Investigation into the grounding of the Indonesian vessel NIAGA 46 on North West Point, Christmas Island, on 9 August 1996

MIIU

Report No 96

COMMONWEALTH DEPARTMENT OF TRANSPORT AND REGIONAL DEVELOPMENT

Contents

Navigation Act 1912
Navigation (Marine Casualty) Investigations
Investigation into the grounding
of the Indonesian vessel
NIAGA 46
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on 9 August 1996
Report No 96

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Sources of Information

Master and Officers Niaga 46

Harbour Master, Christmas Is.

Australian Maritime Safety Authority

Acknowledgement

Portion of chart Aus 608 reproduced by kind permission of the Hydrographic Office, RAN

Summary

At approximately 1600 hours on 8 August 1996, the Indonesian cargo vessel Niaga 46, arrived at Christmas Island, about 4.5 miles to the Northwest of Flying Fish Cove. The ship was due to berth at 0600 the following morning to load 7,600 tonnes of rock phosphate.

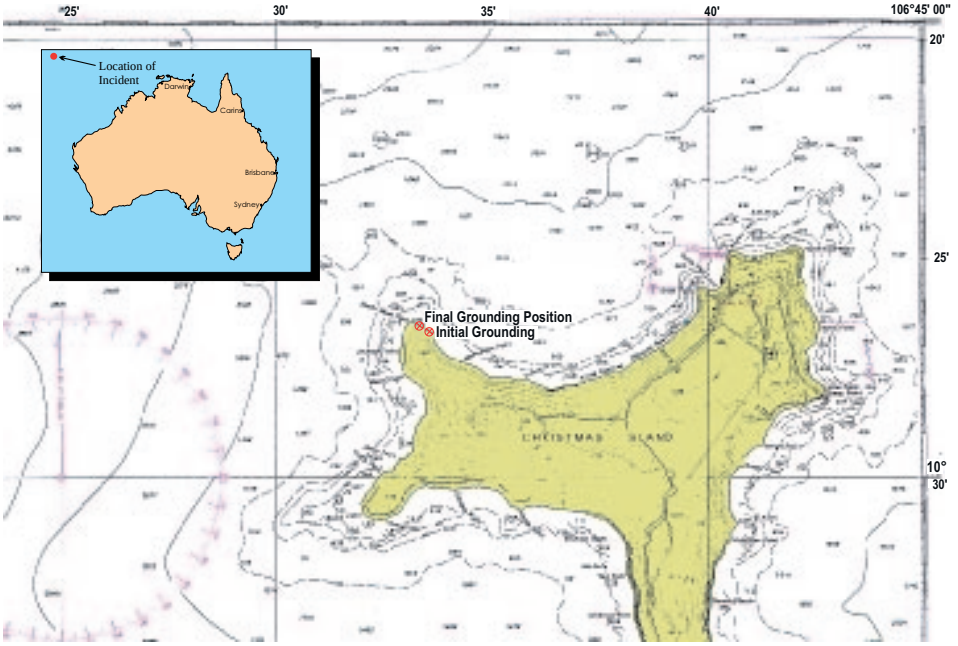
Christmas Island is "steep to" and ships do not anchor but drift while waiting to berth. Niaga 46 hove to in position with North West Point bearing 270° x 2.5 miles, to drift overnight. Sea watches were maintained and the engine was on ten minutes notice of readiness. The wind was blowing from a southerly direction at 17 knots and the anticipated current was west going at about 2 knots.

By 2132, the vessel had drifted west towards North West Point and the Third Mate decided to reposition the ship. At 2323, the vessel was repositioned about 2.5 miles due east of North West Point.

At midnight, the Second Mate had not arrived on the bridge so the Third Mate handed over the watch to the 12-4 apprentice and left the bridge at about 0005. The Second Mate arrived on the bridge at about 0010 and switched on the starboard radar to check the ship's position. The radar showed Niaga 46 as being close to the land east of North West Point. He rang the duty engineer and requested use of the engine. The engine was ready at 0039, however, before the Second Mate could manoeuvre clear of the land the ship grounded at 0047 about 6 cables east of North West Point.

At 0605, contact was made with the Harbour Master, Christmas Island, and he boarded the ship a little after 0700 on 9 August. The Harbour Master took charge of the refloating operation and, after a number of unsuccessful attempts, the vessel was refloated at 2300 on 9 August.

The vessel suffered extensive damage and was taken in tow to a repair port in Indonesia.



Portion of chart Aus 608 showing Christmas Island

Narrative

Niaga 46

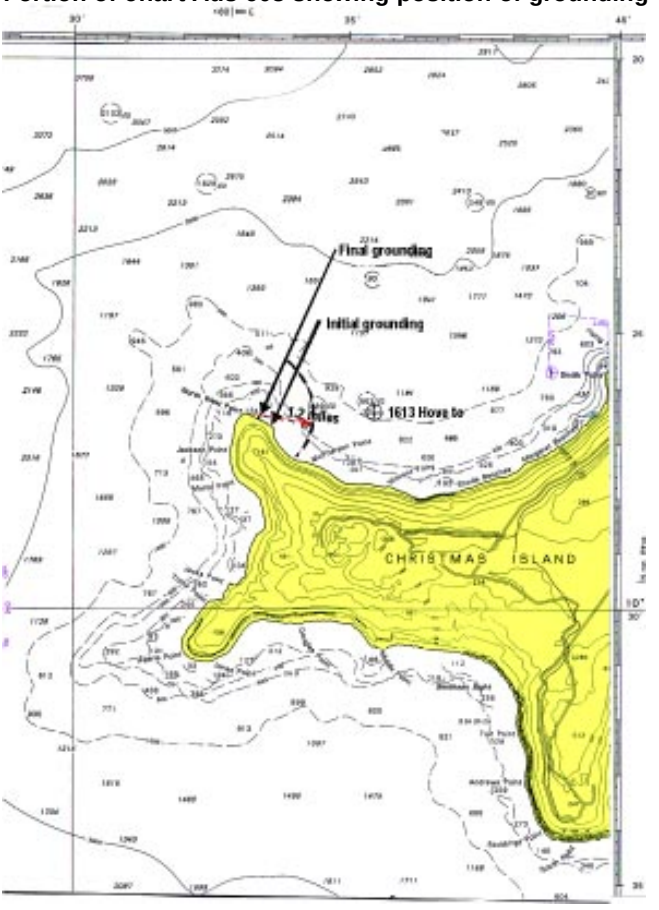
Niaga 46 is a two hold general cargo ship of about 7900 tonnes deadweight at a draught of 7.004 m. It was built in 1975 and launched as Columbo Lu and classed with Bureau Veritas. It underwent a number of name changes until it was transferred from the Panamanian flag to Indonesian owners and flag and named Niaga 46 in 1989. Its classification society was transferred from Bureau Veritas to Biro Klasifikasi Indonesia. It is 115.65 m in overall length, has a beam of 17.40 m and a moulded depth of 8.7 m. The engine is a 6 cylinder Mitsubishi marine diesel developing 3357 kW driving a fixed pitch propeller and providing a service speed of 10.5 knots.

The vessel is crewed by 25, with a Master, three mates, a radio officer, four engineers, one electrical officer, 13 ratings and two apprentices. A traditional sea watch system was maintained, with the Third Mate keeping the 8-12 watch, the Second Mate the 12-4 watch and the Mate keeping the 4-8 watch.

The Incident

Niaga 46 sailed in ballast from Tanjung Priok at 2100 on 6 August 1996, bound for Christmas Island to load 7,600 tonnes of bulk phosphate. The vessel gave an estimated time of arrival of 1600 local time on 8 August.

Portion of chart Aus 608 showing position of grounding



The ship completed its sea passage at 1324 on 8 August, about 330° x 9.5 miles from Flying Fish Cove. At about 1500, the ship contacted the Harbour Master by VHF radio to advise that it had arrived. Due to the short notice of its early arrival the Phosphate Company decided that the vessel should wait and berth at 0600 the following morning, as originally planned.

There are no wharves for trading ships at Christmas Island and vessels moor to buoys in Flying Fish Cove. The Island is "steep to" on all sides and vessels waiting to berth drift off the Island. The Master, who had joined Niaga 46 on 17 July, had been Master when the vessel last visited Christmas Island on 22 July 1996. On that occasion too, the vessel had had to drift off the Island waiting to berth.

On 8 August, the Master decided to heave to with North West Point bearing 270° x 2.5 miles, the same position as on his previous visit on 22 July. The engine was stopped at 1613 and an entry in the engine room log book notes "finished with engines" also at 1613. The vessel's draught was about 0.36 m forward and 4.83 m aft.

The Master noted that the weather was fine and clear with good visibility. The wind was from the south to south-east at about 17 knots with a slight to moderate sea. The Master estimated the current as west going 2 to 2.5 knots.

The radars were turned off, but were available to the officers on watch. It was understood by the officers that should the ship get within one mile of North West Point, the engine was to be used to reposition the ship miles east of North West Point.

Deck and engine room watches were maintained. The deck log book contains no entry for the period 1600 to 2000, other than the vessel was waiting to go alongside and was drifting - no weather or other details were noted.

At 2000, the Third Mate and an apprentice took over the bridge watch and a rating was also on duty. The Third Mate stated that he had the port side radar operating throughout the watch and used it to check the ship's position. The starboard side radar was kept on standby. Deballasting was started in the evening to ready the ship for berthing the following morning.

At 2132, the engine was put to slow ahead, followed by half ahead. A note in the log book at 2140 indicated that the ship was being manoeuvred back to its position 270° x 2.5 miles from North West Point. The engine was put to full ahead at 2146 and remained on full manoeuvring speed until 2313, when the engine speed was reduced to half ahead and then, at 2321, to slow ahead. The engine was stopped at 2323 and a note made in the engine room log book giving the same time for "finished with engines".

The Second Mate was called for his watch at about 2330 and again closer to midnight. The apprentice keeping the 0000-0400 watch arrived on the bridge a little before midnight and the apprentice on the 2000 to 2400 watch left the bridge at 0002 and looked in on the Second Mate who, by this time was awake but was still in his cabin. The Second Mate had not arrived on the bridge by 0005, so the Third Mate left the bridge, having switched off the starboard radar and switching the port radar to "standby". He explained the status of the radars to the apprentice and showed him the midnight position, which was entered in the log book as 10° 26.4' South 105° 35.5' East. No weather details were entered after the time of arrival off Christmas Island, but the Third Mate recalled that there was a strong easterly breeze.

The Second Mate arrived on the bridge some time between 0007 and 0010 on 9 August and found the apprentice alone. He stated that he felt that the wind had increased in intensity and immediately decided to check the ship's position. He recalled that both radars were switched off. He did not talk to the apprentice, but switched on the starboard radar and waited for it to warm up. The apprentice left the bridge to check the soundings in the ship's ballast tanks.

After about three minutes, the Second Mate switched the starboard radar from standby to run and checked the ship's position. He noted that the ship was 1.2 miles east to south east of North West Point. At

a time put by the Second Mate as 0010 (and by the Third Engineer as approximately 0030) the Second Mate telephoned the engine room and told the Third Engineer that the ship was very close to North West Point and to prepare the engine for "standby". At 0027 a rating lookout arrived on the bridge. At 0039, the Third Engineer telephoned the Second Mate telling him that the engine was ready for standby.

The Second Mate stated that he rang dead slow ahead and ordered that the wheel be put hard to starboard at 0040. The Quarter Master saw rocks close to port and called the Second Mate's attention to them. The Second Mate rang stop on the ship's telegraph and then dead slow astern.

The engine room manoeuvring book has an entry of dead slow ahead at 0040, followed by stop at 0044, dead slow astern at 0044:15 followed by stop at 0047.

The ship grounded on a westerly heading close east of North West Point at 0047, with the tide, based on tidal predictions, 1.1 m above datum and ebbing.

Refloating

The Second Mate immediately sent the lookout to fetch the Master. The Master, who was in the saloon, felt the ship ground and rushed to the bridge. The ship by this time was rolling heavily.

The Master stated that attempts were made throughout the night to refloat the vessel, and the engine room movement book shows that between 0109 and 0135 a series of dead slow ahead and some dead slow astern movements were ordered. At 0141 the engine was put full astern for seven minutes and to full ahead at 0212 for twenty five minutes before further full ahead burst on the engine from 0244 to 0301, about the time of the predicted high water at 1.2 m above

datum. Further engine movements were used, mostly slow and half ahead with one five minute period when the engine was run at full ahead on the falling tide. The series of movements stopped at 0613.

The Master attempted to contact the Harbour Master on a number of occasions. Contact was eventually established at about 0605 when the Harbour Master called the ship on VHF and was told that the ship was aground at North West Point. The wind at this time was east-south-easterly at 5 to 10 knots.

The Harbour Master immediately informed other authorities on the Island and then, at about 0620, set off for the casualty aboard a cargo barge in the company of a small pilot tender. The Harbour Master arrived off Niaga 46 shortly after 0700, finding the vessel about 600 m east of the Point, aground port side to the cliff. The vessel was rolling slightly, "pressed hard up against the cliff". The Harbour Master boarded the ship and the Master presented him with the briefest of descriptions, to the effect that the ship had grounded about 0030 local time on 9 August during the Second Mate's duty, whom he believed had been asleep. The Master asked the Harbour Master to arrange for tugs to pull the vessel clear of the reef.

The only contemporaneous record kept of the activities to refloat the ship were contained in the engine room movement book. No record of the transfer of weights or the condition of the ship was kept, nor were any tank soundings entered in the log book.

The Harbour Master took effective charge of the refloating operation. He asked for the tank conditions, but neither he nor the ship made a record of the soundings. However, he recalled the following:

Tank	Status
Fore Peak	Full Water Ballast
No.1 DB	Full Water Ballast
No. 2 Ballast	Full Water Ballast
No. 3 P&S DB	Full Water Ballast
After Peak	180 tonnes Fresh Water
No.4 Cross Tank	170 tonnes fuel oil

The Harbour Master ordered that tow lines should be made ready and that barges should be utilised as towing vessels. He also instructed that the contents of no.3 double bottom port and starboard tanks should be pumped out. The only pump available for this task was the general service pump which had a capacity of 25 tonnes/hour.

Four attempts to refloat the vessel were made between 0740 and 1000, with the barges pulling and using the rudder and main engine. Although the attempts were unsuccessful the ship did pivot to starboard and the Harbour Master was able to align the ship head to swell and reduce the rolling motion. It was later reported that the steering gear had been damaged as a result of the attempts to refloat the vessel.

Some oil pollution, apparently from no. 3 double bottoms, was seen but the current carried it rapidly clear of the Island. Two hundred litres of diesel oil was also spilt and that too was carried out to sea.

The Harbour Master took stock and decided to shift as much weight forward as possible. The fore peak was filled while the after peak drained of water and the cargo hatch pontoons were shifted forward.

The ship was heading due north, its position being maintained by a tow line to a barge. The Harbour Master informed the Western Australian Office of the Australian Maritime Safety Authority of the grounding. He also called for divers and his own scuba diving gear.

An underwater inspection by the Harbour Master and two divers established that only about 10 m of the vessel, towards the stern, was actually aground. The crew rigged forward leading rope springs from aft, which were attached to the reef by the divers. However, heaving on the springs failed to move the ship.

Another small general cargo ship, the Danish flag Thor Kirsten, had arrived during the morning and the Harbour Master negotiated with

the charterer to use the vessel to try and tow Niaga 46 clear of the reef. This attempt also failed.

The ship eventually was refloated on the flood tide at 2300 on 9 August 1996, with the tide about 0.9 m above datum. It was then manoeuvred and anchored in the limited anchorage of Flying Fish Cove.

Comment and Analysis

General

No proper written record of the watchkeeping operations was maintained in the bridge log book after Niaga 46 hove to at about 1613 on 8 August. The only apparently reliable record kept both before and following the grounding was the engine room movement book. The field investigator was forced to rely on statements from the crew based on their memory of events.

Following the grounding, there appears to have been an immediate response by the Master and other officers to lay the blame for the incident on the Second Mate and question his ability and competence. Be that as it may, the purpose of this investigation is not to apportion blame but to examine the circumstances, factors and causes of the incident.

Identifiable hazards

There was an identifiable and foreseeable risk that Niaga 46 may have grounded when underway with its engine stopped, drifting close to shore.

To counter such risks a proper appraisal of the situation, together with an effective plan was necessary, taking into account the ship's equipment, watchkeeping practices, emergency procedures and a system to monitor the plan.

Niaga 46 was hove to at about 1613 on 8 August, in a position that the Master had selected on his previous visit in July. The Master stated that, based on his previous visit, he anticipated a westerly set of 2 to

2.5 knots and that the current would take the ship clear of North West Point. The position gave a lee from the south to south-east wind, but was only about one mile north of the nearest part of Christmas Island and two miles from the land to the east of North West Point.

According to the Master, when he joined Niaga 46 in July, he was told that his three officers knew Christmas Island, they had been in charge of watches on Niaga 46 when it had drifted off the Island on a number of previous occasions and knew what to do. For his own part, he provided no written orders or advice to his officers outlining the safety parameters within which the vessel was to be allowed to drift off the Island. Instead, he took them on trust and relied on the past experience of his officers, leaving the conduct of the drifting ship entirely to the officer on watch.

Ship equipment

The Master stated that the voyage from Tanjung Priok was routine in nature and the ship had experienced no incident or engine breakdown.

Subsequent to the grounding, the ship was inspected in relation to Port State Control requirements. The inspection found life saving appliances, fire fighting appliances, radio equipment and safety equipment in a poor state of repair, impairing the safety of the crew and indicating poor management of the ship and its equipment.

The two ship's radars were available for use by the officers of the watch. Although it seems that there was a tendency to switch the radars off rather than running them or leaving them on standby, the Third Mate operated one radar throughout his watch. However, he switched one radar off before the Second Mate went to the bridge and left the other on standby. Of the other bridge equipment, the gyro compass had a ten degree error and there was no record of the last correction of the magnetic compass.

The engine and steering gear, together with the radars apparently functioned properly. Although there were some delays because of procedures which closed down the lubricating oil pump, the main engine had started when required.

Engine readiness

There is a difference of 20 minutes between the times given for requesting the engine as recalled by the Second Mate and the Third Engineer. The Second Mate stated that he requested the engine at 0010, whereas the Third Engineer recalled the time as about 0030. The engine became available at 0039. It seems the practice was to ring "finished with engine" although the ship was drifting about a mile off the coast of Christmas Island. The Chief Engineer stated that the turning gear was not engaged, but the electric lubricating oil pump, which was required to start the engine was stopped.

The Chief Engineer stated that the lubricating oil system is supplied by a pump driven off the main engine and by a single electric driven pump - the reserve lubricating oil pump. As he was concerned that there was no other pump to supply lubricating oil when the main engine was stopped, the electric pump was shut down while drifting off the Island to conserve it and had to be started to circulate the lubricating oil whenever the engine was requested by the bridge.

To start the engine the Third Engineer would have had to restart the lubricating oil pump and ensure the lubricating oil was at working pressure. As the turning gear had not been engaged, it would not have been necessary to shut the starting air bottles and hence starting air pressure should have remained available. Starting the fuel boost pump, the fresh and salt water cooling pumps, had these been stopped, would have taken, at most, a matter of a minute or two. These pumps are all on push-button starts. Normal practice, however, would have been to have left the fresh water cooling system

circulating, with jacket water heating on, in order to keep the engine warm and ready for use. It cannot be envisaged that making the engine ready for starting should have taken more than nine minutes.

It is neither possible to know with certainty when the Second Mate ordered the engine nor is it possible to reconcile the difference in the accounts. It can be accepted that as soon as the radar picture was obtained the Second Mate saw how close the ship was to danger and immediately ordered the engine. Given the time that the Second Mate arrived on the bridge, switching on and allowing the radar to warm up and the fixing of the ship's position, it is probable that the time the engineer was alerted to the stand by was after 0015, but how close to 0030 stand by was ordered cannot be established.

Ship operating systems and procedures

Circumstances underlying the grounding show a lack of any planning and suggest poor operating systems, procedures and management of the ship.

Regulation 20 of chapter V of the Safety of Life at Sea Convention 1974 requires ships to carry adequate and up-to-date charts, sailing directions, lists of lights, notices to mariners, tide tables and all other nautical publications necessary for the intended voyage. Niaga 46 was not provided with tide tables.

Other documents or publications one would normally associate with an efficiently and safely run ship were not carried. Niaga 46 was not provided with company standing orders, company safety manual or written direction to the Master on the conduct of the ship. It was evidently not the practice for the Master or Chief Engineer to issue written standing orders or for the Master to issue written or verbal night orders. If any such verbal orders were given in relation to the night of 8/9 August, they were not passed to the Second Mate.

Factors contributing to the grounding were as much to do with the lack of operational management, command control, poor procedures and lack of supervision as by any action or inaction by the Second Mate.

Effectiveness of the watchkeeping regime

Repositioning of Niaga 46

After Niaga 46 had been drifting for about 5½ hours, the Third Mate decided to reposition the vessel so as to heave to in the original position with North West Point bearing 270° x 2.5 miles. After starting the manoeuvre at 2132, the main engine was put to manoeuvring full ahead at 2146. The vessel remained at full ahead until 2313 when half ahead was rung, followed by slow ahead at 2321 and stop/finished with engine at 2323. No positions were recorded during this manoeuvre, which took 1 hour 51 minutes to complete and during which time the engine was at full ahead for 1 hour 27 minutes. It was stated that at about midnight the 12-4 apprentice and the Third Mate together checked the ship's position by radar and GPS. A position of 10° 26.4' South, 105°35.3' East was entered in the log book, which purported to be the position at midnight. This position put the vessel due east and 2.3 miles from North West Point.

The midnight position, had the ship been hove to and stopped in the water, is hard to reconcile with the time of grounding and the Second Mate's recall that the vessel had been
1.2 miles off North West Point a little after 0010. Based on the Third Mate's position, Niaga 46 had drifted over one mile between 0000 and 0015, a much greater rate of drift than the previous four hours.

Although light ship, it seems probable, given the prolonged use of the engine at full manoeuvring revolutions, that the vessel would have maintained way for some time after 2323. It is also probable that the midnight position entered in the log book was in fact the position at

2323 or 2330 and the ship had maintained some residual way so that at about 0010 the vessel was about 1.2 miles from North West Point and 0.9 of a mile from the grounding position. Alternatively, if the position entered in the log book was the actual position at midnight, the ship had retained significant headway following the repositioning manoeuvre and the Third Mate had not appreciated this fact.

Bridge hand over

At midnight on 9 August, the Third Mate did not wait to be relieved by the Second Mate, rather he handed over to the apprentice and left the bridge without handing over the watch at 0005.

Although there is no firm evidence regarding the personalities on board, it is fair to deduce that the relationship between the Second Mate and the other officers was less than ideal. There was an immediate move not only to place responsibility for the grounding upon him but also to call into question his fitness for his position.

It is not unknown for the 12-4 watchkeeper to be late on watch at midnight and the Third Mate should not have left the bridge until properly relieved by a competent officer. However, the Third Mate did not wait more than 5 minutes before leaving the bridge and the watch in the care of the unqualified apprentice. It is curious that when the Third Mate left the bridge at 0005, he evidently did not go to the Second Mate's cabin to ensure that he was awake and give some sort of hand over. When the Second Mate arrived on the bridge at about 0010, he made no attempt to talk to the apprentice, whom the Third Mate had briefed as to the state of the watch, and bridge equipment, as well as the ship's position. The Second Mate did not seek any information from the apprentice, nor was any volunteered, and the apprentice left the bridge to check the ballast tanks without telling the Second Mate that the Port radar was on stand by and therefore ready for immediate use. Instead the Second Mate assumed both radars

were switched off, with the consequent delay of at least 3 minutes to allow the set to warm up, before fixing the ship's position.

An increase in wind strength and the backing of the wind to the east were offered as the causes of the grounding, together with the Second Mate's performance.

However, there were inconsistencies in the accounts given. No weather observations were recorded in the log book at 2400, nor indeed at 2000. The Third Mate stated that at midnight the wind was blowing from the east and was strong and the Second Mate sensed that the wind had increased in strength and was acting, with the current, on the starboard side of the vessel. However, the apprentice, who stated that he actually read the anemometer, recalled the wind as being easterly at 5 knots. At about 0600, when the Harbour Master started duty the wind was east-south-east at 5 to 10 knots.

The vessel was in a ballast condition, offering plenty of windage. An increase in wind strength and a change in direction are potential hazards which may have contributed to the grounding, but are hardly sufficient to explain the acceleration in the rate of drift between 2400 and 0045.

Whatever the Second Mate's responsibility for the grounding, and whatever his competence, he had kept the 12-4 watch since joining the ship. When drifting off Christmas Island, he and the other officers were apparently given, at best, limited instructions - and certainly no written instructions - as to the conduct of the watch and no safety parameters seem to have been passed to the Second Mate.

It might be expected that having established the ship's position and ordered the engine for manoeuvring, the Second Mate would have informed the Master of the danger and the steps he had taken to counter it. The Second Mate did not alert the Master and apparently

waited twenty minutes while the ship's position became more hazardous.

The watchkeeping regime on board was not effective and no procedures were in place to counter developing emergencies. There was apparently a casual and offhand approach to the watchkeeping duties on board. All the evidence, given the relatively short time between midnight and the grounding, is that when the Second Mate took over the watch, the ship was already standing into danger. This was compounded by an apparent lack of urgency on his part, his failure to call the Master and his inexperience in handling ships.

Conclusions

These conclusions identify the different factors contributing to grounding of Niaga 46 and should not be read as apportioning liability or blame to any particular individual or organisation.

It is probable that when the Third Mate left the bridge, Niaga 46 was still making way through the water as a result of the prolonged use of the engine at full harbour speed while repositioning the ship between 2132 and 2323. This, combined with the following factors, contributed to the grounding:

1. The Third Mate absenting himself from the bridge before the Second Mate arrived to take up his watch.

2 The hand over of the watch at midnight to the apprentice, was inappropriate, not thorough and did not reflect the true status of the ship in relation to the status of the navigation equipment and the proximity of the land.

3. A complete lack of acceptable watchkeeping standards and an absence of basic seamanship practices.

4. A lack of any realistic assessment by the Master or deck officers of the risks involved while drifting off Christmas Island, together with the lack of planning and determination of sensible safety margins.

5. A lack of clear direction and control over the conduct of the watchkeeping officers by the Company and Master.

6. Poor general management of the ship, and its operation.

Submissions

The provisions of sub-regulation 16 (3) of the Navigation (Marine Casualty) Regulations require if a report, or part of a report, relates to a person's affairs to a material extent, the Inspector must, if it is reasonable to do so, give that person a copy of the report or relevant part of the report. Sub-regulation 16(4) provides that such a person may submit written comments or information relating to the report.

The final draft of the report, or parts thereof, was sent to the Owners, Master, Second Mate and Third Mate of Niaga 46. No submission or new information was received from any of these parties.

Ship Details

Name	Niaga 46 (ex Pegasus Hope, ex Oms Fortune, ex High Speed, ex Julian, ex John Lu, ex Colombo Lu)
IMO Number	7432458
Flag	Indonesia
Classification Society	Biro Klasifikasi Indonesia
Type	Motor general cargo
Builder	Wantanebe Zosen, Hakata, Japan
Year	1975
Owner	PT (Parsero) Pann Muti Finance (PT Pelayaran Surya)
Gross tonnage	4756
Net tonnage	3047
Deadweight	7900 tonnes
Summer draught	7.004 m
Length overall	115.65 m
Moulded breadth	17.40 m
Engine	Mitsubishi 6UET45/80D
Engine power	3357 kW
Crew	25