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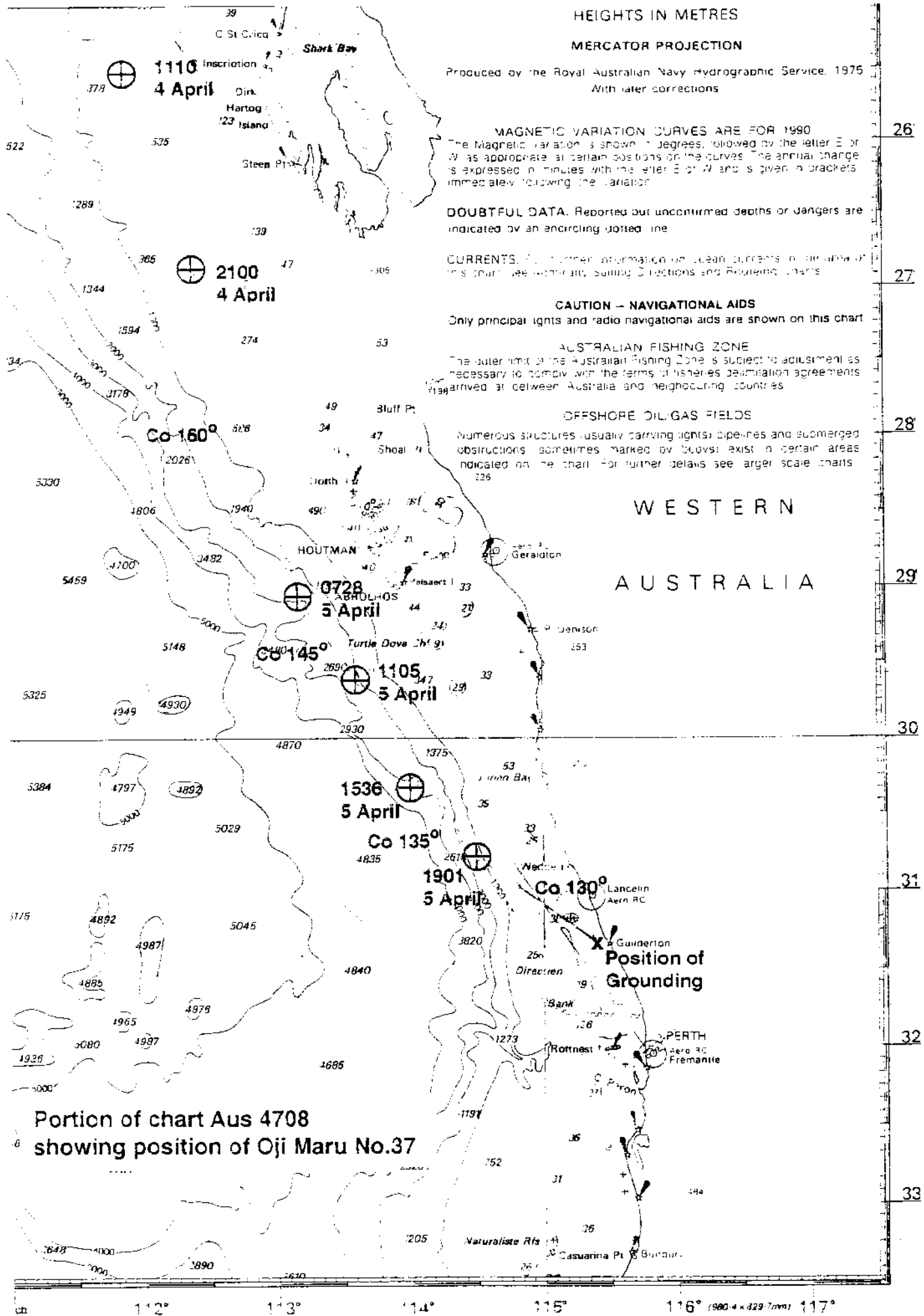
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HEIGHTS IN METRES

MERCATOR PROJECTION

Produced by the Royal Australian Navy Hydrographic Service, 1975  
With later corrections

**MAGNETIC VARIATION CURVES ARE FOR 1990**  
The Magnetic Variation is shown in degrees, followed by the letter E or W as appropriate, at certain positions on the curves. The annual change is expressed in minutes with the letter E or W and is given in brackets immediately following the variation.

**DOUBTFUL DATA:** Reported but unconfirmed depths or dangers are indicated by an encircling dotted line.

**CURRENTS:** For further information on Ocean Currents in the area of this chart see Admiralty Sailing Directions and Buoyage Charts.

**CAUTION - NAVIGATIONAL AIDS**  
Only principal lights and radio navigational aids are shown on this chart.

**AUSTRALIAN FISHING ZONE**  
The outer limit of the Australian Fishing Zone is subject to adjustment as necessary to comply with the terms of fisheries delimitation agreements arrived at between Australia and neighbouring countries.

**OFFSHORE OIL/GAS FIELDS**  
Numerous structures, usually carrying lights, pipelines and submerged obstructions, sometimes marked by buoys, exist in certain areas indicated on the chart. For further details see larger scale charts.

WESTERN  
AUSTRALIA

Portion of chart Aus 4708 showing position of Oji Maru No.37

Position of Grounding

112° 113° 114° 115° 116° (980-4 = 329-7mm) 117°

26

27

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29

30

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# Summary

On 5 April 1993, Oji Maru No.37, a Japanese long line fishing vessel, was on passage from fishing grounds south-west of North West Cape to Fremantle. Just before midnight local time, it ran aground at full speed on Leschenault Reef, two and a half miles off the coast, about 39 miles north of Fremantle pilot boarding ground. The weather was fine and the visibility clear.

Nobody was injured and no pollution resulted from the grounding.

The vessel sustained bottom damage including a hole in No.6 fuel tank,

which was empty, and lost the use of the rudder. The speed at which Oji Maru No.37 grounded nearly carried it over the reef into deep water, but the skeg lodged fast. At about 0200 on 6 April, the vessel refloated and the Master dropped the port anchor at 0218 on the shore side of the reef.

A tug from Fremantle arrived at the vessel at 2210 and, in the morning of 7 April, Oji Maru No.37 was taken in tow to Fremantle.

At Fremantle, temporary repairs were carried out to the holed tank, the skeg and the rudder. These repairs were completed to the satisfaction of the Australian Maritime Safety Authority surveyor and the vessel left for Japan at 1130 on 11 April 1993.

# Information sources

The Australian Maritime Safety Authority

The Australian Customs Service

Tropical Traders (vessel's agents)

Australian Fisheries Management Authority

The Hydrographic Office of the Royal Australian Navy

## Acknowledgements

The Inspector gratefully acknowledges the assistance of the Australian

Maritime Safety Authority in making a marine surveyor available to undertake the field investigation and the Commonwealth Translating and Interpreting Service for assistance during interviews of the Japanese crew.

The positions on which the report is based were taken from the vessel's logbook and from chart Aus 4708 presented by the Master when being interviewed. No other charts were used. The time kept on the vessel was Japanese Time (GMT + 9Hrs). All the times on the copy of the chart Aus 4708 and the times recorded in the log book were in Japanese time. For the sake of clarity times in this report are stated in local time (GMT + 8Hrs).

Portions of chart Aus 334 and Aus 4708 reproduced by permission of the Hydrographic office, RAN.

# Sequence of events

Oji Maru No.37 is a Japanese long line fishing vessel licensed to fish in the Australian Fishing Zone and is manned by 16 Japanese nationals and 4 contracted Indonesian crew. The vessel is one of a number of vessels operating under an agreement with the Australian Government that allows these vessels to fish in Australian waters and return with their catch to Japan. They call into Australian ports for fuel and supplies and for inspection by Australian Fisheries inspectors.

The Australian Fisheries Management Authority monitor the catch to ensure the fish caught in Australian waters does not exceed the agreed quota. Under the above agreement, the vessels must undergo an inspection prior to the commencement of fishing in the Australian Fishing Zone and a "post fish" inspection prior to departure. The ports at which these inspections may take place are limited, Fremantle is one of them.

The Master of Oji Maru No.37 held a 3rd Grade Maritime Officers (Navigation) Licence issued in Japan that entitled him to be Master of this vessel. He stated that he had been a Master on this type of vessel for 24 years and had never before been involved in an incident. The Chief Officer, who was also the Fish Master, held a 4th Grade Maritime (Navigator) Licence. There were no other persons on board with navigator (Bridge Watch keeping) qualifications.

Routinely when the vessel is fishing, the Fish Master is in command for all aspects of the fishing operation, but the Master still retains responsibility for the safety of the ship. The fishing process consists of baiting the hooks and setting the long lines (up to 50 miles long), the lines are left for approximately 5 hours and then hauled back on board. The fish are processed (gutted and cleaned) as the lines are hauled in and then stacked in the freezer holds. The setting of the lines takes about 6 hours, the waiting time is 5 hours and the hauling of the lines takes about 12 hours. If the catch drops below a reasonable level, new fishing grounds are sought. Five men set the lines, but everyone on board, including the Master, helps on deck when hauling. The wheelhouse watch is rotated between the Master, the Fish Master and 6 deckhands.

Oji Maru No.37 left Japan on 10 May 1992, calling at Singapore on 23 May, before starting to fish on the high seas and in the Australian Fishing Zone. Between May 1992 and April 1993, the vessel made four calls at Australian ports to land the catch and take on stores.

The vessel's first Australian port of call was Fremantle, on 23 September 1992, followed by Hobart on 30 October 1992, Fremantle on 20 January 1993 and Albany on 26 February 1993. In early April 1993, Oji Maru No.37 was fishing in the Australian Fishing Zone off North West Cape (22° 10' S 114° 10' E) , northern Western Australia.

On 4 April, the vessel finished fishing and set course to return to Fremantle

for a post fishing inspection, to refuel and to put the 4 Indonesian contract crew members ashore prior to the vessel's return voyage to Japan.

For the passage to Fremantle the vessel was steered by autopilot. The gyro error was nil. All positions were obtained by the Master using the Furuno GP 300 Global Positioning System (GPS). There is no reason to suspect that the GPS was not functioning correctly and or that any item of the ship's equipment failed. The Master stated that two hour bridge watches were maintained by six deckhands and by himself. The Fish Master did not participate in keeping a bridge watch. The Master's instructions to the deckhands keeping a bridge watch were to call him if there was a risk of collision or if anything unusual occurred.

The courses and positions obtained from the ship's log book and chart are listed in Table 1 (see below).

There were no other positions on the chart or in the logbook.

At 1901 on 5 April, the Master, visiting the bridge at that time, considered that the vessel had about 5 hours to run to the coast and that he would then stop and wait until the morning to pick up the Fremantle pilot.

The Master then went below and did not return to the bridge until he was called by the deckhand immediately prior to striking the reef, at about 2356. He stated that he did not go to bed and took no alcohol, in fact there was no alcohol on board.

The deckhands on watch on the bridge changed at 2310. The deckhand taking over the lookout had been at sea for 20 years and had kept bridge watches for 12 years. He did not have any formal qualification entitling him to be in charge of a bridge watch. He understood his duties to be to call the Master if a risk of collision with

**Table 1**

<b>Oji Maru</b>		
<b>Vessel's positions and courses steered , 4 to 5 April 1993</b>		
0311 4 April	24° 18' S 111° 25' E	Set course 160° T for Fremantle
1110 4 April	25° 33' S 111°50' E	
2100 4 April	26° 55' S 112°25' E	
0728 5 April	29° 04' S 113°10' E	Altered course to 145°T
1105 5 April	29° 35' S 113°37' E	
1536 5 April	30° 20' S 114°00' E	Altered course to 135°T
1901 5 April	30° 47' S 114°32' E	Altered course to 130°T

another ship existed or anything abnormal occurred. He did not look in the radar as he stated that he had not received any training. When he came on watch he could see the lights on the shore ahead, including Guilderton lighthouse fine on the port bow. The weather was fine, with light winds and good visibility. He took no action until he heard the sound of waves breaking, when he called the Master, at about 2356.

The Master came to the bridge and immediately stopped the engines, but at the same time felt the shock waves as the vessel hit the reef. More shock waves were felt until the vessel came to rest, listing to port. As the bow was yawing from side to side, the Master considered that the vessel's stern had lodged on the reef and the vessel was resting on its skeg\*. Damage control procedures were instigated, tanks were sounded and a lookout kept for signs of oil pollution. Some time later another shock was felt and the vessel floated off the reef of its own accord. The port anchor was dropped at 0218 on 6 April, in position 31° 18.22'S 115° 23.77'E .

The Master was aware that the No. 6 fuel tank, which was empty, had been holed and that the rudder had been damaged.

The Master had advised Perth Radio immediately on grounding. He communicated with his owners and the vessel's Fremantle agent, Tropical Traders. At 0200, Tropical Traders contacted the Fremantle Tug Company

and requested that a tug be sent to assist the vessel.

At 0730, divers from Franmarine Underwater Services went to the site and reported the extent of the damage at about 1230. They found extensive damage to the vessel's bottom and rudder: about 9.6 metres of centre box keel torn off, the skeg set up 70mm and bent slightly to starboard, the rudder stock pushed up about 70 mm, a hole in the shell plating in way of No 6 fuel oil tank, the echo sounder transducer torn off, and numerous large and small indentations over an extensive area of the vessel's bottom.

Arrangements were made to prepare for the tow, including the securing of the damaged rudder. The tug Wyola left Fremantle at 1700, arriving on the seaward side of Leschenault Reef at 2310 on the 6 April 1993.

The following morning, 7 April 1993, having waited for daylight, fishermen from the local community of Seabird guided the tug through the reef to the Oji Maru No.37. A towing hawser was rigged and the tow to Fremantle commenced shortly after midday, the vessel arriving at 2030 on the same day.

Temporary repairs were made to the vessel's skeg, rudder and the holes in the shell plating at the Fremantle Port Authority's slipway. These were completed to the satisfaction of the Australian Maritime Safety Authority surveyor and the vessel departed for Japan at 1130 on 11 April 1993.

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\* A continuation of the keel aft of the stern post, designed to protect the rudder.

# Analysis

From its position at 0311 on 4 April, when Oji Maru No.37 finished fishing operations, it had about 500 miles to steam to the pilot boarding ground off Fremantle, needing about 45.5 hours at eleven knots. Before setting a direct course to Fremantle the vessel had to clear the Houtman Abrohos Islands and an initial course of 160 degrees true was set on the auto pilot. Two further checks were made on the vessel's position during 4 April, one at 1110 and another in the evening and no alterations were made to the course.

At 0728 on 5 April, Oji Maru No.37 had cleared the islands and was in position 29°04'S 113°10'E. The vessel had made good a course of 162 degrees and covered a distance of 301 miles at a speed of 10.6 knots. From the 0728 position, the course to the pilot boarding ground was 145 degrees with 212 miles to steam, which would take a little over 19 hours.

At 1105, the vessel's position was plotted on the chart, indicating the vessel had made good a course of 143 degrees at 10.7 knots. No adjustment was made to the course.

At 1536, a position of 30°20' S 114° 00'E was plotted. This showed a course made good of 157 degree true at a speed of 10.9 knots. Based on this position, and given that the Oji Maru No.37 was steering 145 degrees, the vessel had experienced a significant 12 degrees set and drift. The rhumb line course to Fremantle fairway bouy

was 142 degrees, with 126 miles to run. The Master considered that currents were setting the vessel to the south and he altered course to a new course of 135 degrees to counteract the current. The position was again checked at 1901, 3 hours 25 minutes later.

The position at 1901 was plotted as 30°47'S 114°32'E. The vessel had made good the course steered at a speed of eleven knots and had experienced minimal set and drift. From this position to the fairway bouy Oji Maru No.37 needed to make good a course of 146 degrees. The distance was 88 miles.

The Master, however, altered course 5 degrees to port, to 130 degrees, towards the coast, rather than eleven degrees to starboard to steer for Rottnest Island. The course of 130 degrees would have brought the Oji Maru No.37 to a position off the town of Two Rocks, 27 miles north of the Fremantle fairway bouy, at about 0100 on 6 April (see portion of chart Aus 334, page 11).

Unless the Master had deliberately altered course towards the coast for some undisclosed reason, it seems that he was preoccupied with the belief that Oji Maru No.37 was experiencing a substantial southerly set. However, examination of the courses made good between the recorded positions shows that, between 0311 on 4 April and 1105 on 5 April, the courses made good were plus or minus 2 degrees of the intended true heading. Between 1536 and 1901 on 5 April, the vessel made good the course steered. The only period in which there was a

pronounced deviation from the intended true course was the four and a half hours between 1105 and 1536, when the difference between the intended course and the course made good was 12 degrees. From 1901 on 5 April, the vessel appears to have made good a course of 125 degrees rather than the intended 130 degrees. This was in an area where a southerly set from the counter current could reasonably be anticipated.

There are a number of possible explanations for the inconsistent positions recorded by the Oji Maru No.37, which may have been factors contributing to the grounding.

It is possible that the satellite navigator was not working properly, or that the position at 1536 on 5 April was erroneous or incorrectly read. However, the 1901 position is consistent with the course and speed from the afternoon position. While the possibility remains that some or all of the positions are inaccurate or transposed incorrectly or misread, this is not regarded as likely.

It is also possible that the log book entries and chart positions were entered after the event, to deliberately mislead any investigation. A non-expert examination of the log book would suggest that possibly two people made entries at various times over 4 and 5 April. One of these was probably the Master. Similarly it was the master who monitored and transferred the positions to the chart. There is no evidence of the falsification of either the log book or the chart, and both must be taken at face value.

Oji Maru No.37 was in no danger until the Master took the decision to alter to 130 degrees and a course was made good of 125 degrees. The decision, if deliberate, seems irrational if he intended to make Fremantle or wait off the Port until daylight. He effectively set course direct for the beach.

The most probable explanation was that the course alteration was applied the wrong way. Had he altered course to 140 degrees, and had the vessel made good that course, Oji Maru No.37 would have arrived off the Fremantle Fairway buoy at about 0300 on 6 April 1993.

The vessel carried a limited number of outdated charts of the west coast of Western Australia. A general chart Aus 4708 (Int 708), Indian Ocean - Australia West Coast, on a scale of 1:3,500,000, covered the general area. Oji Maru No. 37 also carried the British Admiralty chart No.1033, which had been withdrawn in 1987 and superseded by the Australian Hydrographic Service chart. The vessel also had on board a 1966 United States chart H.O.1907, which was apparently an old, out of date chart. The only coastal chart of the area was chart Aus 334, Ledge Point to Cape Naturaliste on a scale of 1:300,000, which took in the general approaches to Fremantle. Oji Maru No.37 also carried chart Aus 112, Approaches to Fremantle. The only chart suitable for coastal navigation was chart Aus 334.

While the lack of charts and the fact that they were out of date, uncorrected, or of unsuitable scale may not have played a part in the grounding, they may be seen as indicative of the

priority given to navigating the ship as against fishing operations. In fact, had Oji Maru No.37's position been transferred to chart Aus 334 at about 2100 on 5 April, when the fishing vessel reached latitude 31 South (the northern limit of chart Aus 334), the potential danger should have been readily apparent to the Master or a qualified navigator, had there been one on the bridge.

It was not established what the Master was doing in the time that he was absent from the bridge. He stated that he was not drinking and that there was no alcohol on board. A fishing inspector of the Australian Fisheries Management Authority, who had been associated with the Oji Maru No.37 during its fishing operations, stated that alcohol was usually carried on these fishing boats, but he had never seen any on the Oji Maru No.37. While there does not seem to be any prohibition against alcohol and a quantity of both beer and spirits were shipped for the voyage back to Japan, the Australian Customs Service stated that no alcohol was declared when the vessel arrived in Australia, and there was no application to take on board any bonded or duty paid alcohol as ship's stores, while the vessel was in the Australian area, before 8 April 1993.

There is no evidence that other drugs, either prescribed or illicit, were involved.

The only conclusion left is that the Master, for whatever reason, made an error at 1901 on 5 April 1993 in that, instead of resuming a course of 145

degrees true, he set a course of 130 degrees true. This resulted in the grounding.

There were two qualified bridge watch keepers on the vessel, the Master and the Fish Master. However, the Fish Master did not participate in keeping a bridge watch whilst the vessel was not fishing. The Master could not remember keeping a bridge watch on the return voyage and it would appear that, although he was in overall charge and navigated the ship, it was the deckhands who in fact were expected to keep the bridge watches, although they have no training in doing so.

There are three International Maritime Organization (IMO) instruments relating to the qualifications to be held by a master or person in charge of a navigational watch or of an engine room; Resolution A.539(13), Resolution A.576(14) and Resolution A.623(15). The Master's qualifications, issued by the Japanese Authorities, met the standards prescribed by these Resolutions.

An earlier Resolution, Resolution A.484(XII), Basic Principles to be Observed in Keeping Watch on Board Fishing Vessels, makes recommendations regarding the conduct of a watch en route to or from fishing grounds, navigation with a pilot embarked, and principles to be followed when engaged in fishing or searching for fish.

IMO Resolution A.484(XII) recommends inter alia:

2. ... *Under the skipper's general direction the officers of the watch*

*are responsible for navigating the vessel safely during their periods of duty when they will be particularly concerned with avoiding collision and stranding.*

4.3.1. *The intended voyage should, as far as practicable, be planned in advance taking into consideration all pertinent information and any courses laid down should be checked before the voyage commences.*

4.3.2 *During the watch the course steered, position and speed should be checked at sufficiently frequent intervals, using any available navigational aids necessary to ensure the vessel follows the planned course.*

4.5.1. *The officer in charge of the watch should keep his watch in the wheelhouse which he should in no circumstances leave until properly relieved.*

The Resolutions are not mandatory and only contain recommendations.

Although the Oji Maru No.37 had two qualified officers, who could have kept watch in accordance with the recommendations and principles of IMO Resolution A.484(XII), neither appears to have undertaken routine watchkeeping and neither remained in the wheelhouse.

It is hard to imagine that the Master exercised any effective control or charge over the watchkeeping and navigation of the vessel, with periods of three to five or more hours absent from the bridge.

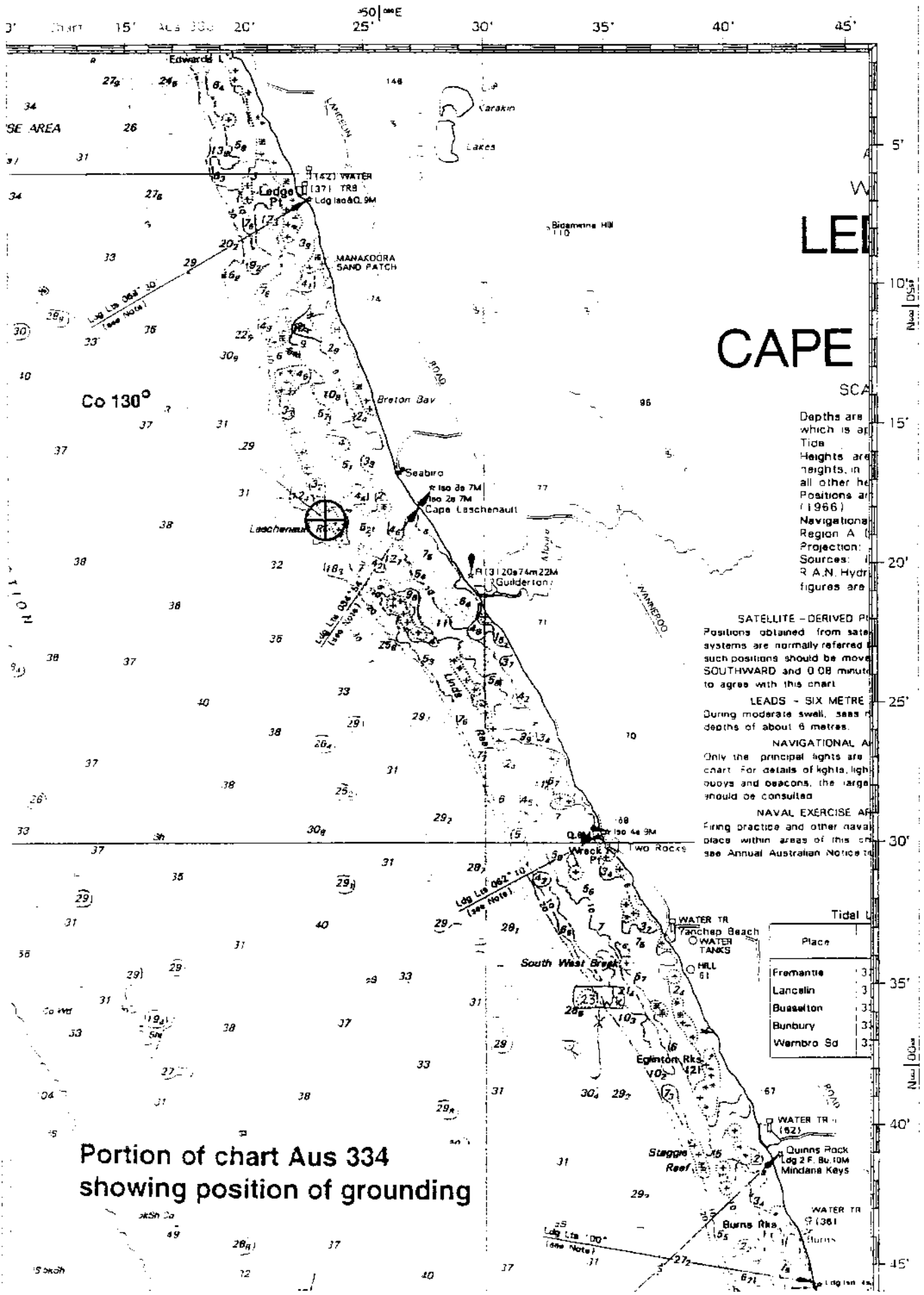
The Master did not navigate his vessel using the means available to him. The GPS, radars and other navigating equipment, including charts, should have provided him with ample means of navigating his ship safely. He did not plan the voyage in any acceptable manner or even draw course lines from the 1901 position, which would have indicated that he would have been heading directly for Two Rocks, and would have grounded there a little after 0100 on the morning of 6 April. On approaching a coast line he failed to check his position or even approach the bridge in the five hours prior to running aground.

The deckhand held no formal qualifications, although he had experience of keeping a lookout as the sole person in the wheelhouse, for some 12 years. Throughout that time he seems to have acquired no knowledge of radar, charts or the significance of shore lights, particularly lighthouses.

The deckhand went to the bridge about two hours before the grounding, when Guilderton lighthouse would have been plainly visible at 14.5 miles flashing 3 every 20 seconds. The deckhand neither knew where the vessel was, nor does it seem that he was interested in where it was.

While it is possible to criticise the deckhand, he held no qualifications and the responsibility for the safe navigation of the ship rested with the Master.

Following the grounding, the Master acted correctly in informing Perth Radio and the agents.



Portion of chart Aus 334 showing position of grounding

# LEI CAPE

Depths are which is at Tide Heights are heights, in all other he Positions ar (1966) Navigations Region A Projection: Sources: R A.N. Hydr figures are

SATELLITE - DERIVED P Positions obtained from sate systems are normally referred such positions should be move SOUTHWARD and 0.08 minute to agree with this chart

LEADS - SIX METRE During moderate swell, seas depths of about 6 metres.

NAVIGATIONAL A Only the principal lights are chart For details of lights, light buoys and beacons, the large should be consulted

NAVAL EXERCISE A Firing practice and other naval place within areas of this ch see Annual Australian Notice

Tidal L

Place	
Fremantle	3
Lancelin	3
Busselton	3
Bunbury	3
Wombro Sd	3

# Conclusions

The grounding of Oji Maru No.37 resulted from the failure to observe the basic principles of navigation and the recommendations of IMO Resolution A.484(XII) in that:

1. The Master failed to navigate the vessel in a professional and careful manner, in that he did not check the

vessel's position at sufficiently frequent intervals, on appropriate and up-to-date charts, to ensure that the vessel followed the planned course.

2. The Master failed to ensure that an appropriately qualified officer was in charge of the watch and in the wheelhouse at all times.

3. The Master should not have relied on an unqualified deck hand to maintain a watch.

# Details of ship

Name of ship	Oji Maru No.37
IMO number	8414245
Official number	126424
Port of registry	Muroto, Kochi
Ship Type	Long Line Fishing Vessel
Owners	K K Oji Suisan, 4669-1 Murotomisakicho Muroto - Shi, Kochi - Ken, Japan
Year of build	1984
Builder	Kanasashi, Shimizu
Gross tonnage	577 (69 Convention)
Length (Tonnage)	46.9m
Length O.A.	53 .5 lm
Breadth	8.7m
Moulded depth	3.75m
Draft	3.40m
Classification society	none
Crew	20

# Navigating equipment

Gyro compass/auto pilot	Tokyo Keiki PR 2000 DOM 7/84
Radio DF	Furuno FD 270 Furuno FD 120
Video plotter	Furuno GD -1 80 linked to the GPS
GPS	Furuno GP 300 Type GPR C12
Sat Nav	Furuno FSN - 70
Radars	1. Furuno Model FR 711-2 and 2. Furuno Model FR-1022-3
Compass	Tokyo Keiki in the wheel house and on the monkey island. The gyro compass is incorporated into the auto pilot and repeated to the fishing control position, the radio D/F and one radar.

Charts on board and relevant to the area :-

BA 1033 1986 Edition  
 Aus 334 29 September 1970 Edition Uncorrected  
 Aus 4708(INT 708)10 May 1985 Edition  
 US Chart HO 1907. Corrected to 11 June 1966 No 24  
 Rottneest Island Approaches -Uncorrected