local Weather. With south or easterly swells the harbour entrance may be difficult or even impracticable to negotiate.

- **9.301 Port Operations**

Vessels can berth or unberth by day or night. Those drawing less than 4.6 metres are handled at any stage of the tide; the movement of deeper draught vessels depends on the berth and height of tide.

- **9.305 Pilots and tugs**

Pilotage district is bounded seaward by the arc of a circle, radius three miles, centred on the south end of Butlers Wall (38° 40'.7 South, 178° 01'.2 East).

Pilotage is compulsory for merchant vessels of 100 nrt or more, unless exempted by law; the Harbourmaster may require a vessel under 100 nrt to take a pilot. The notice for a Pilot is the same as for ETA; see 1.37.

Pilot boarding place is two miles south south west of the south breakwater head light (38° 40'.8 South, 178° 01'.1 East), on the alignment of Gisborne Harbour Leading Lights (9.288), as indicated on the chart."

The significant difference between the 14th and 15th editions was the change to the Controlling Depths.

Depths, Dredging & Survey

- 2.5.17** On 18 June 1999, a capital dredging programme, commissioned by PGL, was commenced with the intention of increasing the working depth in the entrance channel from 9.5 metres to 10.5 metres. The dredging vessel **Heron** was utilised for this work which was completed on 14 March 2000. Thereafter, maintenance dredging was required to maintain this 10.5 metre depth in the entrance channel.
- 2.5.18** A hydrographic survey, conducted by Hunter Hydrographic Services between 22 and 24 February 2000 (before completion of dredging), showed a minimum depth of water in the entrance channel of 9.7 metres. An additional hydrographic survey was conducted upon completion of dredging in March 2000 which showed depths less than 10.5 metres in the main channel thus indicating that the target depths had not been achieved. The next and the last hydrographic survey that was conducted prior to the casualty was in July/August 2001 (*see Appendix 10 – Hydrographic Survey and paragraph 2.5.26*).

- 2.5.19** The most recent maintenance dredging that was conducted prior to the casualty was completed on 4 December 2001. However, no hydrographic survey was conducted after this dredging to determine the resultant depths of water. Consequently, there were no up to date soundings to indicate the true depths of water in the entrance channel at the time of the casualty.
- 2.5.20** Prior to the **Jody F Millennium** casualty, the Pilot had approached PGL on a number of occasions and requested an up to date hydrographic survey of the entrance channel. He wanted a complete and thorough survey of the channel, utilising a vessel equipped with a Differential Global Positioning System (DGPS) and a sounder fitted with heave compensation to ensure the accuracy of the data.
- 2.5.21** The Pilot's evidence was that he communicated his concern regarding the absence of an up to date hydrographic survey of the channel to the local Harbourmaster, and asked that he take up the matter with PGL. The Harbourmaster denies receiving that request and PGL say that no such concern was passed to them by the Harbourmaster.
- 2.5.22** The Chief Executive Officer of PGL was of the opinion that the Pilot should have taken the pilot boat out and sounded the channel with the equipment available namely, an echo sounder without heave compensation and without instrumentation to determine the vessel's position with DGPS. MSA Investigators were of the opinion that this would not have provided the necessary degree of accuracy.
- 2.5.23** It was stipulated in the contract between PGL and Adsteam Port Services Ltd (APSL), that PGL had the responsibility for maintaining the port facilities (clause 16: Port Gisborne's Obligations, sub-heading, Maintenance of Port Facilities):

"That all channels and fairways navigated by Port Users' vessels are kept dredged to the Depths or deeper, and are kept free of all obstructions and are properly marked or buoyed,"

"That all berths and channels and swinging basins, commonly used by Port Users' vessels are kept to the Depths or deeper."

In the same contract, under definitions, it stated that:

"'Depths' means the current operating depths as specified in the New Zealand port of Gisborne chart NZ 5613 as corrected as at 1 November 1998."

- 2.5.24** The minimum depths in the entrance channel, marked on chart NZ5613, were approximately nine metres. This conflicted with the entry in the New Zealand Pilot NP 51, 15th edition 2001, where it was stated that the controlling depth was 10.5 metres. However, this information was qualified in the New Zealand Pilot by the advice to mariners to obtain the latest depths from the Port Authority.
- 2.5.25** PGL published a seven page booklet, titled 'Port of Gisborne – Information Details', dated 22 February 2001 (*see Appendix 9 – Port of Gisborne Information Details*). The purpose of the booklet was to provide general information for ship's agents and other port users and contained the following information under the heading 'The Harbour':

Depth at Entrance	10.5 metres at chart datum
Length of Entrance	1.6 kilometres
Width at Entrance	92 metres
Turning Basin	250 metres
Maximum Size Vessel Permissible	200 metres length overall
Maximum Draught Permissible	10.2 metres without arrangement 10.4 metres subject to weather conditions
Tidal Range	1.36 metres

The Pilot said that he worked to a maximum departure draught of 10.2 metres on a spring high tide.

- 2.5.26** The most recent hydrographic survey of the area prior to the casualty was undertaken in July/August 2001 by DML (see *Appendix 10 – Hydrographic Survey*). This showed significant areas right across the entrance to the harbour where the depth of water was less than 10 metres below chart datum. The shoaling extended south westwards over a distance of approximately 300 metres from the seaward extremity of the Outer breakwater.
- 2.5.27** A hydrographic survey conducted by DML for the MSA Investigators on 25 February 2002 (see *Appendix 11- Discovery Marine Hydrographic Survey*), still showed significant areas in the entrance channel where the depth of water was less than 10 metres below chart datum.
- 2.5.28** In comparing the pre casualty (July/August 2001) and post casualty (February 2002) hydrographic surveys, there was not a significant amount of difference, in that both showed least depths of 9.6 metres below chart datum in the proximity of the leading line in the entrance channel.
- 2.5.29** It was not possible to determine whether the shoaling recorded in the survey subsequent to the casualty occurred as a result of the severe weather conditions experienced on the day of the casualty and afterwards, or, if they existed prior to and at the time of the casualty.

Calculation of UKC

- 2.5.30** The following table of tidal predictions was calculated from the NZNA by the MSA Investigators. When added to chart datum to give the total depth of water, and after deducting the vessel's deepest draught, a table of her predicted static UKC at various times on 6 and 7 February was obtained as follows:

Date and Time	Predicted Height of Tide (m)	Chart Datum (m)	Total Depth (m)	Deepest Draught (m)	Under Keel Clearance (m)
Wed 6/2/02 1353 hours	HW 2.00	10.20	12.20	9.50	2.70
1500 hours	1.90	10.20	12.10	9.50	2.60
1600 hours	1.55	10.20	11.75	9.50	2.25
1700 hours	1.30	10.20	11.50	9.50	2.00
1800 hours	0.90	10.20	11.10	9.50	1.60
1900 hours	0.65	10.20	10.85	9.50	1.35
2012 hours	LW 0.50	10.20	10.70	9.50	1.20
2100 hours	0.55	10.20	10.75	9.50	1.25
2200 hours	0.75	10.20	10.95	9.50	1.45
2300 hours	1.10	10.20	11.30	9.50	1.80
2400 hours	1.40	10.20	11.60	9.50	2.10
Thurs 7/2/02 0226	HW 1.90	10.20	12.10	9.50	2.60
0835	LW 0.60	10.20	10.80	9.50	1.30

HW = High Water

LW = Low Water

Note: Times have been corrected for NZDT.

The above table assumed the following constants:

- Least depth below chart datum in the entrance channel - 10.2 metres.
- Deepest draught on departure (aft) - 9.5 metres.

From the above it can be seen that at the time of the vessel's departure at about 2130 hours on 6 February, there would have been a predicted static UKC of 1.35 metres; 0.15 metres above the minimum predicted UKC of 1.20 metres at 2012 hours. It should be noted that the actual tidal height was showing marginally above prediction (*see paragraph -1.4.47*).

2.5.31 On the basis of the evidence that the Pilot observed the tidal height to be 0.8 metres above chart datum before he boarded the vessel, it was calculated by the MSA Investigators that **Jody F Millennium** would have had a static UKC of about 1.5 metres at the time of her departure from Gisborne.

2.5.32 In contrast to the above and based upon the most recent hydrographic survey undertaken in July/August 2001 when the least depth of water was shown to be 9.6 metres below chart datum, it is calculated that the vessel's minimum UKC on departure would have been 0.9 metres:

Surveyed depth in channel	9.6 m
Height of tide	0.8 m
Total depth in channel	10.4 m
Maximum draught	9.5 m
Calculated static UKC	0.9 m

2.5.33 MSA Investigators also calculated that in still water conditions, the vessel had to heel by approximately 7° to negate a 1.5 metre UKC and for the bilge keel to make contact with the seabed. This figure was determined by traverse table as prescribed in Derret's Ship Stability for Masters and Mates, (first published in 1964 by A Wheaton & Company, England), and confirmed by trigonometry. Further loss of UKC would likely have resulted from squat and the combined effects of heaving and pitching generated by the prevailing swell. The height and period of swells was subject to widely divergent estimates and it is impossible to accurately calculate the combined effect of these factors.

Port Management

2.5.34 PGL was incorporated at the time of New Zealand ports reform in 1989. It succeeded the Gisborne Harbour Board (GHB). At the time of the casualty, all shares in Port Gisborne Ltd (PGL) were owned by Gisborne Holdings Limited, which in turn was owned by the Gisborne District Council (GDC).

2.5.35 The Chief Executive of PGL at the time of the casualty reported to the Board of Directors of PGL.

2.5.36 The Chief Executive Officer of PGL commenced employment with the GHB in 1962. He had a background in financial management and administration. His knowledge of shipping was limited to that gained in the management of the port. He was appointed as Chief Executive Officer of the GHB in 1986.

2.5.37 In 1998, PGL decided to contract out certain of their port operational responsibilities in preference to employing their own staff. Positions included the pilot(s), the crew for the pilot boat and tugs and the linesmen employed to moor/unmoor the ships.

2.5.38 PGL's responsibilities for the safety and upkeep of port facilities and services, included:

- Wharves
- Fendering
- Shore moorings
- Dredging within the harbour and approaches
- Buoyage and navigational marks
- Hydrographic surveys

2.5.39 On 8 December 1998, an agreement was concluded between PGL and APSL of Auckland for a term of 10 years.

2.5.40 The agreement was for APSL to provide the following marine services for the port of Gisborne:

- **Towage**
"Adsteam (APSL) will make tugs available to PGL to enable Port Gisborne to provide port users with towage facilities within the Pilotage District."
- To facilitate this, the tug **Turihaua** of 104.47 gross tonnage and the pilot boat **Takitimu** of 19.33 gross tonnage, both owned by PGL, were bareboat chartered to APSL.
- Shortly after the contract came into force, an additional tug **Titirangi** of 137.97 gross tonnage was acquired. She was owned by APSL.
- In March 2001, the pilot boat **Takitimu** was replaced by the pilot boat **Turanganui** of 15 gross tonnes, in the ownership of APSL.

Subsequent to APSL assuming management of the marine services, the above vessels were manned mainly by personnel who had previously been employed by PGL and had signed contracts to work for APSL.

- **Pilotage**
"Adsteam (APSL) will make available to PGL the services of a licensed pilot, or pilots, for engagement on board vessels operated by port users navigating within the Pilotage District (Pilotage Services)".

At the time the contract between PGL and APSL was signed, the only licensed Pilot offering pilotage services was the now ex Harbourmaster. For a number of reasons, the now ex Harbourmaster and APSL failed to reach agreement that he be employed as a pilot for APSL. Consequently, it was necessary to employ an alternative pilot, and subsequently the Pilot was appointed to this position.

- **Lines**
"Adsteam (APSL) will make available to Port Gisborne the services of such linesmen as are required to assist in the mooring and unmooring of port users vessels operated by Port Gisborne".
- Prior to 1998, PGL provided the linesmen from its own labour force. In late 1997, early 1998, the labour force was made redundant by PGL but was then re-employed by Gisborne Stevedoring Ltd, a subsidiary of New Zealand Stevedoring Ltd.

APSL sub contracted Gisborne Stevedoring Ltd to supply linesmen for the port operation.

In December 2000, the contract between APSL and Gisborne Stevedoring Ltd for the provision of linesmen was due for renewal. Gisborne Stevedoring Ltd was not reappointed on account of what APSL considered to be poor performance in relation to the mooring and unmooring of vessels.

Generally, there was a considerable degree of ill feeling amongst the members of the mooring gang after they were made redundant and the creation of a new regime.

At the invitation of APSL, two members of the Gisborne Stevedoring Limited mooring gang, set up a new venture named Eastland Moorings Limited (EML).

From December 2000, APSL subcontracted EML to supply linesmen for the port and this arrangement was still current at the time of the casualty. The subcontract included the following clauses:

1. "during the engagement of mooring services the pilot is in charge of the operations and instruction as to the provision of this service are to be adhered to".
2. "APSL (Adsteam) will solely determine the methods of operation, forms of communication and supervisory methods to be employed for mooring services and will modify these as necessary to increase the effectiveness and efficiency of the mooring service operations and to maintain health and safety."

The mooring gang comprised 14 employees, employed on a casual basis, as required, for shipping movements.

EML had attended to the moorings of ships at Gisborne for just over a year at the time of the **Jody F Millennium** casualty.

2.5.41 In relation to the provision of marine services, ships calling at the port Gisborne would contract directly with PGL. Normally, the ship's agent would contact PGL to request the particular marine services required, e.g. pilotage, tugs or lines. PGL would then order the required service from its contractor APSL. In relation to the provision of linesmen, APSL utilised the services of EML.

2.5.42 The provision of mooring services at the port of Gisborne did not require any written records to be kept on matters such as the age, maintenance and repairs to any particular component of the shore mooring lines. Further, no records were kept of the condition of mooring lines when they were inspected, or by whom the inspection had been conducted. Finally, there was no means to be able to individually identify and record the components that made up each mooring line system for the port.

2.5.43 In the knowledge that the port of Gisborne was subject to surge conditions, there were no written operational or contingency plans to cover a situation when a vessel was adversely affected by surge. Such operational and contingency planning should have considered matters such as:

- The number, availability and type of extra moorings that would be required and their configuration.
- The deployment of ships' anchors.
- The movement of vessels to other berths within the port.
- Guidelines for the calculation of dynamic UKC.
- The availability and method of deployment of tugs.
- Continual access to accurate wave, surge and tidal data, both actual and forecast.
- Establishment of governing parameters to trigger the evacuation of vessels from the port.

- 2.5.44** The only contingency planning undertaken by PGL appears to have related to health and safety requirements. PGL published a booklet titled “*Health and Safety Requirements Within the port of Gisborne*”, dated November 2000, which was issued pursuant to its obligations under the Health and Safety Act (HS&E) and was available to all port users (*see Appendix 12 – Health and Safety Requirements*).
- 2.5.45** The above safety manual was being updated at the time of the **Jody F Millennium** casualty and a new edition of the same title was produced on 22 February 2002.
- 2.5.46** In addition to the above, PGL published a booklet titled, ‘*Information Details of Port Gisborne*’ (*see Appendix 9*), which contained general information in relation to the port and its environs. The information booklet contained scant detail of the physical characteristics of the entrance channel and port, including a general description of the effects of sea, swell and surge, tidal streams and other matters of relevance to mariners. Ideally, the booklet should have been expanded to deal with those matters in a more comprehensive manner to provide relevant and up-to-date data to users of the port.
- 2.5.47** APSL and the Pilot failed to provide an adequate passage plan with formal operational parameters. The form of passage plan given by the Pilot to the Master for the vessel's inward passage was seriously deficient. No passage plan was given to the Master for the vessel's outward passage. An adequate passage plan would have ensured that both the Pilot and Master had regard to the following considerations:

Checklist for Master/Pilot Exchange (Passage Plan):

- *Vessel in a safe position to carry out passage plan briefing.*
- *Pilot card presented to Pilot.*
- *Sufficient UKC throughout passage.*
- *State of tide.*
- *Depths of water in the main navigable channel.*
- *Consideration given to weather conditions and forecast swell conditions.*
- *Other vessel movements considered.*
- *Anchors ready for immediate use throughout passage.*
- *VHF channels monitored.*
- *Radars set up as required.*
- *Emergency/contingency plans outlined (grounding/engine loss/steering gear loss).*
- *Navigational intentions: berth allocation, courses, speeds, wheel over, tugs, etc.*
- *Layout of bridge established: sounder, GPS, VHF and other navigational equipment.*

- *Responsibilities defined. For example - lookout, monitoring of ship's position and radar.*
- *Tug requirements: VHF working channel, tugs lines.*
- *Ship's gear tested: all navigation and propulsion equipment.*
- *Mooring plan: Ship's lines/shore lines and their configuration.*
- *Effects of squat, interaction, and increase in draught due to heeling considered.*
- *Any deficiencies with the ship.*
- *Any deficiencies with harbour navigational aids.*
- *Parameters as to when vessel can leave/depart – dependent on draught/length of vessel and tidal considerations.*

In addition to a detailed passage plan, APSL and/or the Pilot should have given consideration to interaction effects that may have been potentially relevant to the pilotage area including bank effect, yaw moment and squat. This would have enabled interaction effects to be assessed in respect of each vessel using the port, having regard to each vessel's specifications and handling characteristics.

2.6 Pilotage Practice

2.6.1 Pilots came into being in the earliest times of maritime trade principally to provide ships with navigational guidance to safe passage into harbours or through dangerous waters.

2.6.2 A pilot is defined in Maritime Transport Act 1994 as follows:

"Pilot, in relation to any ship, means any person not being the master or a member of the crew of the ship who has the conduct of the ship."

The Governor General may by warrant define the limits of a pilotage district and such limits shall be gazetted (Harbours Act 1950 s. 211). The pilotage district for the port of Gisborne was bounded seaward, radius three miles, centred on the south end of Butlers Wall and was gazetted. The Local Government Act provides that despite the repeal of section 211 of the Harbours Act 1950, pilotage district limits having effect under that section immediately before its repeal, continue in force until the close of 31 March 2003, unless sooner revoked.

2.6.3 The pilotage district was not the same as the harbour limits.

2.6.4 New Zealand hydrographic chart NZ5613 marked the pilot boarding place as being in a position approximately two nautical miles to the south of the end of the harbour breakwater. In other words the boarding place marked on the chart was about 1 nautical mile inside the pilotage district.

2.6.5 The Gisborne District Council made by-laws which came into force on 15 October 1999. By-law 23F provided:

“... Pilotage is compulsory at the port of Gisborne and the Master of every ship entering or leaving the harbour shall employ a qualified pilot ...”

There are exemptions for ships of up to 100 register tons and where the master holds a pilotage exemption certificate.

By-law 23F refers to the port of Gisborne. The limits of the port of Gisborne and the pilotage district are not the same. Strictly speaking, the by-law should refer to the pilotage district and not to the port of Gisborne.

2.6.6 Despite shortcomings in the wording of the by-law, MSA lawyers were of the view that pilotage within the pilotage district was made compulsory by by-law 23F.

2.6.7 Notwithstanding the boarding position noted on the chart, the practice that developed in the port of Gisborne was for the pilot to board for inward pilotage, and disembark on outward pilotage, in different locations depending upon vessel size and the prevailing weather and sea conditions.

2.6.8 As indicated in paragraph **1.5.29** above, there was a conflict in the evidence of the Master and the Pilot as to the position at which the pilot left the navigation bridge. Even accepting for present purposes that the Pilot's recollection was correct, the Pilot had an obligation to remain on board the vessel - if not until the vessel reached the outer of the limits of the pilotage district, then at least until the vessel was in deep water and clear of danger. Conditions on the night may have prevented the Pilot from disembarking to the pilot boat thereby requiring him to remain on board until conditions eased. If that had occurred, then so be it. There are numerous precedents for pilots being "over carried" to a vessel's next port of call when conditions have prevented the pilot from disembarking the vessel on completion of the pilotage.

2.6.9 The necessity for the Pilot to remain onboard the vessel was heightened having regard to the following factors:

- The departure was in the hours of darkness.
- There was an extreme swell running accompanied by near gale force winds.
- The Master had not previously visited the port.
- It was critical that the vessel remain in the channel on its departure from the port.

2.6.10 Anticipated difficulty in transferring to the pilot boat did not provide the Pilot with any justification for disembarking the vessel in the vicinity of the harbour breakwater and leaving the Master to navigate the balance of the compulsory pilotage district without the assistance of a pilot holding the relevant local knowledge and experience.

2.7 Comparison with Other Relevant Ports

2.7.1 In determining the best practice for the safe operation of a port such as the port of Gisborne, MSA Investigators considered and reviewed the procedures applying in other comparable ports on the New Zealand coast, namely, Nelson, New Plymouth, Napier and Timaru. Three of those ports, New Plymouth, Napier and Timaru, encounter surge conditions and are protected by breakwaters.

2.7.2 MSA Investigators identified 22 matters relating to the safe operation of the above ports and at Gisborne and determined whether documented procedures had been established by the port company responsible for the operation of the port in respect of each of those matters. The result of that comparison was as follows:

TASK	GISBORNE	NELSON	NEW PLYMOUTH	NAPIER	TIMARU
Risk Assessment	X	✓	✓	✓	✓
Safety Meetings	✓	✓	✓	✓	✓
Safety Management	✓	✓	✓	✓	✓
Emergency Procedures	X	✓	✓	✓	✓
Navigation Management	X	✓	✓	✓	✓
Operational Parameters	X	✓	✓	✓	✓ (tankers only)
Pilots Standing Orders	X	✓	✓	✓	✓
Pilots Passage Plan	X	✓	✓	✓	✓
Maximum Draughts	✓	✓	✓	✓	✓
Mooring Plan	✓	✓	✓	✓	✓
Standing Orders Tugs	X	✓	✓	✓	✓
Standing Orders Lines	X	✓	✓	✓	✓
Standing Orders Launch	X	✓	✓	✓	✓
Pilot Training	X	✓	✓	✓	✓
Tug Training	X	IN HAND	✓	✓	✓
Launch Training	X	IN HAND	✓	✓	✓
Lines Training	✓	✓	✓	✓	✓
Position Descriptions	X	✓	✓	✓	✓
Fatigue Management	X	ROSTER	ROSTER	ROSTER	ROSTER
Hydrographic Survey	X	X	✓	✓	IN HAND
Wave Recording	X	N/A*	✓	✓	X
Tide Recording	X	✓	✓	✓	✓

* Not a surge port

To the extent that PGL is shown as having documented procedures in place, these were provided by its contractors APSL and EML.

APSL provided MSA investigators with a number of documents which served as a generic operations manual for their international operations, but which had no specific reference to the port of Gisborne. Being generic in nature, the manuals did not address the particular characteristics of the port or relate to the particular tugs, pilot boat, and port infrastructure at Gisborne. Included amongst the documentation provided by APSL, were specimen checklists relating to APSL operations. No checklists that had been completed by employees involved with the Gisborne operation were furnished by APSL.

2.8 Alternative Contingencies

2.8.1 Ballasting Down/Deliberate Sinking at the Berth

In the course of this investigation, publicity was given to the possibility of the vessel being deliberately sunk at her berth to prevent the vessel from sustaining damage or breaking up. Detailed enquiries were made by MSA Investigators of each of the surge ports referred to above in relation to the contingency of deliberately ballasting a vessel down within a port, in the event of an emergency. Marine managers at the ports of New Plymouth, Timaru and Napier were of the view that ballasting a vessel onto the seabed alongside a berth in their port was not a viable option and therefore not one they would consider. Accordingly, no contingency planning providing for this event had been undertaken by any of these ports.

2.8.2 Use of Anchors

One contingency considered by the Pilot was to carry out an anchor to reduce the vessel's movement alongside. He considered that lowering one or both of the ship's anchors at the berth would have had little or no effect. To have had any beneficial effect, he considered the anchors would have had to be carried out some distance from the vessel by one of the tugs. This option was discounted by the Pilot for two reasons. First, he did not want to utilise one of the tugs for this purpose and reduce the 'push on' effect provided by the tugs in tandem. Second, once carried out, and given the prevailing conditions, the anchor(s) may have been difficult or impossible to recover. At best, retrieving the anchor(s) may have constituted an impediment to an emergency departure. At worst, it may have proved impossible to recover, necessitating the need to slip the anchor(s) and cable(s) at the time of an emergency departure. This would have resulted in the vessel proceeding to sea in severe conditions with only one, or possibly no anchor available.

2.8.3 Further to which, with the vessel ranging up to an estimated seven metres, the ability to position a tug close enough to receive an anchor may have been both impracticable and extremely hazardous.

2.9 The Pilot

2.9.1 The Pilot at the port of Gisborne was the only full time pilot when the casualty occurred.

2.9.2 He was 57 years of age and had spent his whole working life either at sea or piloting. He held a Masters Foreign Going Certificate of Competency (MFG), issued in New Zealand in 1970. He served his apprenticeship with Shaw Savill and Albion Shipping Company Limited. After obtaining his Second Mate's Certificate, he took up permanent employment and progressed through the ranks to Chief Officer with Shaw Savill and Albion. He left that company in 1971 and was then employed as a Third and Second Officer with the Union Steamship Company of New Zealand for the next four years.

2.9.3 He came ashore in 1975 and commenced training as a tug Master/Pilot with the then Hawkes Bay Harbour Board at Napier. He received his Pilot's Licence for Napier in 1981 and was a full time Pilot at Napier through to 1996.

- 2.9.4** In 1996 he resigned as Senior Pilot for the port of Napier for personal reasons and returned to seagoing employment.
- 2.9.5** At the time of his resignation in 1996, he was serving as the Senior Pilot and Pilot Trainer for junior Pilots at Napier. During his 21 years at Napier, he estimated that he had piloted approximately 6 000 shipping movements, which included all types of vessels up to a maximum length of 235 metres.
- 2.9.6** From 1996 through to 1998 he was employed as a relieving Navigating Officer on Ro-Ro (roll on-roll off) vessels and a LPG (Liquefied Petroleum Gas) carrier around the New Zealand coast.
- 2.9.7** In late 1998, the Pilot applied for the advertised position for a Pilot at the port of Gisborne on contract to APSL. His application was successful and in January 1999 he commenced training as a Gisborne Pilot under the now ex Harbourmaster, the incumbent Pilot and Regional Harbourmaster. However, the now ex Harbourmaster would only allow the Pilot on board vessels as an observer and he was not given formal training.
- 2.9.8** The Pilot's training by the now ex Harbourmaster was curtailed due to a contractual dispute between the now ex Harbourmaster and his employer PGL (*see comments under the sub headings of Port Management and ex Harbourmaster*).
- 2.9.9** The Pilot subsequently completed his training under the guidance of the Training/Relief Pilot (*see - Regional Harbourmaster and Pilotage*), who was a relieving Pilot for the port of Gisborne.
- 2.9.10** The Pilot completed approximately 11 pilotage operations during his training period, accompanied initially by the now ex Harbourmaster and latterly by the Training/Relief Pilot.
- 2.9.11** On 23 - 24 January 1999, the Pilot was examined for his Gisborne Pilot's Licence by the Training/Relief Pilot and the General Manager of APSL and the Pilot's employer and line manager.
- 2.9.12** In a letter to the MSA, dated 26 January 1999, the Training/Relief Pilot stated that in his opinion the Pilot met all the requirements and experience to satisfy the relevant regulations namely, General Harbour (Nautical & Miscellaneous) Regulations (GH(N&M)R) 1968, for the issue of a Pilot's Licence for the port of Gisborne.
- 2.9.13** The approval of the Pilot's Licence was the subject of a special meeting of the GDC on Sunday 24 January 1999, when the council ratified the application and the Pilot was granted a full Pilot's Licence for the port of Gisborne.
- 2.9.14** Issues regarding the appointment of the Pilot as the Pilot for Gisborne, were raised at the time and the matter was referred to the MSA's lawyers for advice (*see Appendix 17*).
- 2.9.15** In his three years at Gisborne, the Pilot had conducted about 650 pilotage operations. During this period of time he had the opportunity to observe and experience the characteristics of the port, such as swell, surge and other matters pertinent to the pilotage of vessels.

2.9.16 In addition to his pilotage duties, the Pilot's contract with APSL stated that his job title was that of "Pilot/Manager" and provided for a three month trial period. In that three month trial period, the Company was *"to assess his overall performance, capabilities and effectiveness in the range of duties and responsibilities envisaged for the position"*.

The above trial period was completed to the satisfaction of APSL.

2.9.17 Whilst the Pilot's contract contained the title Pilot/Manager, the contract contained no job description or schedule of responsibilities. He was not provided with any written description of what this title entailed. The Pilot's evidence was that at the time of his engagement, he was told by the General Manager of APSL that his duties would require him to:

- Undertake pilotage of ships.
- Collect and sign invoices, record them and forward to Head Office.
- Record the work sheets of employees and forward to Head Office.
- Oversee the general running and maintenance of the floating plant.
- Oversee the employment of APSL staff.
- Liaise with Port Gisborne Limited.

2.9.18 Once he commenced work at Gisborne however, the Pilot came to understand that in addition to pilotage and from his day to day involvement in the operation of the port, he was required to perform the other duties. He produced a list of duties which included the following items:

- Ordering of tugs and pilot vessels for shipping movements.
- Organisation of manning and operation of port of Gisborne floating plant.
- Organisation of mooring gang subcontractors.
- Liaison with port authorities and statutory bodies.
- Employee administration, training and industrial relations.
- Control of Company operations at Gisborne.
- Control of Company operating costs and Management expenses.
- Property management.
- Office administration.
- Identification of business opportunities and of competitive threat.
- Customer relations and direct customer contact.

2.9.19 In his three years as the Pilot at Gisborne, the Pilot had taken just two weeks leave, during November 2001. At the time of the casualty he had 70 days of leave owing. Although it was acknowledged that a relief pilot was required at Gisborne, in order that the Pilot could take leave, this matter was not accorded sufficient priority by APSL. In addition there was difficulty in finding a suitable candidate to act as relief pilot. Eventually, a Pilot at the port of Napier, agreed to fill the position. APSL took the view that the Pilot was able to rest between pilotage movements. However, this was not an adequate substitute for regular leave, especially given the large number of additional administrative duties he was required to perform.

2.9.20 Before the casualty, the Pilot made several requests to APSL that he be allowed to undertake a BRM course but this was not acted upon. Following the casualty, APSL allowed the Pilot to attend a recognised BRM course.

2.10 Gisborne Regional Harbourmaster and Pilotage

The Ex Harbourmaster

- 2.10.1** The ex Harbourmaster, who held a Masters Foreign Going (MFG) Certificate of Competency, had spent most of his working life as a Pilot, both in New Zealand and overseas.
- 2.10.2** He commenced his seagoing career in 1944 as a cadet with Alfred Holt & Co, rising to the rank of Second Officer. Between 1953 and 1958, he was employed by Strait Steamships of Singapore. From 1958 until 1964, he was a Pilot in Penang, Malaysia. In 1965 he became the Deputy Harbourmaster at Greymouth, New Zealand.
- 2.10.3** Between 1967 and 1978, the ex Harbourmaster was the Pilot, Deputy Harbourmaster and then Harbourmaster for what was the then Gisborne Harbour Board.
- 2.10.4** In 1978, he left Gisborne and continued piloting in both New Zealand, at the port of Timaru and overseas, in Saudi Arabia. He returned to Gisborne in 1991 and resumed piloting. His employer was now PGL, the successor to the Gisborne Harbour Board.
- 2.10.5** He was also Regional Harbourmaster for the GDC. His appointment was made pursuant to Section 42(1) of the Harbours Act 1950. He was required to fulfil the role and duties of a Regional Harbourmaster as required under the General Harbour (Nautical and Miscellaneous) Regulations GH(N&M)R 1968, Part 8 (*see Appendix 13*).
- 2.10.6** The now ex Harbourmaster had a fixed term contract with PGL in relation to pilotage. PGL ceased employing him in January 1999. Subsequently, he brought proceedings against PGL in the Employment Tribunal. The case was heard in May 2000 and in March 2001, the tribunal ordered PGL to pay him lost earnings and compensation totalling approximately NZD\$120 000.
- 2.10.7** When PGL ceased offering the now ex Harbourmaster pilotage work, he continued to serve as the Regional Harbourmaster for GDC until 28 February 2001, when he retired. The position remained vacant until the Harbourmaster was appointed as the Regional Harbourmaster for GDC on 20 September 2001.

The Harbourmaster

- 2.10.8** The Harbourmaster commenced his seagoing career in 1972 in the South African Merchant Marine. He moved to New Zealand in 1975 and continued seagoing employment aboard New Zealand ships in various types of trading vessels and in service vessels engaged in the offshore (oil) industry, to the rank of Master.
- 2.10.9** He held a MFG Certificate of Competency, issued in New Zealand in 1987. In 1995, he came ashore as a tug Master and trainee Pilot for the Port of Napier Limited. In 1998, he resigned from Port of Napier Limited and commenced employment as the Harbourmaster for the Hawkes Bay Regional Council (HBRC) on 4 May 1998.

- 2.10.10** He was appointed as Deputy Harbourmaster for the GDC in late 1999 as a “millennium contingency” in the event that the now ex Harbourmaster was not available over the New Year period.
- 2.10.11** He remained in this deputy position following the now ex Harbourmaster's retirement on 28 February 2001. He was appointed as Regional Harbourmaster for the Gisborne District at a Council meeting held on the 20 September 2001. His contract with GDC was confirmed on 2 February 2002.
- 2.10.12** The Harbourmaster's appointment was made pursuant to Section 650B of the Local Government Act 1974, (this power was inserted by the Local Government Amendment Act (No.2) 1999). His role and duties as the Regional Harbourmaster include those in the GH(N&M)R 1968 Part 8 (*see Appendix 13*). A harbourmaster has wide powers in order to prevent risk or accident to shipping (Regulation 50) and a duty to see that all "harbour bylaws or regulations, so far as they are applicable to vessels in the harbour", are duly complied with (Regulation 56(3)).
- 2.10.13** He was employed on an “as and when required” basis. GDC’s rationale for this part time appointment was as follows:
- The limited number of shipping movements did not support the appointment of a full time resident harbourmaster at Gisborne. GDC’s view was that such an appointment would raise issues relating to:
 - (a) Attracting a suitable appointee.
 - (b) Keeping that appointee occupied on a meaningful basis given the skill level required of the applicant.
 - (c) Justification of the cost.
 - The office of Harbourmaster at Gisborne was previously held by the now ex Harbourmaster who had a residence in Gisborne but was not engaged on a full time basis.
 - The now ex Harbourmaster was also employed by PGL as a Pilot until January 1999. In GDC’s view it was inappropriate for the Harbourmaster to be employed in a commercial operating capacity. The now ex Harbourmaster's employment in both roles gave rise to conflict of interest issues which showed the desirability of a clear distinction between the roles of pilot and harbourmaster.
- 2.10.14** The Harbourmaster's contract with GDC provided for him to be paid a retainer on a monthly basis, for 60 hours work per annum, averaged at one day’s work every two months. This was estimated at the time of his negotiations with the GDC, to be the amount of work required for the position. Any time in excess of the above was to be paid at an hourly rate.
- 2.10.15** In the course of his employment, the Harbourmaster made one visit to Gisborne in his capacity as the Regional Harbourmaster. His involvement was limited to minor regulatory issues involving fishing vessels; safety of vessel navigation; navigation lights etc. He had been discussing contingency plans with GDC, but this had been more to do with matters of pollution and dangerous goods as opposed to the navigational safety of the port, or the observance of the compulsory pilotage bylaw of the GDC or other matters relating to pilotage. At the time of the **Jody F Millennium** casualty, he had completed about 15 hours work for GDC since he commenced employment with them.

- 2.10.16** It had been intended for the Harbourmaster to attend on board a vessel under the Pilot's pilotage for the benefit of his Gisborne familiarisation. However, they were unable to co-ordinate a mutually suitable date to coincide with shipping movements.
- 2.10.17** Sometime after September 2001, the Pilot consulted with the Harbourmaster on a professional basis with regard to his concerns that PGL had not responded to his request for an up to date hydrographic survey of the port of Gisborne and its approaches. There was no evidence to indicate that the Harbourmaster ever took up this matter with PGL or the GDC.
- 2.10.18** The first the Harbourmaster knew of the **Jody F Millennium** casualty was when he was phoned by the Deputy Director of Maritime Safety (Monitoring and Compliance) of the Maritime Safety Authority, at 0215 hours on 7 February 2002.

The Training/Relief Pilot

- 2.10.19** The Training/Relief Pilot was a self employed Pilot at the port of Nelson. He was also a licensed Pilot for the ports of Wanganui, Tarkohe, Picton and Gisborne. He held a MFG Certificate of Competency issued in New Zealand in 1964.
- 2.10.20** His piloting career commenced in Nelson in 1968, culminating as Nelson Harbourmaster in 1981. He then set up his own business as a freelance pilot and compass adjuster.
- 2.10.21** He had been relieving Pilot at the port of Gisborne since 1991 and in that time estimated that he had completed approximately 50 pilotages.
- 2.10.22** After the Pilot had been piloting at Gisborne for a period of approximately one year, he sought to take a period of leave and requested that the Training/Relief Pilot relieve him. Unfortunately, the Training/Relief Pilot had to undergo surgery at about that time and was therefore unavailable.
- 2.10.23** The Training/Relief Pilot subsequently advised that he no longer wanted to be considered for routine relieving work at Gisborne, but would be available if the Pilot was incapacitated either through illness or accident.
- 2.10.24** It was decided to accept the Relief Pilot's offer to make himself available for Gisborne pilotage and he commenced training in September 1999.

The Relief Pilot

- 2.10.25** The Relief Pilot had been a fully qualified Pilot at the port of Napier and had agreed to train for the port of Gisborne so that he could act as a relieving Pilot.
- 2.10.26** He was 38 years of age and held a MFG Certificate of Competency issued in New Zealand in 1992.
- 2.10.27** From 1994 to 1997, he was a Pilot at the port of Auckland. He was issued with a Pilot's Licence for the port of Napier in 1997.

2.10.28 The Relief Pilot undertook the required training for a Pilot at Gisborne, which entailed 20 transits (10 of which had to be undertaken during the hours of darkness). As this training had to be undertaken at a time when he was still serving as a Pilot at the port of Napier, this training took 12 months to complete. He was issued with a Pilot's Licence for the port of Gisborne on 21 November 2000.

2.10.29 The Relief Pilot resigned from the port of Napier in August 2001 and resumed seagoing employment. This reduced his availability to relieve the Pilot. He did, however, relieve him for two weeks in November 2001.

2.11 Desirability of enacting a Port Marine Safety Code

2.11.1 The Minister of Transport is empowered, under section 36 of the Maritime Transport Act 1994, to make maritime rules including:

(g) *Prescribing safe navigational and maritime operational and emergency procedures, including such procedures for any seaplane, and any training requirements in respect of such procedures.*

(i) *Defining operating limits and pilotage limits and specifying requirements concerning pilotage (including when and where pilotage is required, and the classes of ships that must carry a pilot in circumstances described in the rules).*

(j) *Prescribing standards and requirements for the safe management of commercial shipping operations.*

(b) *Regulating the conduct of ships in New Zealand waters or the conduct of ships in any defined part of New Zealand waters, for the purpose of securing safe navigation in those waters.*

On 25 January 2003, the Minister of Transport signed Maritime Rule Part 90 – Pilotage, which comes into force on 1 April 2003.

2.11.2 Section 430 of the Maritime Transport Act 1994 states that one of the principal objectives of the Maritime Authority shall be to undertake activities that:

(a) *Promote a safe maritime environment.*

Section 431(1)(c) of the Act empowers the MSA to:

(c) *Ensure regular reviews of the maritime transport system to promote the improvement and development of its safety.*

(i) *To promote safety in the maritime transport system by providing marine safety information and advice*

and in furtherance of its principal objectives the functions of the Authority specified in section 431 include:

(m) *To advise the Minister on technical marine safety policy.*

2.11.3 The Director of Maritime Safety may, under section 54 Maritime Transport Act 1994, require certain persons to undertake or carry out inspections and audits if the Director thinks it necessary in the interests of maritime safety. Under section 439(3)(b) and section 439(4) of the Act the functions and powers of the Director include taking action in the public interest to enforce the provisions of Acts and regulations there under.

2.11.4 Section 37s Local Government Act 1974 gives a Regional Council responsibility for:

(e) *The following functions, duties and powers in relation to waters within its region or within such area or areas of its region as it may specify for the purpose by bylaws made under this Act, namely, -*

...

(i) *The regulation and control of navigation safety:*

Section 650B of the Local Government Act 1974 authorises Regional Councils to appoint harbourmasters and enforcement officers and section 650c empowers harbourmasters “for the purpose of ensuring navigation safety” to give directions regulating:

(a) *The time and manner in which any ship may enter into, depart from, lie or navigate those waters*

(b) *The position, mooring, unmooring, placing, removing, securing or unsecuring of any ship within those waters.*

2.11.5 Under section 650D of the Local Government Act responsibility is placed on harbourmasters for the purpose of ensuring navigation safety to:

(a) *Direct the Master of any ship in waters within the region of the Council, or lying at any maritime facility, to moor, unmoor, anchor, weigh anchor, secure, unsecure, place or move his or her ship.*

2.11.6 Under section 650J(1)(b) of the Local Government Act (inserted in 1999) a Regional Council has power to:

Delegate to a port operator any functions, duties or powers (other than a power to make bylaws) under this Part that relate to safety.

2.11.7 Notwithstanding that section 5 of the Port Companies Act 1988 provides:

5. *Principal objective to be successful business* – *The principal objective of every port company shall be to operate as a successful business*

there is an obligation on a port company to exercise a reasonable duty of care in the conduct of its business – including that part of its business that relates to maritime safety.

Purported delegation of Authority

2.11.8 In 1990 Gisborne District Council and Port Gisborne Limited reached an agreement, described as an “Accord” in relation to the execution of functions previously undertaken by the Gisborne Harbour Board. The Accord, recorded in a document dated 26 April 1990, stated inter alia:

“Following the Committee’s February resolution, staff have pursued dialogue with Port Gisborne Limited through its General Manager to identify a practical arrangement for the effective implementation of Harbour Board regulatory functions in Poverty Bay.”

The document continued:

- “4. On waters **within** the area of Port Gisborne Ltd’s operations, Port Gisborne Ltd will, at its costs :-
 - (a) Implement and enforce Water Recreation Regulations. Liaise with recreation clubs and authorised launch wardens.
 - (b) Implement and enforce all navigational and safety regulations.
 - (c) Implement and enforce pollution control regulations.
5. Land based navigation aids associated with access to or egress from Port Gisborne Ltd’s operating areas will be maintained by Port Gisborne Ltd at its cost in liaison with appropriate landowners.
6. Port Gisborne Ltd’s operations area is defined in Port Gisborne Ltd’s plan.

In order to practically implement this accord, it will be necessary to delegate authority to appropriate personnel in Council, company and recreation groups.

RECOMMENDATION

THAT In the performance of its Harbour Board Functions in Poverty Bay, Council adopts the proposed accord with Port Gisborne Limited and supports the appropriate delegation of authorities by the Chief Executive, as Harbourmaster.

A.F. ARMSTRONG
MANAGER: ENVIRONMENT & PLANNING”

2.11.9 In a letter dated 12 June 1990 from the Chief Executive, GDC to the Chief Executive Officer of PGL, GDC stated:

“Dear Ben

RE: EXECUTION OF HARBOUR BOARD FUNCTIONS

Following the recommendation of the Harbours Committee meeting on 9 May 1990, Council at its 24 May 1990 meeting adopted the accord proposed with Port Gisborne Limited in respect of the execution of Harbour Board Functions.

...

Accordingly, as Harbourmaster I delegate to you as General Manager, Port Gisborne Limited, authority under appropriate empowering legislation and bylaws to fulfil the obligations pursuant to the accord personally or through the action of your staff. Similar delegation is afforded to the Manager, Environment & Planning.”

2.11.10 In the course of its accident investigation, MSA investigators enquired of PGL and GDC of the current status of that purported delegation. In March 2003 the Chief Executive of GDC stated:

“I confirm the delegations have not been revoked and accordingly remain in force.”

2.11.11 By contrast, solicitors for PGL stated that:

“The Port Company was formed on 1 October 1989. As the Harbours Committee report of 26 April 1990 notes, at the time of that report, the Chief Executive of the Gisborne District Council, was the repository of the harbourmaster’s duties for the Port and district, as a result of the dissolution of the Harbour Board and devolution of its powers to the local Council.

The Chief Executive Officer of PGL and the Chairman of the Port Company (who was at the time the Mayor of Gisborne) are both of the recollection and understanding that the arrangements made at the time, in early 1990, related to the assumption of responsibility for meeting the cost of maintaining the capital items relevant to navigation in and around the harbour. That arrangement was not intended to impose on the Port Company a responsibility to determine what steps or circumstances constituted compliance with the various regulations involved. It did not contemplate the Port Company assuming a responsibility to exercise judgement in the implementation of regulations. It did not provide for the Chief Executive Officer of PGL or anyone else to act as a deputy harbourmaster, or allocate authority to give directions relating to navigation safety.

That was the understanding of the Port Company and the limit to which it agreed and accepted the allocation of responsibility for compliance with navigation regulations.

The Chief Executive Officer of PGL was not personally qualified in matters of navigation. It was not appropriate for him to hold office or responsibility for any duties which required the exercise of judgement in matters relating compliance (sic) with navigation safety issues.

The need to appoint a properly qualified Harbourmaster was addressed by the Gisborne District Council 1991 when it appointed the now ex Harbourmaster to that position. He assumed the responsibility of dealing with matters of navigation safety in the port as part of his duties. As the new Harbourmaster, he did not delegate any authority to others. He was eventually succeeded by the new Harbourmaster, who also did not delegate any duties.

On any view, if there had been any delegation of duties by the Chief Executive of GDC as the Harbourmaster in 1990, that delegation lapsed when the new Harbourmaster was appointed.

The practice of the parties conformed to that state of affairs.

There is, in any event, serious doubt, as a matter of law, at the relevant time (i.e. 1990), any delegation could validly be made by the Gisborne District Council or the Harbourmaster to the Chief Executive of the Port Company.

Section 650J of the Local Government Act 1974 did not exist in 1990. It was not inserted until 1999 in conjunction with the repeal of the Harbours Act. There was no parallel power of delegation existing in the Harbours Act. And in 1990 the then version of section 715 of the Local Government 1974 only permitted Councils to make delegations to a “member or officer of the Council”. In the light of that limitation for delegation outside Council, to be valid there would have needed to have been clear statutory authority for such an action. The statutory scheme must be assessed in determining any general power of delegation (*R v Secretary of State for the Home Department, ex p. Oladehinde* [1991] 1 AC 254. See also the New Zealand decision, *RSPCA v Edgley Ventures* CR3004019172 of 23 June 1992.)

The Harbours Act 1950 does not confer a power of delegation; nor does the General Harbour (Nautical and Miscellaneous) Regulations 1968 contemplate delegation. The definition in Regulation 2 contemplates a “deputy” harbourmaster, but that was not the case here. The regulation also contemplates “other persons” being called upon to assist a harbourmaster “under his direction”. But, again, that was not the case with the purported delegation in 1990. Taken together, these provisions can be seen as a clear statutory scheme which precludes the possibility of a valid delegation at that point in time. In this regard, particular weight must be given to the fact in 1999 that Parliament subsequently decided to enact section 650J i.e.: to fill precisely that statutory lacuna.

It would therefore be incorrect both in fact and law to rely on the letter of 12 June 1990 as a basis for asserting that the Chief Executive Officer for PGL or Port Gisborne Limited had authority or responsibility to undertake any of the functions of the Harbourmaster at Port Gisborne.”

- 2.11.12** Thus, there is apparent disagreement between GDC and PGL as to the legal validity and current status of delegations which have direct relevance to the division of responsibilities between the parties. GDC considers the delegations are still in force. PGL maintain the delegations are no longer in force and question their original validity.

2.11.13 In 2000, in the United Kingdom, the Department for Transport, Local Government and The Regions (DETR) published a Port Marine Safety Code, which summarised the duties of harbour authorities relevant to port marine safety. A companion Guide to Good Practice on Marine Port Operations was published in March 2002. The general and specific duties and powers of harbour authorities were described in the Guide as follows:

General Duties & Powers

- A. Harbour authorities have a duty to take reasonable care, so long as the harbour is open for the public use, that all who may choose to navigate it may do so without danger to their lives or property.*
- B. This includes an obligation to conserve, and facilitate the safe use of the harbour; and a duty of care against loss or injury caused by the authority's negligence.*
- C. Each harbour authority has an obligation to have regard to efficiency, economy and safety of operation as respects the services and facilities provided.*
- D. Harbour authorities typically have an express duty to take such action as the harbour authority consider necessary or desirable for or incidental to the maintenance, operation, improvement or conservancy of their harbour.*

Specific Duties & Powers

- A. A Harbourmaster should have his powers determined in bylaws.*
- B. Powers to direct vessels are available – and should be used – to ensure safety of navigation.*
- C. Dangerous vessels and substances, and pollution, must be effectively managed.*
- D. A pilotage service must be provided if required in the interests of safety.*
- E. Properly maintained aids to navigation must be provided, and any danger to navigation from wrecks or obstructions effectively managed."*

2.11.14 There is no publication in New Zealand comparable to the United Kingdom Code or Guide which consolidates the statutory and other obligations in relation to marine safety in ports and the responsibility of relevant persons.

2.11.15 MSA Investigators are of the view that maritime safety would be enhanced (particularly in relation to smaller ports) if there were in New Zealand a port safety code or equivalent Maritime Rule similar to the United Kingdom Port Marine Safety Code and the Guide to Good Practice on Marine Port Operations which sets out the responsibilities of, inter alia, the Minister of Transport, the Maritime Safety Authority, the Director of Maritime Safety, Regional Councils, Harbourmasters and Port Companies in relation to maritime safety.

2.12 Mooring Practice at Gisborne

2.12.1 Pursuant to the contract between PGL and APSL, the shore mooring lines were owned and maintained by PGL.

2.12.2 At the time of the **Jody F Millennium** casualty, the Pilot was introducing a mooring arrangement which placed less dependence on the shore moorings and shared the load with ship's moorings.

2.12.3 The Pilot had told PGL that in his opinion there were insufficient mooring bollards at No. 8 berth. He suggested that additional bollards would enable supplementary mooring lines to be deployed as necessary. PGL's response to this was that the wharf had been designed by experts and that extra bollards were unnecessary. PGL also said that the Pilot failed to supply any details of what the alternative bollard arrangements should have been.

2.12.4 During the now ex Harbourmaster's time as Pilot at the port of Gisborne, the mooring arrangement had consisted of up to 10 shore mooring lines per vessel. This comprised:

- 4 x headlines.
- 1 x forward spring.
- 1 x after spring.
- 4 x sternlines.

2.12.5 The now ex Harbourmaster recalled an incident during his time at the port of Gisborne, involving the vessel **Mayfield**. She had progressively parted all her shore moorings during severe surge conditions in the harbour. These were replaced and the vessel did not have to leave the port. The now ex Harbourmaster reported that the surge conditions on that occasion improved following the passage of high water. An improvement in the surge conditions did not occur after high water on the afternoon of 6 February 2002.

2.12.6 At the time of the above incident, **Mayfield**, a refrigerated cargo vessel of about 10 000 gross tonnage, was berthed at the No. 7 berth. At that stage, No. 8 berth had not yet been constructed. The consensus of opinion amongst those employed at the port was that No. 7 berth had been less affected by surge than the No. 8 berth.

2.12.7 At the time of the **Jody F Millennium** casualty, a shore mooring line arrangement comprised the components described below, and made up a single mooring, known as a "spring". It should be noted that in Gisborne, all shore lines were referred to as springs. These should not be confused with the normal terminology used to describe forward or after back springs on a vessel. The components, which are described from the shipboard end, were as follows:

- A wire pennant, approximately 12 metres in length, constructed of 32 millimetre diameter wire rope of 6 x 41 construction (six strands each made up of 41 individual wires). The wire pennant had a long soft eye, which was tallurit spliced, and secured to a pair of the ship's mooring bits. This wire section was subject to high wear, as a result of chaffing, in way of where it passed through the moored vessel's fairlead. The wire pennant was designed to be the weakest link of the spring, in that it had the least breaking strain, and was intended to part before any of the other sections in the mooring line. At the shore side end of the wire pennant, another eye was spliced through the eye of a circular steel thimble which in turn was joined to the next section of the spring (*see Appendix A(iii)- Photograph*).
- The next section, the rope 'spring', consisted of a 14 metre (approximately) length of 80 millimetres, three strand synthetic rope doubled and spliced to make an endless seven metre length. This was the stretch section, which permitted limited vessel movement and was literally the "spring". This section was covered in canvas for ultra violet and wear protection. Each end was looped around a circular steel thimble, through which the wire (referred to above) was rove (passed through the centre) at the shipboard end. At the shore side end, a lanyard, which was used to attach the spring to the shore bollard, was rove through the steel thimble. There were no reported failures of this rope spring section on 6 February 2002 (*see Appendix A(iv) - Photograph*).
- The third section, the 'lanyard', comprised six parts of 40 millimetres synthetic rope, rove through the thimble (passed through the centre) at the shore side end of the 80 millimetres rope spring section and round the shore bollard on the wharf. This section acted as a purchase and the working end was secured to a tractor and hauled to tension the mooring. Once tensioned, the rope was 'turned up' (made fast) on the shore bollard (*see Appendix A(v) - Photograph*).

2.12.8 There was no means, either for maintenance or repair purposes, of identifying each of the individual mooring components that were utilised at the port of Gisborne.

2.12.9 The contracts between PGL and APSL, and, APSL and EML, did not contain any specific clause with regard to which party was responsible for mooring line inspection and maintenance/repair.

2.12.10 Clause 16 of the contract between PGL and APSL under the heading "Port Gisborne's Obligations, Maintenance of Port Facilities" provided:

"Subject to the terms of this agreement Port Gisborne will at all times maintain the port in full operating condition".

This clause in general, referred to maintaining the depths of water, the berths and wharves and navigational aids but included nothing specific with regard to moorings.

2.12.11 PGL provided the MSA Investigators with a document titled. "Arrangement of Mooring Services at Port Gisborne". This document was not in existence at the time of the casualty and was provided subsequently, at the request of the MSA Investigators, for clarification of their maintenance procedures.

2.12.12 This document was intended to set out and clarify the understanding which existed between PGL, APSL and EML with regard to mooring line maintenance and repair. It stated that EML was *“responsible for inspecting all the lines and springs owned by Port Gisborne Limited and to arrange for any repair or replacement of such lines as required”*.

The document went on to set out the procedure for arranging the repair with the approved contractors.

2.12.13 According to the above document, EML was required to conduct an inspection of the mooring springs following the departure of each vessel from Gisborne. No record was kept of the results of these inspections.

2.12.14 When PGL ran its own marine services, it had a documented routine inspection and maintenance record for the mooring lines. The MSA Investigators were advised by the Chief Executive Officer for PGL that these records went missing shortly after contracting out the port services to APSL.

2.12.15 MSA Investigators endeavoured to establish, by using the record of rope and wire purchases, the average length of time that various mooring components had been in service but there was insufficient detail to make a determination with any accuracy.

2.12.16 In the absence of any such records, there was no means of determining for how long a particular mooring line component had been in service. One of the mooring spring repair contractors stated that some of the mooring system components appeared to have been in service for up to 10 years but had no documentary evidence to support this contention.

2.13 Mooring Maintenance and Training at Other New Zealand Surge Ports

To obtain a basis for comparison of arrangements at PGL, the MSA Investigators compared mooring line maintenance and training procedures at two other New Zealand surge ports.

New Plymouth

2.13.1 The port of New Plymouth utilised a similar mooring arrangement to that at the port of Gisborne. The main difference was that the ship board end of the wire pennant was fitted with a ‘Senhouse slip’, a heavy steel quick release device to enable the mooring to be let go in an emergency.

2.13.2 The components making up each mooring spring were identified by reference to their site location namely, the wharf and bollard to which they were attached. Each location had its own maintenance history. Details of when a particular mooring component was replaced, was documented and recorded. All shore moorings were inspected before and after use and any component showing signs of wear was automatically replaced. Irrespective of any signs of wear, all components were replaced after 12 – 13 months in service.

2.13.3 The mooring practice at New Plymouth had evolved over a period of many years, including the construction and type of moorings used, and the modification and trialling of new types of rope to optimise efficiency and safety.

- 2.13.4** New Plymouth had a three month induction training period for new members of a mooring gang. There was a training manual and on going monitoring and peer review. There was a total of 15 dedicated mooring crew, a minimum of five crew being used at any one time.
- 2.13.5** Shore moorings were used to secure a vessel to her berth. Two ships lines were used initially to bring a vessel alongside and position her whilst the shore moorings were set up, after which the ship's lines were let go.

Napier

- 2.13.6** As in New Plymouth, the shipboard end of the wire pennant was fitted with a Senhouse slip quick release device. A mixture of ship and shore mooring lines was utilised. However, in the case of a vessel the size of **Jody F Millennium** or similar, it was the practice to utilise four shore moorings lines, both at the bow and at the stern and, in the event of bad weather being forecast, these were supplemented by the bights of ship's lines. It was not the practice at Napier to use fore and aft back springs because these tended to cause the ship to 'hunt' fore and aft alongside the berth. Each headline and sternline was made fast to its own dedicated bollard, which was fitted with a 'knuckle' to prevent the purchase part of the mooring from riding up and over the bollard.
- 2.13.7** New mooring system components were fitted to the most frequently used berths and systematically moved to lesser used berths.
- 2.13.8** The mooring components underwent a routine three monthly inspection.
- 2.13.9** Napier had a structured training regime in place for their mooring gangs, which involved monitoring on a regular basis. There was an induction training period for each new member of the mooring gangs. Usually, a period of between three and six months elapsed before a person was considered competent to moor/unmoor a vessel.
- 2.13.10** Unlike New Plymouth, where shore moorings were used exclusively, Napier determined the need for shore moorings in conjunction with ship's lines, after considering factors related to weather, vessel type and duration of stay.
- 2.13.11** At all ports using shore moorings, these were tensioned at the shore end of the mooring line using tractors, attached to the working end of the lanyard.

2.14 Mooring on the Day of the Casualty

- 2.14.1** EML took their call out orders from PGL when their attendance was required for securing or letting go a vessel.
- 2.14.2** In accordance with usual practice the Pilot recommended the number and the arrangement of the ship and shore mooring lines for each vessel, subject always to the Master's overriding responsibility for the vessel. The mooring gang took their orders from the Pilot.
- 2.14.3** The factors considered in determining the mooring plan were the size of the vessel, the prevailing weather and the length of time the vessel was scheduled to stay in port.

- 2.14.4** The mooring gang Manager, had a total of 14 men available to him on a casual basis for mooring and letting vessels go. It was the Manager of EML's evidence that the mooring gang was trained. On the day of the casualty, he had eight men on duty plus himself. Two tractors were used to tension the shore mooring lines as required.
- 2.14.5** Because of the fluid situation on the day of the casualty, with a number of shore moorings parting and being replaced, the exact number of moorings utilised to keep **Jody F Millennium** alongside her berth was unclear, as evidenced by the table below:

Mooring Lines	Master	Pilot	EML Manager
Ship's Headlines	2	4	4
Shore Headlines	2	2	2
Ship's Forward Back Springs	2	2	2
Shore Forward Back Springs	1	1	1
Ship's After Back Springs	1	2	2
Shore After Back Springs	1	1	1
Ship's Stern Lines	3	4	4
Shore Stern Lines	2	2	2

- 2.14.6** The consensus of the shore personnel employed in the port on the day of the casualty was that a total of eight shore mooring lines parted on 6 February. This number included several of the replacement shore mooring lines which also parted. These failures comprised five parted wire pennants, situated at the shipboard end of the mooring line and three synthetic lanyards, (multi-part purchases), situated at the shore end of the mooring line. None of the rope springs, situated in the middle section of each mooring line, failed. There was no evidence that any of the ship's mooring lines parted. The Master maintained that only four shore mooring lines parted and that all ship's lines remained intact.
- 2.14.7** Dangers associated with the failure of rope and wire mooring lines can never be underestimated. The forces associated with a mooring line failure on vessels the size of the **Jody F Millennium** are enormous. Many experienced mariners have first-hand knowledge of deaths or serious injury and near misses following line failure in the course of mooring operations.
- 2.14.8** The Pilot stated that he could not deploy any additional shore moorings because there were no spare shore bollards. Each shore mooring line was attached to its own individual bollard to enable the mooring line to be tensioned as required. EML contended that additional bollards became available after the **Asian Briar** sailed.
- 2.14.9** The Manager of EML's evidence was that shortly after 1900 hours, **Jody F Millennium** was ranging alongside the wharf over a distance of four metres in a fore and aft direction and that she was lifting 3.5 metres and rolling heavily.
- 2.14.10** The vertical lift/rolling movement of the vessel was such that the gangway had to be raised to prevent any damage caused by contact with the wharf.
- 2.14.11** The Pilot estimated the vessel was ranging about 8 – 10 metres along the wharf and lifting one metre during the worst of the surge conditions.

- 2.14.12** In contrast to the above, it was the evidence of the Master that the vessel was ranging by no more than three metres and moving off the wharf about one metre. This was at the time of the worst conditions of surge namely, shortly after 1900 hours on 6 February.
- 2.14.13** The MSA Investigators observed that the paintwork on the vessel's hull, in way of each of the five wharf fenders that were supporting the parallel body of the vessel, was damaged or missing over a horizontal distance of approximately nine metres. Given that each fender measured two metres square, the above 'damage' to the paintwork would indicate that the vessel was ranging approximately seven metres overall in a fore and aft direction.
- 2.14.14** It was not possible to determine accurately from the damage to the hull paintwork, the amount of lift or degree to which the vessel rolled, because the damage would have been occasioned by a combination of these two components and to a lesser degree, the tide.
- 2.14.15** Of concern to the Pilot at the time was the fact that the wharf fendering would fail and the ship's side shell plating would impact directly onto the solid concrete face of the wharf and be subjected to friction or impact damage.
- 2.14.16** The Skipper of the pilot boat on 6 February, had worked in the port of Gisborne for 40 years and had 35 years experience as Skipper of the pilot boat in the port. He described the surge conditions as being the worst he had experienced during his time at the port. He expressed the view that had **Jody F Millennium** not sailed, she would ultimately have smashed the wharf fendering (in the event, none of the fenders were found to have sustained damage).
- 2.14.17** The Skipper of the tug **Titirangi** on 6 February, had been employed by APSL for 2 ½ years and prior to that had 20 years experience as a commercial fisherman based in the port of Gisborne. He described the sea conditions on the night of 6 February as the worst he had ever experienced at Gisborne.
- 2.14.18** An accommodation port hole "eyebrow" on the ship's side shell plating was found to have worn away due to 'chafe', from contact with one of the shore mooring lines.
- 2.14.19** When the Pilot was told by the Manager of EML that only one shore mooring remained, the Pilot took this to mean that there was only one spare shore mooring left in reserve. What the Manager of EML actually meant was that he had only one shore mooring line left in reserve on the wharf. In fact, he still had another seven shore moorings left in reserve but these were situated in a shed on the wharf.
- 2.14.20** The belief that they were running out of reserve shore moorings was the catalyst that persuaded the Pilot to sail the vessel immediately. His concern was that if she remained alongside, she would eventually break adrift and sustain significant damage to her hull through contact with the sea bed and the bounding walls of the harbour, with the likelihood of severe oil pollution. The Pilot believed that if the vessel did ground in the harbour, there was a real possibility that the port would be closed to other users for some time.

2.15 The Weather

Gisborne Weather - General

- 2.15.1** It was known by all persons with a close involvement in the running of the port of Gisborne, that Poverty Bay and the port were vulnerable to swell conditions which could, subject to the direction, height and period of the swell, become manifest in Gisborne harbour as a surge condition.
- 2.15.2** It was also known that this surge condition was generated frequently after a cyclonic depression, moving eastwards, had passed over, or, to the south of the South Island of New Zealand. Once the depression had passed to the east of New Zealand, it could generate a strong southerly air flow giving rise to swell conditions commensurate with wind strength, duration and fetch (the distance over which the swell had travelled over open water).
- 2.15.3** This was precisely the weather pattern that prevailed in the period preceding the **Jody F Millennium** casualty, as evidenced by the extracts from the weather reports issued by the Meteorological Service of New Zealand Ltd (MetService).
- 2.15.4** This swell generally manifested itself in Poverty Bay about 36 hours after the cyclonic depression had passed to the east of New Zealand but was unpredictable.
- 2.15.5** The occurrence and magnitude of surge conditions within the harbour was a combination of both fetch (the distance over which the swell had travelled over open water), and the direction from which the swell entered Poverty Bay.
- 2.15.6** Surge conditions within the harbour could also be present when there was little perceptible swell in Poverty Bay. Conversely, there could be considerable swell in Poverty Bay and little or no surge evident within the harbour.
- 2.15.7** The Principal Scientist of Coastal Hydrodynamics at National Institute of Water and Atmospheric Research, has postulated the theory that the **Jody F Millennium** was affected by long waves (*see definition in paragraph 1.2.8*). He commented as follows:

“Long waves are groups of swell waves that have coalesced after propagating many hundreds, perhaps even thousands, of kilometres from their generation region. Their occurrence is not necessarily coincident with rough local conditions. Indeed, they can occur when the weather is balmy and the sea is calm locally. Their characteristic is that they have periods of between 1 and 15 minutes, with the main waves being typically 10 minutes in period. My colleagues in Timaru tell me that they look like a rapidly rising and falling tide, rather than the ocean waves we see at the beach or feel on a ship.”

In the absence of recorded tidal data for the port of Gisborne it cannot be determined with any certainty if the port was subject to long waves on 6 February. The Pilot's evidence was that he observed the swell period within the harbour to be approximately 20-30 seconds.

- 2.15.8** The Pilot's evidence was that the worst surge conditions within the harbour were most pronounced at high water. Low water generally brought more settled conditions. On this occasion, the conditions deteriorated rapidly from about 1900 hours, one hour before low water, which was due at 2012 hours.
- 2.15.9** It was the opinion of the now ex Harbourmaster, the Pilot and others that surge conditions within the harbour had become magnified after the entrance channel was dredged in late 1999, early 2000. In a letter dated 4 August 1999, written by the now ex Harbourmaster in his capacity as Regional Harbourmaster, the Manager of Environmental Planning at Gisborne District Council and the now ex Harbourmaster's line manager, it stated: *"nor does he seem to understand that the surge problem in the harbour has increased considerably since dredging commenced."*
- 2.15.10** As shown by the following extracts from marine weather forecasts issued in the days preceding the **Jody F Millennium** casualty, it can be seen that the type of weather pattern which gave rise to surge conditions in the port of Gisborne, developed from the time of the forecast amendment, issued as early as 1301 hours on Monday 4 February.

2.16 Weather Forecasts

- 2.16.1** At page 361 of the New Zealand Nautical Almanac (NZNA) under the sub heading "2.3: Sea State and Swell", it stated amongst other things that the term swell (when used in the MetService coastal forecasts) referred to the longer period of waves generated by a distant storm. Forecasts of swell heights were mostly given in metres, but stated that sometimes the following described terms might be used to describe swell:

Low	0-2 metres
Moderate	2-4 metres
Heavy	greater than 4 metres

The heights of both sea and swell referred to the average vertical distance from wave trough to wave crest of the highest one third of the waves present (otherwise known as "significant wave height"). It stated that occasional waves might reach much higher: about one in a hundred was likely to reach half as high again, and one in a thousand almost twice the quoted average.

At page 368 of the NZNA, under the sub heading "Forecasts", it states that these are a general indication of average conditions expected within a single coastal area or group of coastal areas. Forecasts applied to open waters within 60 nautical miles of the coast and do not apply to enclosed waterways, fiords, harbours, small bays and river estuaries. It is noted that the average wind speed might be considerably exceeded in gusts close to shore.

The contact details of the MetService and their services were listed in the NZNA at page 371.

The following were extracts from coastal forecasts issued by the MetService between 1200 hours on 4 February and 0000 hours on 7 February (see Appendix 15 - Coastal Sea Forecast Areas).

2.16.2 Monday 4 February

Situation at 1200 hours issued at 1216 hours (see Appendix 18 - Weather Map 1)

"A ridge of high pressure over the North Island is expected to retreat to the east today. A front lying Milford to Chalmers moving north east should lie Grey to Rangitata this evening, and Raglan to Castlepoint midday Tuesday."

The above situation, issued at 1216 hours, was amended less than an hour later, at 1301 hours, with the addition of the following:

"A low is expected to deepen rapidly south east of New Zealand during Wednesday and Thursday, forcing gale force winds over the Chathams during Thursday."

Forecast issued at 1203 hours on 4 February and valid until midday on 5 February.

"Portland: northerly 10 knots developing this afternoon and rising to 20 knots this morning. Sea becoming moderate. Easterly swell two metres easing.

Outlook following 12 hours: North west 15 knots, but 25 knots in north."

2.16.3 Tuesday 5 February

Situation at 0000 hours 5 February, issued at 0043 hours. (see Appendix 18 - Weather Map 2)

"A front Grey to Christchurch is moving north east, reaching East Cape this evening. Another front also moving north east and is expected to reach Cook this evening. A low develops south east of Banks Peninsula today, deepening rapidly overnight. A strong unseasonably cool, southerly spreads over New Zealand during Tuesday night."

Gale warnings were in force for sea areas: **Cook, Castlepoint, Rangitata and Conway.**

Forecast issued at 0037 hours on 5 February and valid to 2400 hours on 5 February

"Portland – North west 15 knots rising to 25 knots north of East Cape early evening. Sea becoming rough in the north. Easterly swell two metres easing. Fair visibility in scattered morning rain.

Outlook following 12 hours: A change to south west 35 knots."

"Castlepoint - GALE WARNING IN FORCE

North west 20 knots, becoming 30 knots and gusty this morning. A change to south west 40 knots late evening. Sea becoming very rough. Easterly swell two metres easing. Fair visibility in morning rain, becoming poor in squally showers late evening.

Outlook following 12 hours: South west easing to 30 knots"

Situation at 1200 hours on 5 February, issued at 1250 hours. (see Appendix 18 - Weather Map 3)

"A front lying from Raglan to Castlepoint moving north east should lie east of the North Island by midnight. A trough moving north east is expected to reach Cook Strait this evening. A low, lying south east of Banks Peninsula should deepen rapidly overnight and move slowly south east. A strong southerly flow should spread over the eastern areas of both Islands during today and tomorrow."

Gale warnings were in force for sea areas **Portland, Chalmers, Rangitata** and **Conway** and a storm warning was in force for **Castlepoint**

Forecast issued at 1234 hours on 5 February and valid until midday on 6 February.

"Portland: GALE WARNING IN FORCE

North west 20 knots, but 30 knots about East Cape, tending south west 20 knots throughout tonight, then rising to 35 knots in the morning. Sea becoming very rough. Southerly swell three metres developing in morning. Easterly swell one metre. Fair visibility in scattered rain.

Outlook following 12 hours: South west 30 knots."

"Castlepoint: STORM WARNING IN FORCE.

North west 25 knots tending south west 25 knots this evening and rising to 50 knots in the morning. Sea becoming high. Southerly swell three metres developing. Easterly swell one metre. Fair visibility in scattered rain but becoming poor in thundery rain overnight.

Outlook following 12 hours: South west easing to 40 knots."

2.16.4 Wednesday 6 February

Situation at 0000 hours, issued at 0043 hours on 6 February (see Appendix 18 - Weather Map 4)

"A low 990 hPa (hecto pascals) about 210 miles south east of Banks Peninsula moves slowly eastwards, deepening rapidly. A very strong, cold south west flow lies over the eastern coast, slowly abating overnight. A high in the Tasman Sea slowly spreads a ridge over southern New Zealand on Thursday, reaching central New Zealand Friday.

*Gale warnings were in force for the sea areas: **Chalmers, Rangitata, Conway, Cook** and **Portland** and a storm warning remained in force for **Castlepoint**."*

Forecast issued at 0029 hours on 6 February and valid until midnight

"Portland: GALE WARNING IN FORCE

Westerly 30 knots rising to south west 35 knots south of Cape Kidnappers this morning. Sea becoming very rough in south. South west swell rising to four metres this afternoon. Easterly swell one metre. Fair visibility in showers, mainly south of Cape Kidnappers.

Outlook following 12 hours: South west easing to 25 knots."

"Castlepoint: STORM WARNING IN FORCE

South west 25 knots, rising to 40 knots but 50 knots south of Honeycomb Rock this morning. Sea becoming high in south. Southerly swell rising to four metres. Easterly swell one metre. Poor visibility in rain.

Outlook following 12 hours: South west easing to 30 knots."

Situation at 0300 hours on 6 February, issued at 0428 hours.

"A low 984 hPa, about 240 miles south east of Banks Peninsula moves slowly eastwards. A very strong cold south west flow lies over the eastern coasts, slowly abating overnight. A high in the Tasman Sea slowly spreads a ridge over southern New Zealand on Thursday reaching central New Zealand Friday."

Gale warnings were in force for the sea areas: **Chalmers, Rangitata, Portland** and **Cook**.

Storm warnings were in force for sea areas **Castlepoint** and **Conway**.

Forecast issued at 0421 hours on 6 February and valid to midnight.

"Portland: GALE WARNING IN FORCE

Westerly 25 knots rising to south west 35 knots south of Cape Kidnappers this morning. Sea becoming very rough in south. South west swell rising to four metres this afternoon. Easterly swell one metre. Fair visibility in showers, mainly south of Kidnappers.

Outlook following 12 hours: South west easing to 25 knots."

"Castlepoint: STORM WARNING IN FORCE

South west 25 knots, rising to 40 knots but to 50 knots south of Honeycomb Rock this morning. Sea becoming high in south. Southerly swell rising to four metres. Easterly swell one metre. Fair visibility in rain.

Outlook following 12 hours: South west easing to 25 knots."

Situation at 1200 hours, issued at 1231 hours (see Appendix 18 - Weather Map 5)

"A deep low 980 hPa lying about 240 miles south east of Banks Peninsula, is expected to move slowly east. A very strong, cold south west flow lies over the eastern coasts and should slowly ease overnight. A high in the Tasman Sea slowly spreads a ridge over southern New Zealand during Thursday."

Gale warnings were in force for the sea areas: **Chalmers, Rangitata, Cook**, the **Chatham Islands** and **Portland**.

Storm warnings were in force for **Conway** and **Castlepoint**.

Forecast issued at 1240 hours, on 6 February and valid to midday on 7 February

'Portland: GALE WARNING IN FORCE

Westerly 25 knots but south west 35 knots south of Cape Kidnappers, becoming south west 25 knots throughout, overnight. Very rough sea in the south easing. Southerly swell rising to four metres. Easterly swell one metre. Fair visibility in showers, south of Kidnappers.

Outlook following 12 hours: South west 20 knots."

'Castlepoint: STORM WARNING IN FORCE.

South west 40 knots, but 50 knots south of Honeycomb Rock, easing to south west 40 knots throughout tonight and to 30 knots in the morning. High sea in the south easing. Southerly swell five metres. Easterly swell one metre. Fair visibility in showers.

Outlook following 12 hours: South west easing to 20 knots."

Situation at 1500 hours on 6 February, issued at 1613 hours.

"A deep low 979hPa about 300 miles east of Banks Peninsular is moving slowly eastwards. A storm force south west flow lies over the central east coast of New Zealand, easing slowly overnight. A ridge of high pressure should develop over the South Island during Thursday."

Gale warnings were in force for the sea areas: **Rangitata, Cook, Portland** and the **Chatham Islands**.

Storm warnings were in force for **Castlepoint** and **Conway**.

Forecast issued at 1606 hours on 6 February and valid to midday on 7 February

'Portland: GALE WARNING IN FORCE:

Westerly 25 knots, but south west 35 knots south of Cape Kidnappers, becoming south west 25 knots throughout overnight. Very rough sea in the south easing. South west swell rising to five metres. Fair visibility in showers in south.

Outlook following 12 hours: South west 20 knots."

'Castlepoint: STORM WARNING IN FORCE:

South west 50 knots easing to 40 knots tonight and to 30 knots in the morning. High sea easing. Southerly swell five metres. Fair visibility in showers.

Outlook following 12 hours: South west easing to 20 knots."

2.16.5 Thursday 7 February (Post Casualty)

Situation at 0000 hours, issued at 0041 hours. (see Appendix 18 – Weather Map 6)

"A deep low 981 hPa over the Chatham Islands moves slowly eastwards, weakening the strong southerly flow over New Zealand during the day. A ridge of high pressure should develop over the South Island during today."

Gale warnings were in force for the sea areas: **Conway, Cook, Portland** and the **Chatham Islands**. A storm warning was in force for **Castlepoint**.

Forecast issued at 0034 hours on 7 February and valid until midnight.

'Portland: GALE WARNING IN FORCE:

Westerly 25 knots, but south west 35 knots south of Cape Kidnappers, becoming south west 25 knots late morning. Very rough sea in the south, easing. South west swell five metres. Fair visibility in showers in south.

Outlook following 12 hours: Becoming south east 20 knots."

'Castlepoint: STORM WARNING IN FORCE:

South west 50 knots, easing to 35 knots this morning, and to 25 knots in the evening. High seas, easing. Southerly swell five metres. Fair visibility in showers.

Outlook following 12 hours: South east 15 knots."

- 2.16.6** From the foregoing, it can be seen that the weather development over the three days preceding the casualty provided a situation conducive to the formation of significant swell conditions along the east coast of New Zealand.
- 2.16.7** In summary, at midnight on 3 February, a cold front lay to the south of New Zealand on an approximate north west – south east axis. On Monday 4 February, a cyclonic depression developed on this cold front. By midday on Tuesday 5 February, it had formed into a well defined cyclonic depression with a central pressure of approximately 990 hPa and lay between the South Island and the Chatham Islands. From that point, the depression moved only slowly to the south east. By midday on 6 February it had deepened to 980hPa and remained between the South Island and the Chatham Islands. This created a very steep barometric pressure gradient to the east of New Zealand, giving rise to strong southerly quarter winds, high seas and a heavy swell, forecast to rise to five metres.
- 2.16.8** Between 1999, the year the Pilot commenced his employment as Pilot at Gisborne and 5 February 2002, there were eight occasions when a swell forecast was issued by the MetService for four metre swells in the Portland forecast area. There had been no forecasts of swell heights in excess of that figure during that time. The forecast issued at 1606 hours on 6 February that the south west swell would rise to five metres was therefore the highest swell forecast that the Pilot had received during his time at Gisborne.
- 2.16.9** On four of the eight occasions referred to in paragraph **2.16.8** there were ships in Gisborne harbour. On two of these four occasions, the swell was from the south. On another occasion the swell was from the south east and on the last occasion the swell was from the east. The Pilot could not recall any problems with the shore mooring lines on any of these occasions and no vessel had to leave port because of surge conditions.
- 2.16.10** During his time at Gisborne, the Pilot had to take only one vessel to sea because of the surge conditions within the harbour. This vessel was a car carrier. However, it was not the excessive surge conditions alone that caused the problem, but the shape of the vessel's hull, which had a limited parallel body that was in contact with the wharf fendering. This, and the fact that she had a high freeboard, made it difficult to keep her secured alongside.

- 2.16.11** At 1305 hours on 6 February, the Duty Marine Forecaster at the MetService sent a facsimile to the Conservation Division of GDC which warned of southerly swells of four to five metres for Poverty Bay. This warning was issued in accordance with an arrangement entered into between GDC and the MetService, whereby the MetService would issue a facsimile warning of swell conditions that were in excess of 3.5 metres and which might cause coastal erosion. Similar warnings were issued to other district and regional councils around New Zealand, tailored to swell heights appropriate to their areas.
- 2.16.12** There was no procedure in place for swell warnings received by GDC to be passed to PGL or APSL. One would not normally expect local authorities to assume responsibility for passing weather information to those responsible for the operation of a port. Local authorities would reasonably assume that ports, such as Gisborne, would obtain weather information directly from the MetService in the coastal weather forecasts. According to MetService, the contract for weather services that MetService has with the Minister of Transport states that warnings of heavy swells for coastal areas shall be provided following a request from a Regional Council having a statutory duty in relation to the coastal area concerned. MetService is willing and able to pass these warnings to port authorities on request, and provide any other forecast services on a commercial basis. The port of Gisborne has never requested any services to be supplied by MetService.
- 2.16.13** The latest weather forecast, which the Pilot had available at the time the above warning to GDC was issued, was for a southerly swell rising to four metres. It was not until 1606 hours that the MetService issued a coastal forecast for Portland, giving a south west swell rising to five metres. In other words, it was some three hours after the MetService issued its coastal erosion warning to GDC that the Pilot became aware of the forecast swell changing from “rising to four metres” to “rising to five metres”.

2.17 Actual Weather on the day of the Casualty

- 2.17.1** The very heavy swell experienced in sea area Portland during the period in question was not the product of local weather. It originated from a low pressure weather system centred some considerable distance from Gisborne. This generated a very heavy swell with a long period, producing considerable energy. As a result, a significant surge was evident within the harbour.
- 2.17.2** Although **Jody F Millennium** and **Asian Briar** were ranging alongside their respective berths during the morning of 6 February, on account of the surge conditions, they were not sufficient to cause any concern. There was only a light wind from the southerly quarter at this time.
- 2.17.3** From approximately midday on 6 February, the surge conditions within the harbour began to increase. By 1400 hours they were sufficient to cause the Manager of EML enough concern to call the Pilot to the harbour.
- 2.17.4** The evidence of both the Pilot and the Master of **Jody F Millennium** was that the swell outside the harbour never exceeded a height of more than three metres during the afternoon and early evening of 6 February. However, representatives of the owners of **Jody F Millennium** have stated that other witnesses are reported to have observed **Asian Briar** on her departure at 1900 hours heave or sink into the swell trough repeatedly so that only her boat deck, wheelhouse and funnel were visible.

- 2.17.5** Both the Master of **Jody F Millennium** and the Pilot reported that on departure, the weather conditions deteriorated rapidly with an increase in both wind speed and swell height. MSA Investigators obtained a number of tide gauge records for the port of Napier. A copy one of these records, dated 6 February is annexed as *Appendix 16*. Napier was located approximately 70 nautical miles to the south west of the port of Gisborne. The trace for the annexed tide printout showed considerable activity during the period 1200 hours NZDT through to approximately 2330 hours NZDT. During the afternoon of 6 February the variations were in a band ranging from approximately 0.1 to 0.2 metres. However, very large peaks and troughs in tidal height were recorded at approximately 2100 hours NZDT. The trace at 2100 hours showed a sudden fluctuation in excess of 0.6 of a metre indicating substantial surge activity within the harbour. The effects of the weather system continued to move north along the east coast of New Zealand during the afternoon and evening of 6 February. It was therefore at least possible, that the sudden wave activity recorded in the port of Napier at 2100 hours, might have manifested itself further north at Gisborne at around the time of the departure of the **Jody F Millennium**, approximately one hour later.
- 2.17.6** The surge conditions within the harbour during the late afternoon and early evening of 6 February were extreme, according to the statements made by long serving employees at the port. The consensus of opinion was that these were the worst surge conditions they had experienced during their employment, which ranged from 20 to 40 years.
- 2.17.7** At the time **Jody F Millennium** left her berth the Pilot noted that the shipboard anemometer was reading southerly 15 – 20 knots.
- 2.17.8** The Master and the Pilot confirmed that on clearing the berth the wind suddenly increased in strength to southerly 30 knots.
- 2.17.9** Both the Master and Pilot stated that when the vessel was in the vicinity of the Outer breakwater, they estimated the height of the swell to have increased from about three metres to four to five metres, in the intervening period of about 1½ hours since darkness fell.

2.18 The National Institute of Water and Atmospheric Research Ltd (NIWA) – Weather Analysis

- 2.18.1** MSA Investigators commissioned NIWA to analyse the weather data obtained during the course of the weather event experienced on 6 February 2002. NIWA refer to this event as the ‘ Waitangi Day Storm’. The following are pertinent extracts from the report. (*see Appendix 14 - Full Report from NIWA*).

“Significant Wave Height (Hs) is the average height of the highest one third of the waves observed.

Direct analysis of winds gave an estimate of the return period for winds, like those associated with the Waitangi Day storm, of 20 to 30 years.

At Gisborne, a return period for eight metre waves of 26 years and a return period for seven metre waves of eight years were found from the hindcast data using the annual extreme method. Inspection of the synoptic sea level pressure charts on Waitangi Day indicated the peak significant wave height Hs of 8.06 metres measured at Baring Head (Cook Strait) could be viewed as an upper band for Hs at Gisborne at the same time.

We estimate that the return period for waves similar to the Waitangi Day event at Gisborne is between eight and 20 years.

High sea waves were the most critical feature of this storm because of the damage caused at Gisborne was caused not by winds but by waves. Although big waves are associated with strong winds, they are also dependant on wind duration and the length of fetch.

The ultimate size of the waves generated by a given wind event depends on the wind speed, the length of the storm (the duration) and the distance over the sea that the winds are blowing (the fetch)”.

2.18.2 Elements of the above analysis were based on the data gathered from a ‘wave rider’ buoy, (a buoy used to gather wave and swell data, height and period, which was situated off Baring Head, close to the entrance of Wellington harbour). This was in turn compared with the data previously gathered from another wave rider buoy that had been situated in Poverty Bay, but which was not in service at the time of the casualty.

2.18.3 NIWA also published the following media release on their web site in relation to the Waitangi Day storm:

“Around midday on 5 February 2002, a recording buoy off Baring Head lulled in seas with waves about one metre high. Just 15 hours later, on Waitangi Day morning, waves reached 13 metres and fluctuated between 10 and 12 metres for the rest of the day’. Thereafter, waves declined only slowly”.

2.18.4 It should be noted that this media release referred to maximum wave heights and not significant wave heights, the measure used in the marine weather forecasts issued by MetService.

2.18.5 Wave Rider buoys measure the combined wave height that is a combination of wind driven waves and swell. From these figures the significant wave height is calculated. According to NIWA, the significant wave height recorded at the Baring Head wave rider buoy on 6 February was 8.06 metres. This contrasts with a maximum significant swell height of six metres that was forecast by MetService that day for sea area Cook.

2.18.6 In their report NIWA stated *“However any analysis indicated that no simple relationship exists between the severity of storm waves from the S-SW quarter at Baring Head and Gisborne. While the Waitangi Day 2002 storm was the most severe in the 5.3 year Baring Head record, there is no simple way to estimate the peak Hs values that would have occurred at Gisborne at this time. Given the particular pattern of the pressure field associated with the Waitangi Day storm shown in Fig.1 and with the storm centre located off Kaikoura it would seem very likely that the waves at Gisborne would have been lower than those at Baring Head. Thus the 8.06 Hs observed at Baring Head on Waitangi Day could be viewed as an upper bound for Hs at Gisborne at the same time. An extreme value analysis gives a return period for eight metre waves at Gisborne of 26 years and a return period for seven metre waves of eight years. Unfortunately the nature of the statistics involved means we cannot give meaningful confidence limits for any of these return period calculations – they are simply the best estimates available given the data currently at our disposal and using standard accepted methods.”*

2.18.7 The slipway shed in the harbour basin, which had stood for about 80 years, was severely damaged by the extreme surge conditions in the harbour on the night of 6/7 February.

RELEVANT FACTORS

3.1 Weather

*Surge conditions within the harbour were of a severity well in excess of those which the Pilot could reasonably have expected to eventuate from the weather forecasts received in the period leading up to **Jody F Millennium** leaving her berth. Those conditions further deteriorated when the vessel was at or about the entrance to the harbour.*

- 3.1.1** In the period leading up to the casualty, the Pilot monitored in accordance with his normal practice, the weather reports received at his harbour office. The forecasts contained swell warnings as follows:

Forecast Issued	Swell Conditions
5/2/02 – 1234 hours	Three metre swell developing
6/2/02 – 0029 hours	Swell rising to four metres
6/2/02 – 0421 hours	Swell rising to four metres
6/2/02 – 1240 hours	Swell rising to four metres
6/2/02 – 1606 hours	Swell rising to five metres

- 3.1.2** During the Pilot's time at the port of Gisborne, there had been at least eight previous occasions when the MetService had issued forecasts containing swell conditions of four metres. On none of these occasions had the swell resulted in surge conditions similar to those experienced on the day of the casualty and no vessel in port, on those occasions, had to depart the port prematurely because of the surge conditions. The only occasion when a vessel did depart was because of her hull design and limited parallel body in contact with the berth, which rendered it difficult to keep her alongside in surge conditions.

- 3.1.3** It was the view of the MSA Investigators, that weather factors and the resultant sea conditions were the most significant cause of the casualty. The weather and sea conditions encountered by **Jody F Millennium** when she was at or about the entrance to the harbour were more severe than forecast, exceeded past experience and could not have been reasonably foreseen.

3.1.4 Limitations of Marine Weather Forecasts

Marine weather forecasts for coastal sea areas issued by the MetService included swell forecasts. The swell forecast did not provide information to enable a prediction of surge conditions likely to be encountered in enclosed waters, including harbours – (*see paragraph 2.16.1*).

- 3.1.5** There was nothing in the weather forecast issued on the morning or early afternoon of 6 February for sea area Portland that would have indicated to the Pilot that conditions, which were to develop on 6 February, would be anything significantly different to those experienced, following previous weather forecasts, including swells of similar height and direction. There was a forecast increase of swell height at 1606 hours, but this was "rising to five metres" and was not received until late in the afternoon on 6 February.

- 3.1.6** Although information contained in New Zealand coastal weather forecasts is consistent with international formats, it is the opinion of the MSA Investigators that the MetService should critically assess the adequacy of the swell component contained within existing coastal weather forecasts. In particular, the MetService should assess whether additional information, for example wave period, should be included so as to increase the predictability of conditions likely to give rise to surge conditions in ports, such as Gisborne. Alternatively, if this is not to be part of the weather forecast, should there be some form of early warning system whereby critical wave period information is notified to a port that might be adversely affected by surge conditions? According to MetService the provision of wave period information is currently not part of their contract with the Ministry of Transport in relation to weather forecasting services.
- 3.1.7** MetService and NIWA should critically assess whether there should be additional co-operation/collaboration between them. If NIWA received recordings of actual extreme conditions, what arrangements are in place to pass that information to MetService? Precisely, what exchange of information occurs between those two bodies?
- 3.1.8** Consideration should be given as to what exchange of information, if any, occurs between New Zealand ports. For example, on the day in question, should warnings of extreme conditions in Cook Strait have been passed to ports further north?

3.2 Management, Master and Pilot

This investigation has revealed serious deficiencies in the management and operation of Port Gisborne and in the conduct of the Master and the Pilot leading up to the casualty. Whether or not these factors singularly, or in combination, may have prevented the casualty is impossible to determine. They are nevertheless significant in nature and are of concern to MSA.

- 3.2.1** As noted in section **2.11** all harbour authorities have a duty to take reasonable care, so long as the harbour is open for the public use, that all who may choose to navigate it, may do so without danger to their lives or property. Those responsible for the operation of the port have an obligation to have regard to the safety of operation of the services and facilities provided. That responsibility rested on GDC, the Harbourmaster, PGL, APSL, EML and the Pilot, statutorily and pursuant to contracts that existed between them.

Port Gisborne Limited

- 3.2.2** Port Gisborne Limited failed to meet its responsibility for the safe operation of the port namely:

Hydrography

PGL failed to dredge and undertake hydrographic surveys to ensure the advertised depths were maintained. As a result of these failures Port Gisborne Ltd continued to disseminate unsubstantiated and potentially inaccurate controlling depths for the port.

- 3.2.3** PGL was responsible for implementing hydrographic surveys of the port and the navigable approaches to the port of Gisborne. This aspect was fundamental to the safe operation of any port and particularly significant in light of the entry contained in the New Zealand Pilot NP 51 15th edition, where mariners were advised that the controlling depth in the entrance channel to Gisborne was 10.5 metres below chart datum.
- 3.2.4** The last hydrographic survey of the entrance channel was undertaken about six months before the casualty (*see Appendix 10 - Hydrographic Survey*). That survey showed a band of 9.7 metre soundings across the entrance channel, located approximately 200 metres south west of the Outer breakwater light. In addition to this 9.7 metre shoal, there were several areas where the soundings were less than 10 metres. This survey was not passed to the Pilot by PGL.
- 3.2.5** Maintenance dredging was undertaken but surprisingly no hydrographic survey followed to determine the results of that dredging and what depths had been attained. The Pilot stated he was never advised of the results of the maintenance dredging that was carried out in December 2001. The Pilot had approached PGL on a number of occasions and requested an up to date hydrographic survey of the entrance channel. He had approached the Harbourmaster for his assistance in this regard but notwithstanding these efforts, nothing was done to remedy the situation.
- 3.2.6** It was the opinion of the Pilot, that, as there was no up to date sounding data, little or no reliance could be placed on the promulgated controlling depth of 10.5 metres. For this reason, both the Pilot and PGL used a figure of 10.2 metres as being the maximum draught for a vessel on departure. This draught was arrived at from the Pilot's observations made during transits of the channel.
- 3.2.7** The responsibilities of the port authority in relation to the nature and frequency of hydrographic surveys has recently been summarised by the UK Department for Transport, Local Government and Region in the Port Marine Safety Code and accompanying Guide to Good Practice on Port Marine Operations. As is noted in the guide, at paragraph 6.2.18:

"Frequency of Survey

- 6.2.18 *The code (para 2.3.2) observes that the finding, marking and monitoring of the best navigable channel or channel in a harbour is an essential part of the formal hazard assessment and safety management system. The need for surveying, which may be time consuming and costly, should therefore be determined by a risk assessment. There needs to be a clear understanding between the harbour authority and any berth operator about responsibility for arranging surveys alongside a berth.*
- 6.2.19 *The frequency of surveys should be determined by formal risk assessment. It should reflect the stability of the sea bed and its susceptibility to situation or erosion. The depth of available water, in relation to the draught of vessels using that water, is also a consideration. Given that the depth of water and stability of the seabed will often vary within a port, it is recommended that an overall survey plan be drawn up which meets the need for surveys at varying times in different areas.*

6.2.20 *Surveys are needed firstly to facilitate the production of charts. The intervals between surveys of the whole harbour below high water may vary from five to fifteen years. The interval may also be different for different parts of the harbour. There is no need to spend resources re-surveying areas known to be stable and efforts should also concentrate on the channels in use or areas where draught is relatively critical to users.*

6.2.21 *More frequent periodic surveys will therefore be necessary where the depth of water is known to fluctuate in areas critical to navigation. These periodic surveys are typically undertaken at intervals between one and twelve months. They should be included in the overall survey programme. These surveys need not be as comprehensive as a main survey and should aim to establish any variation since the last survey, thus enabling a warning to be given and any appropriate remedial action to be taken".*

Whilst this UK code has no legal standing in New Zealand, MSA Investigators are of the opinion that it nevertheless represents the standard to which a well-run port in New Zealand should operate.

3.2.8 Subsequent to the casualty, and at the request of the MSA Investigators, a hydrographic survey was conducted of the entrance channel and the harbour on the 25 February (*see Appendix 11 – MSA Hydrographic Survey*). The survey results broadly reflected the results of the August 2001 survey in that there was a band of soundings in the entrance channel, extending 400 metres from the seaward extremity of the Outer breakwater, where the soundings were less than 10 metres and where the minimum depth on the leading line transits was recorded as 9.6 metres below chart datum.

3.2.9 If the above minimum soundings had pertained on the day of the casualty then, with a maximum draught of 9.5 metres, the vessel's static UKC at the time of her departure would effectively have been limited to approximately the height of the tide namely, 0.8 metres. If this was the static UKC, the MSA Investigators calculated that the vessel would have had to roll only 4° in still water for the bilge keels to have come into contact with the sea bed.

3.2.10 In the absence of the results of an up to date hydrographic survey of the entrance channel, it was not possible to determine exactly what the minimum static UKC would have been on the day of the casualty.

Risk and Safety Assessments

3.2.11 There had been a failure by PGL to undertake formal risk and safety assessments to determine maximum limits of length and draught, the effects of weather on shipping operations and the adequacy of mooring systems. The need for these risk and safety assessments had been highlighted by a Risk Assessment Study of the port of Gisborne, commissioned by Silver Fern Shipping Limited on 26 March 1998, which prompted the decision by that ship operator to cease bulk oil tanker visits to the port of Gisborne.

3.2.12 In addition the MSA Report 002325 into the **Diao Papyrus** incident on 15 December 1999 recommended that Port Gisborne:

“In light of the recommendations contained in the risk assessment study for Silver Fern Shipping Limited, review the vessel length and weather parameters put in place by the now ex Harbourmaster and the Training/Relief Pilot and satisfy themselves that they are appropriate.”

Although the parameters referred to would not have been relevant to the **Jody F Millennium** casualty, once again no further action appears to have been taken by PGL to implement that recommendation.

Operational Plans

3.2.13 There was a total absence of any structured written operational plans or risk management contingencies for the safe operation of the port of Gisborne. There should have been written procedures relating to the following port operations:

- Pilotage procedures
- Weather limiting parameters
- Contingency plans (e.g. in the event of the onset of heavy surge conditions)
- Hazard identification (e.g. parting moorings)
- Maintenance/repair procedures
- Mooring plans for different types/sizes of vessel
- Minimum UKC criteria
- The provision of up to date hydrographic survey data

Appointment of Harbourmaster

3.2.14 As commercial operators of the port, Port Gisborne Limited should have raised objection to Gisborne District Council’s (its major shareholder) failure to ensure that the Harbourmaster function was adequately fulfilled, rather than by way of a nominal appointment of an absentee functionary as actually occurred.

Contractual

3.2.15 The contract between PGL and APSL was a commercial contract for the supply of services, with little reference to operational and safety responsibilities within the port. After PGL contracted out its marine services functions to APSL, it failed to maintain adequate superintendence of the safe operation of the port. An example of this was the failure to ensure that maintenance/repair procedures and records were kept of all mooring spring components. This was a significant failure considering the importance of the need for shore moorings in a port subject to surge conditions.

Bollards

3.2.16 PGL disregarded the advice of the Pilot that additional bollards were required for berth No. 8 (*see paragraph 2.12.3*).

3.3 Adsteam Port Services Limited (APSL)

- 3.3.1** APSL's contract with Port Gisborne Ltd gave it control over the day to day operation of pilotage, towage, and the provision of mooring linesmen within the port. Independently of its contractual obligations to Port Gisborne Ltd, APSL owed a duty to port users to ensure that those marine services were provided to an appropriate and reasonable standard.

Pilotage

- 3.3.2** APSL's provision of pilotage services, through the Pilot, was unsatisfactory in several respects. There was an ambiguity in the position assigned to the Pilot, namely that of "Pilot/Manager". There was no detailed or precise job description including a definition of the responsibilities that the Pilot carried.
- 3.3.3** APSL failed to provide a structured system of relief pilots who would be available when the Pilot was on leave, ill, or otherwise unavailable. This placed unacceptable pressure upon the Pilot and breached APSL's obligation as a good employer.

Risk and Safety Assessments/Operational Plans

- 3.3.4** APSL did not seek from Port Gisborne Ltd or, alternatively, itself commission, safety assessments or operational plans relating to the operation of the port. Realising that the operation of the port was in some respects dysfunctional, APSL had a responsibility itself to take action to attempt to remedy the situation.

Mooring Gang

- 3.3.5** In relation to the provision of mooring gangs, APSL contracted out this function and thereafter failed to retain any effective supervisory control over such matters as the operation of mooring gangs, ongoing monitoring and peer reviews.

3.4 The Pilot

Roles and Responsibilities

- 3.4.1** The Pilot had a duty to resolve the ambiguity with respect to his roles and responsibilities with APSL and within the port. As sole provider of pilotage within the compulsory pilotage district, he had a duty to ensure suitable relief arrangements were put in place. He should have raised objections to his employer's failure to ensure adequate relief arrangements were being made.
- 3.4.2** The Pilot should have raised objections to the absence of a harbourmaster being appointed during the period of February to September 2000.
- 3.4.3** Further, following the appointment of the Harbourmaster, the Pilot should have objected to the allocation of that role to an absentee Harbourmaster who took no active role in the day to day operation of the port and matters of navigational safety.

- 3.4.4 Under the structure which applied in Gisborne, the Pilot was isolated in respect of professional nautical expertise. Whilst the Pilot liaised with the agent and PGL, neither had a maritime background. Notwithstanding the inactivity of the Harbourmaster, the Pilot should have notified him as events unfolded and the scale of the emergency developed.

Decision to leave Wharf

- 3.4.5 By 2100 hours on 6 February, a total of eight shore mooring lines had parted. Although the mooring gang continued to rig replacement lines, this posed a significant hazard to the health and safety of the mooring gang and the ship's crew. Both the Pilot and the Manager of EML had expressed concern at the risk this posed to personnel. The conclusion of the MSA Investigators was that the potential for fatal accidents and/or serious injury, posed by the parting of heavily loaded mooring lines, was a significant consideration in the decision to sail the vessel.
- 3.4.6 The two tugs were restricted in their ability to assist in keeping the vessel alongside the wharf. The situation was exacerbated by the damage to fendering on board the tug **Turihaua**.
- 3.4.7 With the vessel ranging approximately seven metres in a fore and aft direction together with significant rise and fall alongside the berth, there remained the real possibility that the wharf fendering would fail and the ship's side shell plating would impact directly on the solid concrete wharf and be subjected to friction or impact damage.
- 3.4.8 The Pilot was justifiably concerned that if the vessel remained alongside she might break adrift and suffer significant hull damage and resultant pollution and possible blockage of the port.
- 3.4.9 For reasons set out in the body of this report, the MSA Investigators are of the view that to ballast the vessel down and sink her within the harbour was not a viable option given the violent surge conditions. Again, the result may have been serious hull damage within harbour limits together with the potential escape of up to 630 tonnes of heavy fuel oil from the vessel's double bottom tanks. Furthermore, The Pilot would have had no legal authority to order the vessel to be sunk at her berth. Such a draconian measure could only have been undertaken with the consent of the ship's Master and the Harbourmaster.
- 3.4.10 The Pilot undertook an estimate of under keel clearance based on known draughts of the vessel and the observed tidal height. The Pilot's evidence was that the possibility of the vessel grounding in the channel was a concern of his.

The Pilot said that his concern was based primarily on the anticipated pitching movement of the vessel rather than a rolling motion. The inference drawn by MSA Investigators from the totality of the Pilot's evidence was that he believed that there was a real risk of touching bottom as the vessel departed.

- 3.4.11** Calculations undertaken by MSA Investigators were that **Jody F Millennium** had a static UKC of about 1.5 metres at the time of her departure and that in still water conditions, the vessel had to heel by only approximately 7 degrees for the bilge keel to make contact with the sea bed (*see paragraph 2.5.33*). Accordingly, MSA Investigators were of the opinion that given the prevailing conditions, the Pilot knew or ought to have known that the vessel would almost certainly sustain bottom damage as she transited the entrance channel but, with the possibility that the vessel might reach deep water and remain afloat.
- 3.4.12** The Pilot found himself on the 'horns of a dilemma' - neither of the two options open to him namely, remaining in port or sailing would have assured the vessel's safety. Without knowing what would have occurred to the vessel had she remained in the harbour, it cannot be said that the choice to depart was wrong. However, even if the decision was the wrong one, maritime regulatory authorities should be slow to criticise judgement calls made by mariners in the face of an emergency.
- 3.4.13** Given the normal responsibilities of a Pilot, the Pilot would, technically, have been entitled to have concluded that unless, and until, he was advised by the Master, the ship's agent and/or Port Gisborne Limited that **Jody F Millennium** was ready to proceed to sea, he owed no duty to the vessel and could legitimately have stayed away from the port area. To his credit, the Pilot elected to take charge of the situation. In the absence of a Harbourmaster or person performing the role of marine manager, he became "the man on the spot".
- 3.4.14** However, having taken charge of the situation, the Pilot should have made a more concerted effort to communicate with the Master and bring him into the communications/decision-making loop at an early stage. There was no excuse for the Pilot to say that he could not contact the Master. The Master was fundamental to the decision making process.
- 3.4.15** In the circumstances, the Pilot should have initiated discussion with regard to an action plan as to how best to handle the deteriorating conditions and how to best utilise the available resources including linesman, ships crew, extra moorings, and the use of the ship's anchors.
- 3.4.16** Having commenced the pilotage, the Pilot was obliged to exercise the standards of seamanship and pilotage expected of a reasonably competent harbour pilot. The Pilot should be severely censured for his actions in leaving the vessel early and in dereliction of his pilotage duties. The possibility of the Pilot being unable to disembark the vessel outside of the port limits provided no justification for the Pilot's premature departure from the vessel at or near the end of the Outer breakwater.
- 3.4.17** The necessity for the Pilot to remain on board the vessel was obvious: the departure was in the hours of darkness, there was an extreme swell running accompanied by near gale force winds; the Master had not previously visited the port and it was critical that the vessel remain in the channel. On leaving the bridge, the Pilot left the Master to navigate the balance of the compulsory pilotage district without the assistance of a person holding relevant local knowledge and experience. The fact that the vessel might have grounded, even had the Pilot remained on board, does not provide any excuse for his premature disembarkation. Similarly, the Pilot's proposal to observe the progress of the vessel from the pilot boat was an unacceptable substitute for his physical presence on the bridge.

3.5 The Master

3.5.1 Roles and Responsibilities

The duties of the Master under New Zealand law are set out in the Maritime Transport Act 1994 as follows:

“19. DUTIES OF MASTER

(1) The master of a ship shall–

(a) Be responsible for the safe operation of the ship on a voyage, the safety and wellbeing of all passengers and crew, and the safety of cargo carried; and

(b) Have final authority to control the ship while in command and for the maintenance of discipline by all persons on board; and ...”

The relationship between a Pilot who has the conduct of the ship and the Master who retains command was summarised by the Canadian Royal Commission on Pilotage, Ottawa 1968, as follows:

“to conduct a ship’ must not be confused with being ‘in command of a ship’. The first expression refers to action, to a personal service being performed; the second to a power. The question whether a pilot has control of navigation is a question of fact and not of law. The fact that a pilot has been given control of the ship for navigational purposes does not mean that the pilot has superseded the master. The master is, and remains, in command; he is the authority aboard. He may, and does, delegate part of his authority to subordinates and to outside assistants whom he employs to navigate his ship– ie pilots. A delegation of power is not an abandonment of authority, but one way of exercising authority.”

3.5.2 In relation to this casualty, MSA Investigators are of the opinion that the Master did not adequately discharge his duties of command. He was not assertive with regard to his position, having overall responsibility for the safety of the vessel. He made no attempt to establish any dialogue with the Pilot and employees of PGL during 6 February with regard to the moorings and how to best to keep his vessel secured, or, subsequent to the decision to sail the vessel, the safety factors to be considered in relation to the departure. For example, he did not question, challenge or protest any of the decisions made by the Pilot in relation to the vessel's departure, the pilotage, UKC or the Pilot's decision to disembark early at the breakwater.

3.5.3 The Master's evidence was that he considered that PGL had given a direction or instruction that **Jody F Millennium** leave the port. By way of explanation, the Master said that he thought that if he protested that direction and the vessel had been allowed to stay he would be held responsible for any damage to the port. However, MSA Investigators are of the opinion that did not excuse the Master's failure to question, challenge or protest that pivotal decision.

3.5.4 The Master had undergone Bridge Resource Management Training and should have been aware of the importance of ‘challenge and response’ in situations such as the one he faced on 6 February. Indeed, the Master's evidence was that he had previously challenged Pilot's advice on several occasions, when he was concerned about a particular situation.

- 3.5.5** The Master would have been entitled to have declined the Pilot's request to disembark at the breakwater, and to have insisted that he remain on board to the outer limits of the compulsory pilotage area. If the Pilot had been unable to disembark the vessel at that point then so be it.
- 3.5.6** The Master made no attempt to contact the Pilot and discuss the worsening surge conditions within the harbour and how best to secure his vessel by all available means, including the possible use of anchors. Liaison between the Master and the voyage charterer's agent was no substitute for a face-to-face discussion between the Master and the Pilot.
- 3.5.7** The Master had the information and ability to determine what the vessel's UKC would be and, having regard to this information and the weather conditions, did not question or challenge the Pilot's decision to put his vessel to sea.
- 3.5.8** The Master had ultimate responsibility for setting adequate mooring lines. There was no discussion between the shipboard and shore personnel to develop an action plan to handle the deteriorating conditions and best utilise the available resources by way of moorings and manpower available. If the Master believed that the situation could be contained by rigging additional mooring lines, he should have insisted that they be put in place. If they were not provided, he ought to have remonstrated with the Pilot at the first available opportunity.
- 3.5.9** The Master's evidence was that the vessel maintained the compass heading of 234° from the centre of the wheelhouse. However, the Master would not have had any visual indication of the vessel's lateral position in the channel and would not therefore have known if she was keeping station on the centre line of the channel. The Second Officer was monitoring the vessel's track using parallel indexing on the radar. However, the radar target being used (Butlers Wall) would only have been 45 metres from the centreline of the ship (when passing abeam) and accordingly, would not have provided the necessary degree of accuracy.

3.6 Eastland Moorings Limited

- 3.6.1** Although the Master was critical of the mooring gang's performance, the Pilot's evidence was that they performed satisfactorily in the face of the extreme conditions then prevailing.
- 3.6.2** A statement made by a representative of this company unintentionally led the Pilot to believe that there was only one mooring line in reserve when in fact there were several in a nearby shed. This led directly to the Pilot's decision to put the vessel to sea as a matter of urgency.
- 3.6.3** Whether it would have been safe to have continued to rig those reserve lines is of course questionable.
- 3.6.4** Eastland Moorings Ltd had, over several months prior to the casualty, continued to operate using mooring lines supplied by Port Gisborne Limited in respect of which there was an absence of adequate maintenance/repair systems.

3.7 Harbourmaster and Gisborne District Council

- 3.7.1** As a full time Harbourmaster operating in the port of Napier, the Harbourmaster would have understood the roles and responsibilities attaching to that position. He should have realised that his appointment on an “as required” basis at a port some 3 hours distant by road, was incompatible with the proper discharge of a harbourmaster’s functions. His involvement with the port had in practice amounted to a mere 15 hours work in the previous five months. That gave him neither effective supervision of navigational safety within the port nor availability in an emergency.
- 3.7.2** As Harbourmaster, he had a duty to ensure that dredging and hydrographic surveys were being carried out by GDC or PGL to maintain and verify the advertised depths. Alternatively, if for any reason, depths were not maintained, then his responsibility was to ensure that that information was disseminated to all relevant parties.
- 3.7.3** Gisborne District Council had the statutory function and the power under the Local Government Act 1974, to appoint a harbourmaster for the port of Gisborne. They ought to have known that the appointment of the Harbourmaster on the terms and conditions they agreed and the manner in which they supervised his appointment, would be insufficient to ensure the effective monitoring of matters relating to navigational safety at the port of Gisborne.

CAUSE

- 4.1** Violent surge conditions within the harbour, that were in excess of those that could reasonably be expected given the available weather forecasts, prevented **Jody F Millennium** from safely remaining alongside her berth. The vessel departed the harbour with inadequate UKC for the conditions then prevailing. Around the time of departure, sea and swell conditions were reported to have deteriorated further. The vessel was caused to ground shortly after clearing the entrance to the harbour by sea and swell conditions that were reported by some long serving port employees, to be the worst they had ever experienced.

RECOMMENDATIONS

It is recommended that the Director of Maritime Safety take the following action in respect of the following companies, individuals and organisations:

5.1 Port Gisborne Ltd (PGL)

The Director of Maritime Safety write to PGL expressing concern at the deficiencies in the operation of the port of Gisborne as identified in this report and, to the extent that they have not already been remedied, seek PGL's proposals for the remedy of those deficiencies and its proposed timetable for that, including:

- The implementation of a programme of regular hydrographic surveys and dredging to verify and maintain promulgated depths within port limits;
- The installation of appropriate instrumentation to assist in the monitoring of weather, swell and surge conditions including consideration of the installation of wind speed and wind direction instruments, electronic tide recording instrumentation and a wave rider buoy;
- Consideration of commissioning a dynamic UKC assessment system for the approaches to the harbour or the interim imposition of operational parameters of maximum draught and maximum length of ships visiting the port;
- The implementation of structured operational plans and procedures for pilotage within the port of Gisborne;
- The implementation of risk assessments in order to develop contingency plans as set out in paragraphs **2.5.43**, and **3.2.13** of this report;
- The improvement of the standard of training and supervision of its mooring lines sub contractor - including, the implementation of practice manuals, the ongoing monitoring of linesmen and peer review, such as is appropriate for known risks experienced at surge ports;
- The introduction of maintenance and repair procedures and records for shore mooring lines including a system for identification of individual mooring components;
- The implementation of closer liaison between PGL and MetService/NIWA to ensure the provision of information to assist with the more accurate prediction of conditions likely to result in hazardous surge conditions within the port

5.2 Adsteam Port Services Limited (APSL)

The Director of Maritime Safety write to APSL expressing concern at the deficiencies in the performance of its current contract with PGL as identified in paragraph **3.3** inclusive of this report and, to the extent that they have not already been remedied, seeking APSL's proposals for remedying those deficiencies and the proposed timetable for that, including:

- The establishment of a comprehensive job description for the Pilot/Manager position;
- The implementation of adequate relief arrangements for the pilots employed by APSL;
- Seeking confirmation that APSL will arrange for the Pilot to undertake, as soon as practicable, an Advanced Pilot Training Course at a recognised training facility.

5.3 The Pilot

The Director of Maritime Safety write to the Pilot:

Severely censuring him in respect of the dereliction of his duty as a Pilot arising from his early disembarkation of **Jody F Millennium** at or near the end of the harbour breakwater, rather than remaining with the vessel to the limits of the compulsory pilotage district;

- Recommending that he undertake, as soon as practicable, an Advanced Pilot Training Course at a recognised training facility;
- Recommending that he ensure that his job description and roles and responsibilities as Pilot/Manager are clarified with his employer and that proper lines of communications are established with the Harbourmaster.

5.4 The Master

- The Director of Maritime Safety write to the Korean Maritime Safety Authority recommending that the Master be censured for his failure to adequately discharge his duties of command as identified in paragraph **3.5** of the report.

5.5 Gisborne District Council (GDC) and Harbourmaster

- The Director of Maritime Safety write to Gisborne District Council and the Harbourmaster expressing concern at Gisborne District Council's failure to appoint a harbourmaster on terms and conditions that ensured that the statutory function of harbourmaster within the port was adequately discharged so as to give effective supervision of matters relating to navigational safety within the port. The letter should also seek confirmation that the existing terms and conditions of the Harbourmaster's contract will be varied so as to ensure that the current situation is remedied.
- Gisborne District Council should review its current by-laws and gazetted pilotage district to ensure that the compulsory pilotage area is consistent with the boarding and disembarkation positions actually used.

5.6 Ministry of Transport/Maritime Safety Authority

- That the Director of Maritime Safety and the Ministry of Transport give consideration to the introduction of a port marine safety code and/or appropriate Maritime Rules establishing a standard marine safety code for the operation of New Zealand commercial ports, similar in nature to the United Kingdom Port Marine Safety Code (and accompanying Guidelines) published by the UK Department of Environment and the Regions (DETR) in March 2002.
- That there be an audit conducted pursuant to section 54 of the Maritime Transport Act 1994, as to the operation of Port Gisborne and of the relevant parties named above so as to monitor implementation of the above recommendations. (This audit has already been completed).