its administration that are concerned with the safe operation of ships is not in itself a problem. It is a sensible division of responsibilities. But at least in the case of a ship with novel design features, or applications for registration or upgrades in the registration of a ship that prompt concerns of the kind articulated by Captain Boath and Captain Diack, a more comprehensive approach to assessment of the safe operation of the ship is required at the registration stage.

[42] In the case of the *Wunma* this required a comprehensive analysis of the ship's seakeeping properties in cyclonic conditions, particularly of her water management system, prior to the grant of any registration upgrade. Such an assessment, based on the ship's actual performance, would have posed, and possibly answered, the kinds of questions raised in the Thompson Clarke Operational Review. It will be recalled that these questions included the following:

> "What height of waves might be experienced in and around Karumba?
> Partial or total destruction of the canopy by wind, sea or unsecured objects?
> What objects might become unsecured? Boats? Loading boom? Safety rails? Other internal damage of canopy covering by wind through openings at stern or on top of canopy?
> Ingress water into well deck over the stern?
> Ingress of rain into well deck?
> Ability, or otherwise, to rid well deck of water?
> Free surface effect of water in well deck and effect on stability?
> Is tank capacity for excessive rain water adequate? Overflow arrangements?
> Ability or otherwise to control the vessel in high seas given likelihood of reduced power available to avoid engine racing (ie propellers coming out of the water)?
> Have some of the crew ability and knowledge and experience to hand cyclones at sea."[19]

[43] A comprehensive analysis of the ship's seakeeping properties in cyclonic conditions would have raised the issue of whether the ship could safely go into cyclonic seas fully loaded, and, if she could not, what operating procedures or condition of registration could ensure that she not be in a loaded condition should she go to sea.

[44] It also would have raised the issue of whether the safe operation of the ship depended upon the installation of a new cyclone mooring in the Norman River in lieu of the one on Sweers Island that Zinifex proposed be decommissioned.

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[19] Thompson Clarke Operational Review, Exhibit 49, CB137, Attachment C, p.4.

[45] Ultimately, no one certified prior to the registration upgrade in September 2005 that the ship could operate safely in open seas in cyclonic conditions, especially when fully loaded.

9.6 RESPONSIBILITY FOR SAFE OPERATIONS

[46] The kinds of issues raised by the Thompson Clarke Operational Review were not only the proper concern of MSQ as regulator in granting the ship a Class 2B registration and reviewing her operating procedures. They were matters that needed to be addressed by the operators of the ship, including her owner, as part of their general safety obligations even if MSQ granted the requested registration upgrade.

[47] Practices and design features that were tolerated by them in the ordinary operation of the ship, such as blocked deck valves and the practice of not directing collected rainwater to sea, were inappropriate for a long voyage in open seas when the ship could not return to port. Contrary to the representation of the consultant to the owners and operators in December 2003, the operational experience gained in the ship's ordinary daily operations did not make a cyclone mooring unnecessary or qualify the ship or her crew to venture into open waters. In fact, operational experience showed that the water management system did not operate according to the design intent of a "first flush" system.

[48] The option of going into open waters during cyclonic conditions required a qualitatively different approach to preparing for the voyage than applied in preparing for the usual voyage in fair conditions to the export vessel at the Karumba Roadstead. Blocked drains would need to be unblocked. Valves in the side deck drains that were designed to direct water to sea would need to be operational. This is easier said than done in the light of the evidence of the time taken to service and replace them.

[49] Whatever justification existed for not installing freeing ports in the aft well deck during normal operations in the ship's normal area of operation did not apply if analysis showed that the aft well deck was likely to collect large volumes of water. In the absence of freeing ports, additional pumping facilities would be required to discharge water overboard.

[50] In 1999 ISM had described the ship as "far from a typical seagoing example" and operational experience had confirmed this fact. The owner's consultant in 1999 and

MSQ had given sworn evidence that going to sea was not a viable option and that a cyclone mooring buoy was needed for the safety of the vessel and her crew. The doubts that had been cast in the intervening years on the utility and safety of the cyclone mooring at Sweers Island by Dr Cowell and others did not detract from the force of this evidence, or make credible the claim that operational experience removed the need for a cyclone mooring. Instead, it served to highlight the need for a *new* cyclone mooring.

[51] The review of the ship's operation by Thompson Clarke Shipping which highlighted some of the shortcomings in the ship's cyclone procedures came too late for a long term solution, such as a new cyclone mooring in the Norman River to be implemented prior to the incident. But the issues identified by Thompson Clarke Shipping in late 2006 could and should have been identified by a proper analysis of the risks associated with the option of allowing the ship to go to sea in cyclonic conditions when that option was being canvassed years earlier. No proper risk analysis was undertaken by the owners and operators of the ship, or by the regulator, MSQ.

9.7 SYSTEMIC ARRANGEMENTS AT THE TIME OF THE INCIDENT

[52] In the result, as at February 2007, systemic arrangements jeopardised the safe operation of the ship in cyclonic conditions:

- A ship that was designed and initially intended to operate by having access to a cyclone mooring had no operational cyclone mooring to protect the ship, her crew and the marine environment.
- The ship's operating procedures did not reflect the sound practice of not loading when a low pressure system was in the Gulf in "cyclone season".
- The ship's SQS Cyclone Procedure and the Port of Karumba Cyclone Contingency Plan did not provide the option of the ship remaining alongside the Zinifex wharf with extra mooring lines, or the more contentious option of heading upstream in ballast and anchoring there.
- They required the ship to head to sea, but only after a certain alert status was declared when wind and tide conditions may have rendered it unsafe for the ship to navigate the channel, and in any case, when there may be insufficient time and searoom to engage in cyclone avoidance procedures against a cyclone heading in the direction of the South East part of the Gulf.

- The ship's water management system did not operate as it was designed to operate: her deck drains and valves were prone to being blocked with concentrate and, once blocked, the valves to sea could not be made operational without a major and time-consuming effort.
- The ship's design and equipment did not allow her to quickly rid herself of water that accumulated in the aft well deck.
- The ship was at risk of becoming, in effect, a receptacle for the large volume of rainwater that her water management system would collect during a long voyage in cyclonic conditions, and any seawater that she might take on board in heavy seas.
- If the ship was caught in a loaded condition when the cyclone threat eventuated, the risk to the safe operation of the ship was acute. As Mr Bundschuh explained in his evidence:

> "In a full load condition if you have a water management system that relies on keeping water on board, you are then in serious danger of actually overloading the vessel. That is the context in which the water management system has to come into play to make sure that when operating in full load you are not going to keep on water that immerses the load line."[20]

[53] A ship that had been designed to operate in coastal waters in fair weather was authorised to go into open waters in foul weather. Without an overhaul of her water management system and loading conditions, any such voyage carried the risk of the ship having its load line immersed in cyclonic seas.

[20] Mr Bundschuh; T.767, T.770.

CHAPTER 10 TROPICAL CYCLONE NELSON AND THE *WUNMA*

[1] Tropical Cyclone Nelson originally formed as a tropical low near Gove on 31 January 2007. The low pressure area deepened to a tropical depression and tracked along the North Coast of the Northern Territory and into the Gulf by 1 February 2007. It continued to move through the Gulf to be near Vanderlin Island on 4 February 2007. Strong upper winds over the system made conditions unfavourable for development into a tropical cyclone.

[2] Details of the influence of the low during these days appears in the statements of Mr Ian Shepherd, a Senior Meteorologist with the Bureau of Meteorology based in Darwin,[1] Mr Jeffrey Callaghan, who heads the Severe Weather Section of the BOM in Brisbane,[2] and Mr Robert Cowle, who works for a private organization WeatherDirect.[3] The statements of Mr Shepherd and Mr Callaghan describe and attach a large number of forecasts, coastal waters warnings and tropical cyclone advices and warnings issued by the BOM in Darwin and in Brisbane during February 2007.

[3] Sea level Northwest to West winds became very strong across the Gulf on 4 February while the low that was to become Tropical Cyclone Nelson was located near the Southern Coast of the Gulf. The low commenced moving towards the East on 5 February and began to rapidly deepen as it moved into the South-Eastern Gulf.

[4] Early on 6 February the low crossed to the East of Longitude 138 degrees East, and the BOM in Brisbane assumed responsibility for the issuing of warnings and naming the cyclone. It passed to the North of Mornington Island. At 0500 hours on 6 February the low was intensifying, and conditions became favourable for development of the system into a tropical cyclone. It was officially named Tropical Cyclone Nelson shortly before 0800 hours on 6 February.

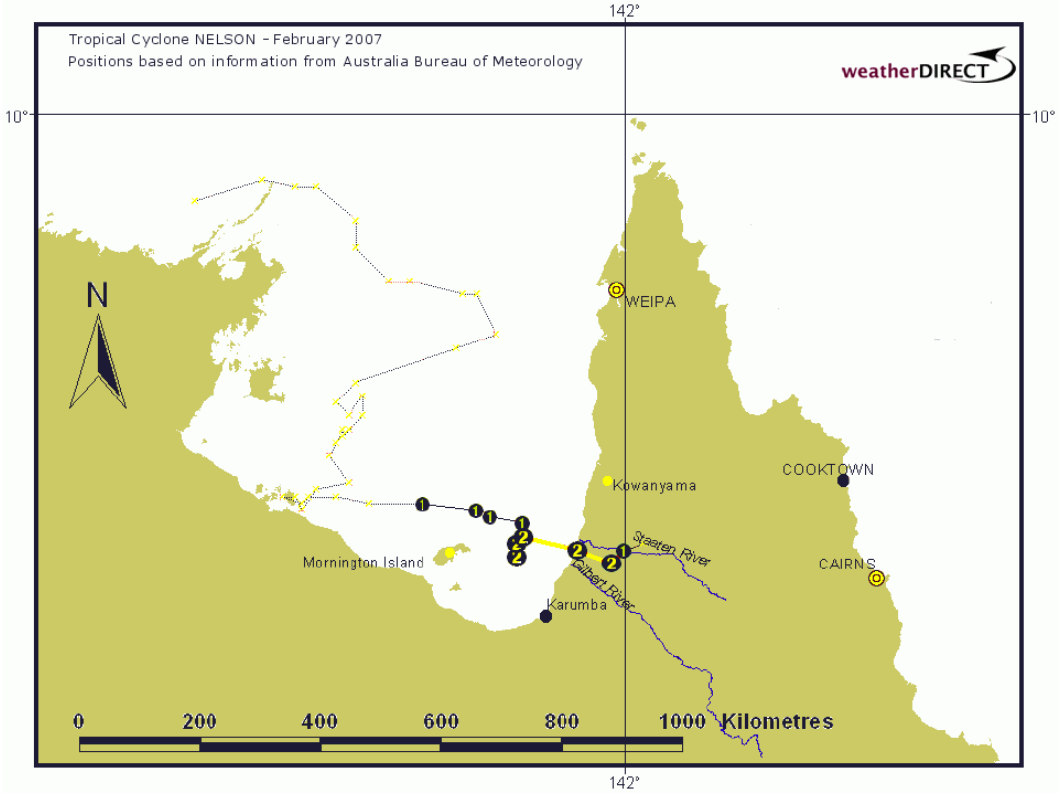
[5] Tropical Cyclone Nelson intensified to a Category 2 Tropical Cyclone on 6 February 2007 and continued in a generally East / East Southeast direction. and crossed the

1 Exhibit 78.
2 Exhibit 77.
3 Exhibit 108.

Coast between Karumba and Kowanyama just south of the Gilbert River mouth on 7 February 2007. It then moved inland in an East South Easterly direction while gradually weakening before it entered the Coral Sea near Cairns and moved steadily away from the Queensland coastline in a South Easterly direction.

[6] Information provided by the Bureau of Meteorology indicates that Tropical Cyclone Nelson was at its most intense between 1900 hours on 6 February 2007 and 0700 hours on 7 February 2007

[7] The track of Tropical Cyclone Nelson is shown in the graphic below:



[8] The track of Tropical Cyclone Nelson confirms Mr Shepherd's evidence that "cyclones in the Gulf can move very erratically".[4]

[9] The *track* of Tropical Cyclone Nelson is, of course, different from its expected *path* from time to time. Accordingly, the imposition of the track of the voyage of the *Wunma* onto a figure of the track of the cyclone needs to be viewed with that

4 Exhibit 78, para 29.

qualification. But such an exercise is helpful in depicting the relative positions of the cyclone and the ship from time to time.

[10] Prior to the hearings, the Board produced graphic representations of Tropical Cyclone Nelson and the *Wunma* for this purpose, and they became Exhibit 7. Parts of Exhibit 7 seek to isolate the position of the tropical low/ tropical cyclone and the ship at critical times. The pages that formed Exhibit 7 are reproduced in the following Gallery.

Figure 1 - Tropical Cyclone Nelson and the *Wunma* – 3 to 6 February 2007 - Overview

Figure 2 - Tropical Cyclone Nelson and the *Wunma* - 0700 Hours - 3 February 2007

Figure 3 - Tropical Cyclone Nelson and the *Wunma* – 1900 Hours - 5 February 2007

Figure 4 - Tropical Cyclone Nelson and the *Wunma* – 0700 Hours - 6 February 2007

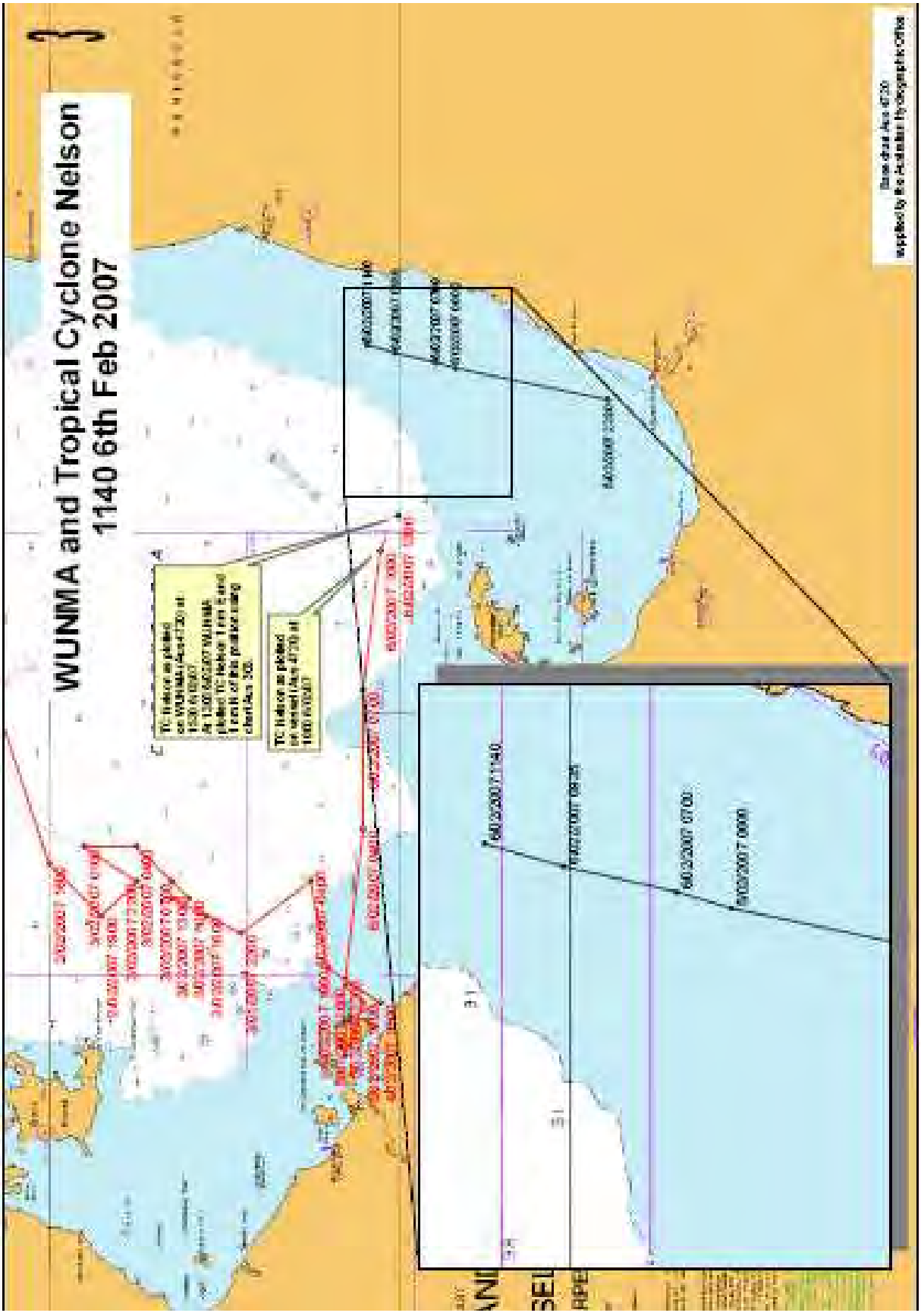


Figure 5 - Tropical Cyclone Nelson and the *Wunma* - 1140 Hours - 6 February 2007

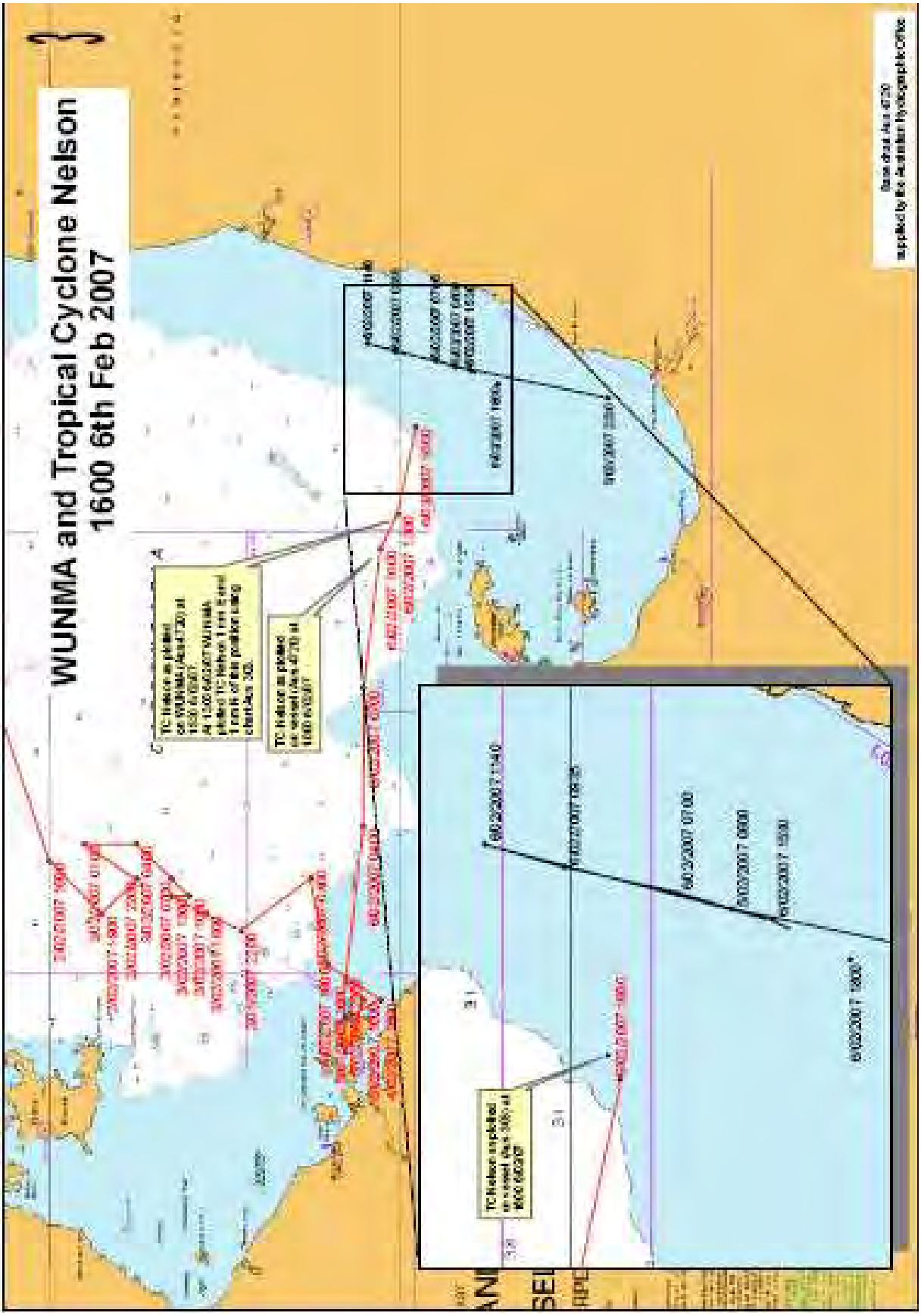


Figure 6 - Tropical Cyclone Nelson and the *Wunma* - 1600 Hours - 6 February 2007

WUNMA BOARD OF INQUIRY

CHAPTER 11 THE COURSE OF EVENTS

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CHAPTER 11 THE COURSE OF EVENTS

11.1 INTRODUCTION

[1] This Chapter examines the course of events from Monday, 29 January to Wednesday, 7 February.

11.2 MONDAY, 29 JANUARY 2007

[2] At 2120 hours on 29 January, loading of the first parcel of cargo into the hold of the *Wunma* commenced.[1]

11.3 TUESDAY, 30 JANUARY 2007

[3] The export vessel *Ernst Oldendorff* is reported to have arrived at the Roadstead at 0854 hours on 30 January.[2] At 1140 hours, loading of the first parcel of cargo (5,004 tonnes) on the *Wunma* was completed and at 1515 hours, the *Wunma* departed the Wharf for the export vessel[3] and, at 1755 hours, the *Wunma* was secure alongside.

[4] A hold survey was conducted and this was completed by 1810 hours. Thereafter, transfer of the cargo to the export vessel commenced and was completed at 2230 hours.

[5] The *Wunma* departed for Karumba at 2245 hours.[4]

11.4 WEDNESDAY, 31 JANUARY 2007

[6] The *Wunma* arrived at the Wharf at 0100 on 31 January.[5] Thirty minutes later, the loading of the second parcel of cargo (5,002 tonnes) commenced.[6] This was completed at 1130 hours and the *Wunma* departed the Wharf at 1649 hours.[7]

[7] At 1930 hours, the *Wunma* arrived alongside the *Ernest Oldendorff* and the transfer of cargo began at 2310 hours.[8]

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1 Inco Shipping Summary; Exhibit 26.
2 Exhibit 26.
3 Exhibit 26.
4 Exhibit 26.
5 Exhibit 26.
6 Exhibit 26.
7 *Ibid*.
8 Exhibits 26 and 86.

11.5 THURSDAY, 1 FEBRUARY 2007

[8] Transfer of the cargo from the *Wunma* to the *Ernest Oldendorff* was completed at 0450 hours on 1 February. Five minutes later, the *Wunma* departed for Karumba.[9]

[9] The *Wunma* arrived back at the Wharf at 0645 hours and commenced loading the third parcel of cargo (5,005 tonnes) at 0719 hours. Loading was completed by 1620 hours.[10]

[10] The *Wunma* departed the Wharf at 1830 hours and was secure alongside the export vessel by 2230 hours. Transfer of the third parcel of cargo began at 2235 hours.[11]

11.6 FRIDAY, 2 FEBRUARY 2007

[11] By 0310 hours on 2 February, transfer of the third parcel of cargo to the export vessel was completed.[12]

[12] At 0330 hours, the *Wunma* departed for Karumba.[13] However, at 0420 hours the *Wunma* dropped the starboard anchor at a position some nine nautical miles from the Fairway Beacon.[14] Nothing is recorded in the deck log about why the ship anchored. Captain Seal stated that a decision was taken not to load, due to a tropical low in the South West corner of the Gulf, until "the track of the cyclone went over land".[15]

[13] There are a number of notations in the deck logbook about the weather. Between 0330 hours and midnight on 2 February, the logbook records that the barometer was steady and that the vessel had a long low swell on the beam. Wind directions varied from South East to South South East, up until 1600 hours, and between Beaufort Force 2-3 (4-10 knots). From 2000 hours until 2200 hours, the wind direction was noted to veer, from South South East to the South, and the wind strength was noted to have increased to Beaufort Force 4-6 (11-27 knots). By midnight the wind had backed to the East, Beaufort Force 5-6 (17-27 knots) with passing squalls and heavy rain.[16]

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9 Exhibits 26 and 86.
10 Exhibits 26 and 86.
11 Exhibits 26 and 86.
12 Exhibits 26 and 86.
13 Exhibits 26 and 86.
14 Deck Log – Exhibit 86.
15 Statement of Captain Seal - 26 February 2007; Exhibit 18.
16 Exhibit 86.

[14] The record of the Operational Review Meeting that occurred on the morning of Friday, 2 February[17] records as the Key Issue: "Cyclone in Gulf effecting (sic) shipping". The document noted that the *Wunma* did not comply with the program and recorded:

> "Wunma completed 3rd load but due to strong winds She can not enter channel safely. The Captain has anchored in the Gulf and will re-assess the situation as the weather becomes clearer."

The respective statements of Mr Mewett[18] and of Mr Gurr[19] state that the *Wunma* returned to Port on 2 February. But the ship's deck logbook records that the ship remained at sea throughout 2 February.

11.7 SATURDAY, 3 FEBRUARY 2007

[15] Very little information was recorded in the deck logbook for 3 February. At 0420 hours the *Wunma* commenced heaving up the anchor and, at 0515 hours, the anchor was aweigh. By 0805 hours, the ship had returned to the Wharf.[20]

[16] In accordance with the usual, daily routine, an Operational Review Meeting would have commenced at 0745 hours.[21] The "Port Daily Coms Meeting" record for that meeting indicates that the Zinifex Duty Manager was Mr Gurr (in Mr Mewett's absence) and that Mr Tonkin attended the meeting. The document records in respect of Safety/Environmental matters: "Ensured lockdown of wharf for cyclone prep". Amongst the matters planned for 3 February were "Cyclone preps". In stark contrast, in respect of the ship the following was planned for 3 February:

> "Load & export 4 of 5 MV Ernst Oldendorff."

[17] In their respective statements, Mr Mewett[22] and Mr Gurr[23] stated, in identical terms based upon the relevant minutes of the Operational Review Meetings that:

> "Prior to the incident, it (the Wunma) was last in an unloaded state on 3 February, but the decision to load on 3 February was made on 2 February."

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17 Statement of Mr Mewett, Exhibit 47, Annexure 7. The date on the document is 1/02/2007 and this reflects the fact that the purpose of the meeting on the morning of Friday, 2 February 2007 was to review the operations that had occurred the previous day and to plan operations for 2 February.

18 Exhibit 47; para 75(b).

19 Exhibit 55; para 9(b).

20 Exhibit 26.

21 Mr Mewett; T.399.

22 Exhibit 47; para 75(c).

23 Exhibit 55; para 9(c).

The minutes do not indicate when the decision to load on 3 February was made. At the time of the Operational Review Meeting on the morning of 2 February the ship was at sea and weather conditions uncertain. If a decision was made on 2 February to load on 3 February then the evidence is unclear about who made the decision and when it was made. The record of the Operational Review Meeting that occurred on the morning of 3 February indicates that there was a plan to load the ship that day. The record for that day also records that there was to be a "Weather watch"

[18] The track of the tropical low that was to become Tropical Cyclone Nelson from 1600 hours on 2 February to 0700 hours on 3 February is represented in a graphic[24] appearing at the end of the previous Chapter .

[19] At 0920 hours the loading of a fourth parcel of cargo (5,005 tonnes of concentrate)[25] commenced, and was completed at 1800 hours.

[20] During the loading procedure at 1339 hours, Captain Seal received a group email from Mr Gurr of Zinifex which provided weather information from the BOM.[26] Attached to that email was a "threat map" which provided a visual representation of the position of the Tropical Low at 1000 hours that day and its predicted course. As Captain Seal recalled, it indicated that there was a low out to sea headed in a generally South West by West direction.[27] Captain Seal agreed that "much more precise information" than threat maps is available from the BOM.[28] He said in his evidence that when alongside he "would have" viewed all aspects of the information[29] but was unable to be precise about the weather information that he viewed on 2 and 3 February and when he viewed it.

[21] Loading was completed at 1800 hours and the *Wunma* departed the Wharf at 1830 hours.[30] On arriving at the export vessel, conditions were deemed unsuitable for cargo transfer and the ship anchored to wait for conditions to abate. The starboard anchor was let go at 2330 hours.[31] No weather conditions were reported in the deck logbook for this day.[32]

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24 Exhibit 7.
25 Exhibits 26 and 86.
26 Exhibit 22, Captain Seal; T.121.
27 Captain Seal; T.121.
28 *Ibid*.
29 *Ibid*.
30 Exhibits 26 and 86.
31 Exhibit 86.
32 Exhibit 86.

[22] Mr Tonkin spoke to Captain Seal by telephone as Mr Tonkin had been checking weather predictions over the internet. They "discussed what options were available to ensure the safety of the *Wunma* and her crew and also the environmental situation".[33]

11.8 SUNDAY, 4 FEBRUARY 2007

[23] The *Wunma* remained at anchor throughout the morning of 4 February.

[24] The deck logbook records that at 0200 hours the wind was from the East, Beaufort Force 4-5 (11-21 knots), with moderate seas. Similar wind and sea condition observations are recorded at 0400 hours and 0800 hours.

[25] At 1206 hours, the dirty water tanks were recorded in the deck logbook as being full and the ship commenced to heave up the anchor at 1224 hours. In the "Remarks" section of the deck log, the following was recorded:

> "V/L returned to port due to bad weather - strong winds & rough seas (3.5m swell)."[34]

[26] By 2110 hours, the *Wunma* was all fast at the wharf. The dirty water tanks were later discharged to shore.

[27] At 2312 hours Captain Seal sent an email to various persons at Zinifex and to others, including Mr Tonkin. It advised that the *Wunma* would "most probably sail tomorrow night in order to be at sea in case of a cyclone, but is unlikely to be able to discharge her cargo".[35]

11.9 MONDAY, 5 FEBRUARY 2007

[28] Nothing is recorded in the deck logbook for the first 18 hours of 5 February.

[29] Captain Seal in his statement to MSQ said that the cyclone had "crossed back into the Gulf in the morning" and that the "forecast was for the low to pass directly over Karumba". [36] He was mistaken about the first matter as the centre of the low did not cross over land.

[30] Mr Tonkin recalls:

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33 Supplementary Statement of Mr Tonkin - 22 August 2007; Exhibit 57; para 9.

34 Statement of Captain Seal - 26 February 2007; Exhibit 18. Supplementary Statement of Mr Tonkin - 22 August 2007; Exhibit 57; para 10.

35 Exhibit 25.

36 Statement of Captain Seal - 26 February 2007; Exhibit 18.

> "When the *Wunma* came in, I had several discussions with Dean after he had got some sleep. We discussed what we were going to do and looked at the cyclone procedures. Dean would have taken into account the tidal restrictions for entering and leaving the Norman River as this is necessary to ensure there is adequate water for the *Wunma* to traverse the Karumba Channel. Weather forecasts and the *Wunma*'s cyclone procedure, which is stipulated for the *Wunma* to leave Karumba, was also discussed. We both felt that there was no option but to sail and Dean subsequently took the *Wunma* out of Port on the Monday evening about 7pm and I understand his intention was to hug the coastline heading North to Weipa. His intention was not to actually arrive in Weipa but to sail in that direction."[37]

[31] Captain Seal decided to head to sea with it in mind to assess the sea conditions at the Fairway Beacon to determine whether they were suitable for discharging the cargo into the *Ernst Oldendorff* and, if they were not, to then proceed to Weipa.[38]

[32] The position of the tropical low that was to become known as Tropical Cyclone Nelson as at 1600 hours on 5 February 2007 is represented in the graphic[39] appearing at the end of the previous Chapter .

[33] At 1830 hours, the bridge gear was tested and, at 1900 hours, the *Wunma* left the wharf. At approximately 2030 hours, she passed the Fairway Beacon.[40] Captain Seal formed the opinion that the weather conditions were unsuitable for discharging the cargo. According to his statement[41] he determined to proceed to Weipa.

[34] The *Wunma* proceeded in a Northerly direction but, remarkably given that the purpose of the voyage was to avoid the cyclone, Captain Seal chose not to engage the main engine. Rather, only the outboard engines were engaged. This was probably for the reason that the *Wunma* did not have full bunkers.[42]

[35] Entries in the deck logbook for 5 February 2007[43] record only one weather observations. That was recorded at midnight and was that the wind was from the East, Beaufort Force 6 (22-27 knots) and that the ship was rolling and pitching easily in rough sea and low swell. The barometric pressure was recorded as 1,004 mb.

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37 Supplementary Statement of Mr Tonkin - 22 August 2007; Exhibit 57; paras 11 and 13.
38 Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18.
39 Exhibit 7.
40 As to the position of the Fairway Beacon, Thompson; T.38 and Exhibit 13.
41 Exhibit 18.
42 Statement of Mr Fisher – 2 August 2007; Exhibit 41, paras 30-34; Statement of Mr Leeson; Exhibit 45, para 6.
43 Exhibit 86.

11.10 TUESDAY, 6 FEBRUARY 2007

[36] The *Wunma* maintained her Northerly course during the morning of 6 February.

[37] Ms Osmand was the Deck Officer on watch from midnight to 0400 hours.[44]

[38] By the end of her watch the winds had built up to approximately 40 knots and were coming from an easterly direction and the seas were rough.[45] Ms Osmand recalls that the barometer was "falling steadily", but not greater than normal daily patterns. She said that more observations were needed in this regard and that she mentioned this to the Chief Mate, Mr Davis, when she handed over the watch.[46]

[39] After handing over her watch, Ms Osmand retired to her quarters and slept until 1100 hours on 6 February.[47]

[40] Mr Davis was on watch between 0400 and 0800 hours. Due to problems that he encountered with the ship's communications systems, during his watch Mr Davis did not receive any weather information.[48]

[41] Captain Seal came back onto the bridge between 0630 hours and 0700 hours and remained in charge of the ship's navigation throughout that day.

[42] The position of Tropical Cyclone Nelson and the *Wunma* at 0700 hours on 6 February 2007 is represented by a graphic[49] appearing at the end of the previous Chapter.

[43] At 0739 hours on 6 February, the low pressure system which had been present in the Gulf was named Tropical Cyclone Nelson by the BOM.[50] Cyclone Warnings and Coastal Waters Warnings and other information about weather and sea conditions were issued by the BOM that morning.[51] Remarkably, the *Wunma* did not seek to access them from the BOM or the Designated Person Ashore after telephone calls to Mr Tonkin went unanswered.

[44] Up until 0800 hours, the wind direction was Easterly and the deck logbook records wind speeds of 20-35 knots with moderate to rough seas and a moderate beam swell

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44 Ms Osmand; T.217-271.
45 Statement of Ms Osmand - 16 August 2007; Exhibit 38, para 43.
46 *Ibid*, para 41.
47 Statement of Ms Osmand - 16 August 2007; Exhibit 38, para 44.
48 Mr Davis; T.681
49 Exhibit 7.
50 Statement of Mr Callaghan; Exhibit 77; Attachment 1; p.3 of 14.
51 Statement of Mr Callaghan; Exhibit 77.

with heavy rain throughout. The barometric pressure during the morning was steady at around 1001 mb.

[45] Throughout the morning, runoff water was accumulating in the well deck. After observing accumulated water on the well deck, Mr Caletti went straight to Captain Seal to advise him.[52]

[46] According to the statement provided by Captain Seal to MSQ,[53] at around 1100 hours, he and the Second Mate opened the deck drains to sea to allow the run-off water to flow directly overboard. But the Second Mate says she did not come onto the bridge until around noon and after the ship had turned south. In his oral evidence Captain Seal confirmed that the deck drains were opened to sea.[54]

[47] At 1127 hours, Captain Seal received an email from his wife. It had attached to it a threat map depicting the position and direction of the cyclone at 0700 hours. By this time, the *Wunma* was approximately 75 nautical miles to the north of Karumba[55] and, according to Captain Seal, proceeding at about 4.5 knots. After receiving the email from his wife, Captain Seal believed that the cyclone had "picked up speed" and changed direction further to the North.

[48] Captain Seal recalled that before turning South, the wind had come around to the port bow. At 1140 hours, Captain Seal decided to take a reverse course, increase speed and make good a course for where he understood the South West quadrant of Tropical Cyclone Nelson to be.[56] The main engine, which had not been engaged, was brought online for this manoeuvre and a decision was made by Captain Seal to leave it engaged in order to steam under full power.

[49] The deck logbook records that, by 1200 hours, the wind had backed to North by West, however, no wind speeds were recorded for this time and the barometric pressure had fallen to 997 mb.

[50] By 1200 hours, water had accumulated in the well deck to a depth of approximately 50 mm and, soon after, permission was sought and granted by Captain Seal to pump the dirty water tanks overboard. Attempts were also made to open the well deck

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52 Exhibit 61, Statement of Mr Caletti.
53 Statement of Captain Seal - 26 February 2007; Exhibit 18.
54 Captain Seal; T.173 – the reference in the transcript should be 11am, not 11pm.
55 Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18.
56 *Ibid*.

sump drain, but it was blocked.[57] The First Engineer, Mr Leeson, tried to clear it with a steel cable without success.[58] Two pumps were set up in the well deck but one failed and the other lacked suction. In the meantime, the water level in the well deck continued to rise and was estimated to be about half a metre by 1300 hours.

[51] At about 1300 hours, Mr Leeson was in the mess room located below the wheelhouse when Captain Seal asked him to come up to the cargo control room. The cargo control room is located at the aft end of the wheelhouse on the starboard side.

[52] On viewing the closed circuit TV monitors of the cargo hold, Mr Leeson saw that the water level in the well deck had risen considerably and it also appeared that the pump was not moving any of the water. Mr Leeson and Mr Caletti went aft and found that the pipes in the sump drain were blocked with concentrate. The two men worked to clear the pipe and Mr Leeson decided to change over to the other pump on the system, but found that it would not work. He opened up the pump and saw that there was a problem with the diaphragm which he was able to remedy in order to make the pump operational. Mr Leeson and Mr Caletti made another attempt to clear the sump drain pipe and, whilst it cleared, would still not drain any water. By this time, the well deck had been flooded to a depth of about 0.5 m and, for this reason, he and Mr Caletti moved the bobcat into the cargo hold. The Second Mate, Ms Osmand together with the Leading Hand, Mr White, assisted Mr Leeson and Mr Caletti.

[53] Accumulated water had reached the level where it had encroached past the "barn doors' and into the cargo hold to a level of approximately 60 cm or 70 cm. Captain Seal recalls that this occurred at 1400 hours.[59] This meant that there was in effect a "wedge of water" at the stern of the vessel.[60]

[54] By 1415 hours, the high level water alarm on the 5 tonne dirty water tank sounded and was "staying on for long periods of time". By this time, the Chief Engineer, Mr Fisher recalls that the well deck was flooded to a level of about one metre and that the water level was lapping the bottom of the watertight doors to both the emergency generator room (located aft on the starboard side) and the hot workshop (located aft

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57 Statements of Mr Leeson - 15 February 2007 and 2 August 2007; Exhibit 45.
58 Statements of Mr Leeson - 15 February 2007 and 2 August 2007; Exhibit 45.
59 Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18, p.16.
60 Captain Seal; T.243-244. Exhibit 35.

on the portside opposite the emergency generator room). Mr Fisher also noted that seas were shipping over the stern door. Ms Osmand witnessed this and reported it to the Master.

[55] The *Wunma* made a course change at 1530 hours to the South South West and then a substantial course change to the West at 1800 hours, the motivation for these changes being concerns about the ship being pooped.[61]

[56] The relative positions of the *Wunma* and Tropical Cyclone Nelson as at 1600 hours is represented by a graphic[62] appearing at the end of the previous Chapter.

[57] Between 1200 hours and 1600 hours, the wind was recorded to be from the South East at 25 knots.[63] The barometer fell, from 997 mb at 1200 hours to 993 mb at 1800 hours. By 1800 hours the ship was reported to be pitching and rolling in very heavy confused sea and swell.

[58] At 1800 hours, a notation was made in the deck logbook to the effect that the ship's courses were various and to the Master's orders (CVTMO).[64] By about this time, the water in the well deck was about one third of the way up the watertight door to the emergency generator room.[65]

[59] At 1804 hours, Captain Seal forwarded an email to Mr Tonkin (copied to Mr Peter Iuliano and Captain Ives) which was in the following terms:

> "Just letting you know we are traveling OK. Have a fair bit of freshwater runoff down the tail end approx 1m deep. Ship in loaded condition."[66]

[60] This was the only communication Inco received from the ship prior to Captain Seal telephoning Captain Ives later that evening to advise that the vessel was in distress.[67]

[61] At around 1900 hours, a sea was taken over the stern and sea water was seen to enter the cargo hold on the port side through holes in canopy.[68] By this time, the water level in the well deck had risen to approximately 1.8 metres.[69]

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61 Captain Seal; T.186.
62 Exhibit 7.
63 Exhibit 86.
64 Exhibit 86.
65 Statement of Mr Fisher – 2 August 2007, Exhibit 41, para 42.
66 Attachment AD6 to the Statement of Captain Dally - 19 August 2007; Exhibit 53.
67 Supplementary Statement of Captain Dally - 19 August 2007; Exhibit 53; para 11.
68 Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18.
69 Statement of Captain Seal - 2 August 2007; Exhibit 18, p.16.

[62] Shortly thereafter, Captain Seal decided to alert the Rescue Coordination Centre in Canberra ("RCC") to inform it of the position of the *Wunma* and the ship's general condition.[70] Inco was then contacted by Captain Seal, and an Emergency Response Team was formed in the office of Inco in Sydney which comprised, amongst others, Captain Dally, Captain Ives and Mr McDonald.[71] Mr McDonald kept a diary of those events.[72]

[63] According to Captain Seal:

> "The main communication was with AMSA SER Centre, Canberra and Inco Head Office, Sydney. Initial situation was communicated to SER Centre at 1930 on Feb the 6th. I don't recall the exact time I initiated communications with Inco, but it was around the same time.
>
> The information communicated to SERS included the number of POB, L pos'n and course and nature of distress. I spoke with the Sydney Office in more detail regarding the level of water in the vessel, water in the engine room and conditions.
>
> …
>
> The advice given by the SER Centre was the position of the rescue helicopters and that they would not be able to conduct operations at night in those conditions.
>
> The advice given by the Office, in consultation with Lloyd's and with the data supplied, was that the vessel was still in a stable condition at which point the SER Centre contacted me and I agreed to downgrade it to a Pan Pan."[73]

[64] Attempts were made to heave-to, but water was still coming in over the stern and, in Captain Seal's opinion, the ship was still "wallowing".[74]

[65] At approximately 2004 hours, the engine room high bilge alarm under the centre main engine sounded. Shortly afterwards the ship lost all essential circuits, an event that was recorded in the deck logbook as a "blackout"[75] occurring at 2010 hours. There was a loss of propulsion on the centre and starboard engines and, in consequence, the port engine was running on idle only. The ship also lost all navigation aids, including compass, radar, steering and engine control as well as any

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70 Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18.

71 Statement of Mr McDonald 30 July 2007; Exhibit 50; paras 4 and 5. And see: Statement of Captain Dally - 1 August 2007; Exhibit 53; paras 37-38. And see: Statement of Captain Dally - 1 August 2007; Exhibit 53; paras 38-40. Captain Dally; T.544-545.

72 The Annexure to Mr McDonald's Statement - 9 August 2007; Exhibit 50. Statement of Captain Ives - 6 August 2007; Exhibit 51; para 12. Captain Ives; T.482-484.

73 Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18, pp.16 and 17.

74 Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18.

75 Exhibit 86.

communication systems that were not backed up by battery. This was caused by the ingress of water into the emergency generator room and the arrangement and location of switchboards.

[66] At the time of the blackout, Mr Fisher and Mr Leeson were both on the aft deck. Mr Leeson recalls that there was at least two metres of water over the well deck and that the water level was approximately one third of the way up the watertight doors for both the emergency generator room and the hot workshop. He recalls that the watertight door to the emergency generator room appeared to be loose, but that he and Mr Fisher were unable to "get down to tighten the door due to the depth of water and cylinders and timber crashing from side to side in the water".

[67] Mr Fisher and Mr Leeson worked to isolate the emergency switchboard from the main switchboard. As a result, some power was restored but steering control to the main engine was lost. Thereafter, until approximately 2200 hours, steering was carried out from the emergency steering flat with the main engine clutched in.[76]

[68] Throughout this period, Mr Fisher moved between the wheelhouse and the engine room. By 2030 hours, water was flooding into the engine room from the starboard steering flat. Captain Seal granted permission to commence pumping water from the engine room bilges overboard.[77] By this time, Captain Seal had announced an evacuation call over the ship's public address system.

[69] At 2100 hours, a Mayday message was sent after Captain Seal noticed that seawater was still coming in over the stern. This message was later downgraded to a Pan Pan broadcast.[78] By this time, the water that had collected in the well deck had risen to a level of approximately 2.2 metres and was noted to be at the "edge of the ramp".[79] It remained at that level until approximately 1130 hours on 7 February 2007 when it "dropped possibly 10 cm" due to the activity of the pumps that had been supplied from the Air Sea Rescue Aircraft.[80]

[70] At 2200 hours, Captain Seal decided to drop the starboard anchor after discussing the ship's predicament with Captain Ives. At that time, Captain Seal reported that:

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76 Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18.
77 Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18.
78 Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18.
79 Statement of Captain Seal - 2 August 2007; Exhibit 18, p.16.
80 Statement of Captain Seal - 2 August 2007; Exhibit 18, p.16.

> "Seawater was flowing backwards and forwards over the stern ramp progressively making the cargo heavier and increasing the stern trim."[81]

[71] At that time the *Wunma* was only about eight nautical miles from the theoretical centre of the cyclone, that is well within 30 nautical mile radius of the theoretical centre of the cyclone.

[72] At about 2215 hours, the Chief Engineer had a telephone conversation with Captain Ives over the satellite telephone system.

[73] At about 2230 hours, Lloyd's Register SERS in London were contacted by Inco and computer modelling of the *Wunma* was commenced to determine what, if any, consequences, there would be for the ship in her reported condition and, in particular, given the reported ingress of water into the well deck and cargo hold.[82]

[74] By 2300 hours, the engine room was flooded to a depth of about one metre at the aft end on the tank top and the starboard engine flywheel was picking up water and spraying it around the engine room. Mr Fisher, Mr Leeson and Mr Caletti then worked to reduce the water level in the engine room by pumping the bilges overboard.

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[75] Mr Fisher, Mr Leeson and Mr Caletti remained in the engine room, pumping down the bilges. At about 0200 hours, the ship blacked out again. As a result, and given that the battery backup for the satellite telephone was by around this time exhausted,[83] the main communication systems on the vessel failed. Captain Seal and Ms Osmand were in the process of attempting to transmit a message when the radio equipment in use made a "loud bang/hissing" noise and then "went dead".

[76] Once the main communication systems had failed, the *Wunma* was restricted to VHF radio communication and, by reason of the fact that such communications are restricted to "line of sight", the *Wunma* was restricted to communications with nearby shipping and, on their arrival, rescue aircraft.

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81 Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18.

82 Supplementary statement of Captain Dally - 19 August 2007; Exhibit 53; para 40.

83 Captain Seal; T.173.

[77] The *Ernst Oldendorff* had decided to depart the anchorage in view of the cyclone and proceed on voyage. Some time earlier it was out of contact.[84] The *Eastern Star*, an export vessel that had been at the anchorage waiting to load once the loading of the *Ernst Oldendorff* had been completed, was requested to assist. As a result, the *Eastern Star* left the anchorage and, at about 0300 hours, she was in sight of the *Wunma*,[85] standing off at a distance of between 5 and 8 nautical miles.

[78] In the meantime, Mr Fisher attempted once again to restore power. In this, he was partially successful after running a cable from a spare circuit breaker in the main switchboard to the control console and, at approximately 0300 hours, he managed to restore some power back to the monitoring and engine control system.

[79] Given the loss of direct communications with the *Wunma*, messages from Inco were conveyed to the *Wunma* through RCC and then via the *Eastern Star*. One message that was conveyed to the *Wunma* was that helicopter assistance would be "arriving during daylight hours".[86] The Master of the *Eastern Star* was a Chinese National and it appears that some difficulty was experienced by Captain Seal and other deck officers of the *Wunma* in understanding what information was being conveyed.

[80] By about 0430 hours, the water level in the engine room had been stabilized through the action of the bilge pumps.

[81] At 0424 hours, Captain Ives spoke to the operator at RCC Canberra and told the operator that if there was no power to the vessel and she continued to flood the ship should be abandoned. Further, Captain Ives told the operator that the computer modelling indicated that if the cargo liquidates, the vessel will "sink by the stern".[87]

[82] According to Captain Seal he received a communication via the *Eastern Star* to the effect that if the water level had reached halfway up the stern ramp, the vessel would eventually sink and the ship should be abandoned.[88] The water in the cargo hold at this time was more than halfway up the stern ramp. A notation in the deck logbook reads:

> "0615 Preparing to abandon ship."[89]

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84 Statement of Captain White - 5 September 2007; Exhibit 114; para 4.9.9.
85 Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18.
86 Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18.
87 Exhibit 23 and Captain Ives; T.485.
88 Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18, pp.20 and 21.
89 Exhibit 86.

[83] By 0700 hours, the crew had been informed that they were to abandon ship via helicopter rescue.

[84] Prior to 0815 hours, an air sea rescue plane arrived at the scene and unsuccessfully made an attempt to drop pumps to the ship.[90]

[85] Between 0930 hours and 1100 hours, a second attempt was made, the air sea rescue plane dropping four pumps, of which two were recovered and pressed into service by Mr Fisher who set the pumps up in the well deck.[91] The pumps had some effect, the water level in the well deck being observed by Captain Seal to have dropped approximately 10 cms to a level of 2.1 metres,[92] but the pumps had limited fuel supplies.

[86] The Master and crew were evacuated in two successive helicopter lifts that occurred at 1130 hours and 1300 hours respectively.[93] The first helicopter took Ms Osmand, Mr Shepherd, Mr White, Mr Rohrsheim and Mr Roll. The second helicopter took Mr Fisher, Mr Davis, Mr Leeson, Mr Caletti and Captain Seal.

[87] At 1227 hours, Inco's Emergency Response Team recorded advice that the ship still had no power, that Captain Seal was not sure how much water there was in the engine room, that the starboard anchor was down and that the engines were clutched in ahead and "holding nicely to anchor".[94]

[88] Before abandoning ship, Mr Fisher left the auxiliary generator running to allow the engine room bilge pumps to continue operating. [95]

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90 Exhibit 86. Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18.

91 Exhibit 86. Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18.

92 Statement of Captain Seal - 2 August 2007; Exhibit 18, p.16.

93 Statements of Captain Seal - 26 February 2007 and 2 August 2007; Exhibit 18.

94 Appendix I to Exhibit 114; Inco Ships Emergency Response Team hand Writeen NotesStatement of Captain White

95 Statement of Mr Fisher, Exhibit 40, para 68

11.12 GALLERY

Figure 1 - MF/HF Radio, 2 x SatComm C Units and 3 x Printers

Figure 2 - The GMDSS VHF Radio

Figure 3 - The Wunma - Waterline at the Base of the Stern Door

Figure 4 - Water in the Aft Well Deck

Figure 5 - The Hot Workshop Depicting Slurry Marks

Figure 6 - Inside the Emergency Generator Room

Figure 7 - Inside the Hot Workshop

Figure 8 - The Cargo Hold

Figure 9 - Bobcat Overturned in the Cargo Hold

Figure 10 - Debris in the Cargo Hold

Figure 11 - Port Side Gear Box

Figure 12 - Damage to the Canopy on the Port Side

Figure 13 - Port Tiller Flat

Figure 14 - Louvered Vent from the Emergency Generator Room

Figure 15 – Damage and Down Pipes and to the Port Side Deck