

# CASUALTY REPORT

Date: 29 July 2003  
Case: 199932267/12  
File: 01.40.01

## The Foundering of KARIN CAT 18 February 2003

DIVISION FOR INVESTIGATION OF  
MARITIME ACCIDENTS

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## 1. The Casualty

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Type of casualty:        Foundered following a shift of the cargo  
Location of casualty:    The Mediterranean, 35°16' N 019°22' E  
Date and time:           18 February 2003 at 0600 hrs (UTC +1)  
Injuries:                 None

## 2. Summary

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On a voyage Antwerp – Ridham – Cherbourg – Talamone to Muscat KARIN CAT encountered a north / northeasterly gale with heavy swell south of Sicily. The speed of the vessel was reduced to about 8 knots, which reduced the roll to 15 to 20°. During the morning of the 18 February the chief officer as officer on watch felt that something was wrong in the movements of the vessel. He called the master to the bridge and went down to check the cargo holds. In hold No.1, tween deck, he noticed that the cargo, heavy equipment for a RAS gas project, loaded in Antwerp, had shifted and had damaged the ship's side shell plating. There was a hole in the plating of more than ½ a square metre. Every time the ship rolled over to starboard seawater was pouring in through the hole.

The speed of the vessel was further reduced to steerageway and the course was altered to a northerly course to keep the damaged part of the hull out of the water. Pumps were started and were sucking from No.1 bilges.

However, the list to starboard increased and at about 0700 it had reached 20-25°. Within the next hour the list increased to 40-45°.

At about 0800 the master abandoned the ship, and the crew went into the rescue boat, which was swamped eventual. The crew transferred to a life raft.

At about 0900 the crew in the life raft watched KARIN CAT coming upright gradually and then rolling over to about 45° to port.

At about 1100 the crew was picked up by the Malaysian vessel BUNGA PELANGI DUA and brought to Damietta outside Port Said.

KARIN CAT foundered on 19 February between 0954, when its last EPIRB transmission was received, and 1600 when the tugboat arrived in the area with no sighting of the vessel.

### 3. Ship Particulars

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<i>Name of Ship:</i>	KARIN CAT
<i>Registration No:</i>	
<i>Home Port:</i>	Korsør
<i>Call Sign:</i>	OXKI6
<i>IMO No:</i>	8615576
<i>Type of Ship:</i>	Dry Cargo Ship
<i>Construction year:</i>	1986
<i>Tonnage:</i>	1501 BT / 499,9 BRT
<i>Length/breadth/draft:</i>	71,9 m / 11,2 m / 6,7 m
<i>Engine Power:</i>	970 kW
<i>Crew:</i>	7
<i>Owner:</i>	K/S Puma, Odense
<i>Classification Society:</i>	Bureau Veritas

KARIN CAT was a 2 hatches general cargo ship. Each hold had a single tween deck with flush fitting steel pontoons. The holds were separated by a steel bulkhead with doorways at tween deck level and in the lower hold. The hatches were forward of the bridge and accommodation and were covered by Macgregor type single pull steel hatch covers. The bridge was fitted with modern navigation equipment including two GPS, two ARPA radars, gyrocompass, autopilot, 3 VHF sets and GMDSS.

The vessel was driven by an 8-cylinder MWM diesel engine of 970 kW. This drove a single left-handed variable pitch propeller controlled from the bridge. The normal speed was about 10 knots.

KARIN CAT carried valid certificates including Document of Compliance with the special requirements for ship carrying dangerous goods, dated 26 September 1998.

The ship's certificates were inspected in Antwerp on 27 January by the Danish Maritime Authority.

## 4. The crew

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The master is a Danish citizen and has sailed as master since 1975. He joined KARIN CAT on 20 December 2002.

The chief officer is a Danish citizen and had served on board KARIN CAT since 1995, apart from periods of routine leaves. He rejoined the vessel on 27 December 2002.

The chief engineer is an Ukrainian citizen and has served as chief engineer for 5-6 years. He had a previous 6 months period on board KARIN CAT and rejoined on 24 January.

The rest of the crew, one bosun, one AB, one OS and one cook were all Philippine citizens.

KARIN CAT was manned in accordance with the Minimum Safe Manning Document issued by the Danish Maritime Authority on 5 October 1988.

## 5. Narratives

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*The following sequence of events are based upon written statements by all 7 members of the crew supplemented by oral statements by the master, the chief officer and the chief engineer during a Shipping Inquiry held at the Danish Embassy in Cairo on 23 February 2003. The Investigation Division was represented at the Shipping Inquiry.*

The last port of discharge before the present cargo was Avonmouth. After the discharge the holds were checked and swept and made ready for the next cargo. On board they had received instructions for their next voyage early in January and the master and the chief officer prepared the stowage plan, which was sent to the company on about 8 January. The cargo included some large loading arms of which the company had sent some drawings. The master and chief officer decided they could only fit these into the No 1 tween deck.

### Loading in Antwerp

KARIN CAT berthed alongside at Antwerp on 25 January. A German surveyor attended on behalf of the shippers to supervise the loading operation. The cargo was the following stainless steel LNG cargo handling equipment for Ras Laffan:

- 67 crates of stainless steel pipes, weighing about 126 tonnes. 26 crates were loaded in each of No 1 and No 2 lower holds and 3 crates in No 1 tween deck.
- 9 cases of stainless steel valves, weighing about 32 tonnes, loaded in No 2 lower hold.
- 13 packages of loading arms and other cargo, weighing about 47 tonnes, 8 packages in No 2 lower hold and 5 in No 1 tween deck. **See Enclosure 1.**

The sides of No 1 tween deck were loaded from the aft end with bundles of pipes and then the other packages on the top. The pipes were about 12 m in length and did not reach the forward end of the space. They were held together with steel strapping. The other packages

were of regular sizes, and easy to stow. They were secured using dunnage and chains, fixing the chains to the “pad-eyes” on the side frames and the lifting hooks on the pontoons. Each pontoon weighed about 3½ tonnes.

The cargo in No 1 tween deck included two large, about 18 m in length, and two smaller, about 13 m in length, stainless steel loading arms. The two longest arms were partly enclosed in wooden crates. At one end was a light framed wheel about 3 m in diameter. At the other end was a solid stainless steel plate, about 2 square metres and 5 cm thick. The lower edge of this was resting on wood, but the remainder was unprotected. It looked rather strong and unlikely to be damaged by normal handling.

The two longest loading arms were placed close to the centreline, with one end against the aft bulkhead. They were laid the opposite way around, so there was one light frame wheel and one heavier foundation plate at each end. The two shorter loading arms were placed on either side, in the space between the longer sections on the centreline and the cargo in the sides.

The cargo was lashed by the crew, supervised by the chief officer, and the master was also present during the lashing of the loading arms. About 40 new span-sets had recently been delivered to the ship and had been used for the Avonmouth cargo. They had blue webbing bands about 6-7 cm in width, with a hook in the free end and a hook on the ratchet. They were marked “5 tonnes”. Apart from these, the ship was also equipped with a numerous sets of securing chains, which also had tightening device.

The loading arms were secured using 8 span-set on each side, attached to strong points along the loading arm itself (not the packaging) the other ends being secured to different parts of the ship’s structure. 4x4” pieces of dunnage were fixed between the loading arms and the cargo loaded in the sides and longer pieces for the forward ends where the sides were free of cargo. There was also fixed dunnage between the foundation plate at the forward end and the forward bulkhead, a distance of about 2 metres.

The master, the chief officer and the shipper’s representative were all satisfied that sufficient lashings had been placed on the cargo to prevent any movements.

KARIN CAT sailed from Antwerp at about 1800 on 27 January.

#### Loading in Ridham

KARIN CAT berthed alongside at Ridham at about 0900 on 28 January. Here the vessel loaded about 141 tonnes of ammunition on pallets, at the forward end of No 2 tween deck. This was also secured with dunnage and chains. The ammunition was bound for Muscat for delivery to the Omani Ministry of Defence. The loading was completed the same day and KARIN CAT sailed for Cherbourg at about 1900.

#### Loading in Cherbourg

KARIN CAT arrived at Cherbourg pilot station in the afternoon of 29 January. The vessel waited at anchor until berthing on 4 February. Here the vessel loaded 35 tonnes of cargo, described as “Mistral Air Defence System”. It was stowed at the aft end of No 2 tween deck,

except for a truck (for the radar), which was stowed at the forward end of the square. The cargo was secured with dunnage and chains.

KARIN CAT sailed for Talamone, Italy, at about 1400 on 4 February.

#### Loading in Talamone

KARIN CAT anchored off Talamone in the morning of 13 February and started loading at anchor on the following day. 17 pallets of ammunition were loaded in the centre of No 2 tween deck.

The vessel was delayed at the anchorage while repairing on of the cylinders of the engine. The vessel departed at about 2200 on 14 February bound for the Suez Canal. The hatches were closed and the hatch cleats secured for sea. All the cargo ventilation flaps were closed and secured.

#### The total cargo

The total cargo weighed about 400 tonnes, which was a relative small load compared to the vessels dead weight of 1,736 tonnes. The vessel was therefore fully ballasted with 520 tonnes of ballast water. Besides it carried 54 tonnes of fuel and 30 tonnes of fresh water. The master calculated the GM to be about 1.15 m, well above the minimum GM of about 0.15 m, but not as much to make the vessel too “stiff”. He also calculated the sailing draft to be F: 2.50 m A: 3.25 m, which was within 5 cm of the observed drafts.

#### The sea voyage until Talamone

During the voyage in the English Channel, the Bay of Biscay and off the northcoast of Spain KARIN CAT experienced rather strong winds. The bosun and the crew checked and tightened the cargo lashings on a daily basis. The master supervised this and sometimes he went into the hold together with them. The chief officer also checked the cargo from time to time. The cargo remained secured.

The bosun also took soundings of the ballast tanks and hold bilges at 0800 every day. The only time when water was found in any of the hold bilges was when it had been raining during the loading.

#### The sea voyage after Talamone, See Enclosure 2

The master and the chief officer shared the bridge watches on a 6-on 6-off basis, assisted by one of the deck crew when necessary.

The vessel encountered bad weather with north easterly wind up to gale force 8 when rounding the south of Italy. The forecast was up to force 9.

During the 17 February, when passing south of the Adriatic Sea, there was a rough north easterly swell on the beam, about 5 m in height. The sea was washing over the port side of the deck. The course steered was 104°. In the morning the master went into the hold together with the bosun and deck crew and checked the lashings one by one. They were generally tight. Those that were not were adjusted. The bosun fixed an extra pair of chain,

one on each side of one of the long loading arms. The vessel was rolling 15-20° and was also pitching and heaving.

During the day the speed was reduced to  $\frac{3}{4}$  speed and under the prevailing conditions it gave a speed of approximately 5 knots, where the normal speed would have been 8 knots. The vessel was rolling 15-20° and was also pitching and heaving. The speed reduction made the vessel's motions more comfortable.

In the morning of 18 February the chief officer took the 00 – 06 watch as usual. During the handover the master and chief officer discussed the fact that the wind seemed to be backing to the north and easing. It was then about force 7. There was however still a heavy swell running and the  $\frac{3}{4}$  speed was continued.

The watch of the chief officer passed without any incidents. The chief officer did not make any adjustment to the course, 104°, or to the speed. There was quite a noise from the weather and the engine. The chief officer did not notice any other unusual noise.

Towards the end of his watch, sometimes between 0500 and 0600, the chief officer realized that the vessel was rolling more to starboard than to port, and at 0550 he was convinced that the vessel had a definitive starboard list. He called the master and asked him to come to the bridge straight away, so he could go and check the cargo holds.

The master came to the bridge and the chief officer went forward along the starboard main deck, where he opened the hatch access at the forward end of No. 1 hatch and went down the ladder.

The chief officer saw immediately that the cargo had shifted. Everything seemed to have shifted to starboard and was now quite stationary. He noticed that the foundation plate at the forward end of one of the longer loading arms was now lying against the ship's starboard side, about 40 cm aft of the recess. It appeared to have moved not only to starboard, but also forward.

Where the foundation plate had landed, it had punched a hole in the side shell plating, more than  $\frac{1}{2}$  m in height and about  $\frac{1}{2}$  m in width. The hole was above the tween deck, and would normally have been above the waterline. However, with the list, each time the vessel rolled to starboard, water poured through the hole. The chief officer could see free water already collecting in the lower hold.

Via his portable VHF the chief officer reported the situation to the master and advised him to start pumping from No. 1 bilge as soon as possible. He then returned to the bridge, so that the master could go down and see the situation for himself.

The master woke up the chief engineer and immediately sent him below to start the bilge pump, and to pump out No. 1 and No. 2 starboard ballast tanks. The vessel was now listing about 5° to starboard.

The master also called the other crew members and together with the bosun he went forward after the chief officer had returned to the bridge. Through the access hatch to No. 1 tween

deck, at the forward end of the main hatch, they went down in the hold. The master right away saw the confused state of the cargo stow.

The loading arms had shifted over to starboard, crushing the crates that had been stowed in the way. The foundation plate of one was lying against the ship's side, about 40 cm aft of the recess (at about frame 97). The force of contact had breached a hole in the shell plating, more than ½ m square. Each time the ship rolled to starboard water poured in through the opening. No cargo was moving.

The master returned aft and called the ship's operation manager on his home number, using the mini m Sat C phone. He reported the leakage and that the situation looked bad. He said that he would alter course towards Crete, but that it might be that they would have to abandon the ship.

The master then went to the bridge and reduced the propeller pitch to only steerageway. The chief officer checked the position in the chart and the course and distance to Crete, about 200 miles on a course of 082°. The course was changed to port, which also took the swell off the beam. However, after 5 or 10 minutes the master realized that he would have to turn further to the north, and came onto course 000°, to try to keep the damaged part of the hull out of the water.

At about 0630 the master sent the bosun to check the sounding in No. 2 hold bilge. The bosun reported that it was dry. He also checked the stowage of the cargo in No. 2 tween deck and reported that this was still secure. The master was concerned about the possibility of the truck moving as the list increased. It was not possible for the bosun to enter No. 1 lower hold.

The chief engineer reported that the pumps were sucking from No. 1 bilges. However, the list continued to increase. At about 0700 it had reached 20-25°. Within the next hour it had increased to 40-45°. The master then believed that the situation was hopeless and that it would be dangerous to remain on board.

The master gave the order to launch the rescue boat and the starboard life raft, so that they could abandon the ship. At the same time he sent distress signal on Sat C and VHF channel 16. They left the bridge before they had received any acknowledgement.

The crew put on their immersion suits and abandoned the ship at about 0800. The seas were then washing over the starboard side of the main deck. The master could not see any visible damage to the vessel. The rescue boat was loaded with the portable GMDSS radios, the pyrotechnics, the EPIRB and the radar transponder as well as provisions that the cook had put together. The master did not have the time to save any of the ship's documents or the crew's licences and passports.

Very soon after boarding the rescue boat, the seas came over the gunwales and started to swamp the boat. However, they were able to catch the line for the life raft, which was still attached to the ship, and they transferred to that.



At about 0900 the master noticed, that the ship was coming upright and then gradually rolled over through the upright position and to about 45° to port. He saw black smoke from the funnel and then nothing. Presumably it was when the main engine stopped.

Later during the morning the Malaysian container vessel BUNGA PELANGI DUA arrived. She was a large ship and had difficulty in getting alongside the life raft. In the third attempt her captain managed to get close enough for his crew to establish contact by lifelines. The crew of KARIN CAT was hauled on board. They were all exhausted but without any injuries.

When the master of KARIN CAT, from the bridge of BUNGA PELANGI DUA, saw KARIN CAT for the last time, the ship was listing about 55° to port and the bridge wing was nearly touching the water.

## 6. Further Investigations

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### Loading in Antwerp.

On 12 May the Investigation Division met with the Marine & Cargo Surveyor, who surveyed and supervised the loading of the Antwerp cargo. The meeting took place at the premises of the freight forwarder of the cargo, the Panalpina Welttransport GmbH, in Bremen. Representatives from Panalpina were also present at the meeting.

The surveyor had drawn up a very descriptive report on the different phases of the loading operation supplemented with photos. At the meeting the surveyor gave an oral explanation of the loading operation and concluded, that in his opinion the Antwerp cargo was very secure lashed, and he found it unlikely that the cargo, and especially the one specific loading arm, could have moved around in the cargo hold, as it was explained by the ship's crew.

*After the meeting the surveyors report was forwarded to the Investigation Division, and the following is based on this report.*

The surveyor arrived at the Port of Antwerp the day before the loading and met with KARIN CAT's master and chief officer on board the ship, which was berthed with port side alongside berth No. 127. They inspected the cargo holds and discussed the preloading plan and the sequence of loading, and together with the chief officer he inspected that part of the cargo, which was lying free. On the morning the next day they inspected that part of the cargo, which was kept in a closed warehouse.

The surveyor found that the condition of the vessel, the hatch covers and the cargo holds were good. Also the cargo and its packing was found in good order, except for some loose planks at some of the steel pipes crates. The planks were re-nailed by the crew during the loading operation.

The greatest cargo items were two marine loading arms, about 18 m in length and each weighing 14,6 tons, packed in wooden skids and two base risers, about 13 m in length and each weighing 5,1 tons, packed at the one end in a wooden skid / transportation frame.





On 27 January at 0800 a local stevedoring firm started the loading.

At 0906 a total of 26 crates of pipes were loaded into the lower hold fore part of hatch No. 2. The crates were loaded 3 crates high. The tween deck covers in the fore part were closed and the aft part of the tween deck was opened.



At 1020 a total of 17 cases with valves and general cargo were loaded directly onto the wooden tank top in the aft part of hold No. 2.



Loading operation continued in the lower hold of hatch No. 1 aft part. 29 crates with pipes were loaded into this stowage location, 3 crates high. At 1115 the loading operation in the lower hold of hatch No. 1 was completed and the tween deck was closed.



At 1140 the loading operation continued on the tween deck of hold No. 1. The remaining 12 crates with pipes and 1 case were loaded under the wings in port and starboard side of the tween deck. All the crates were stowed as closely as possible together, using dunnage wood and square timber as necessary.



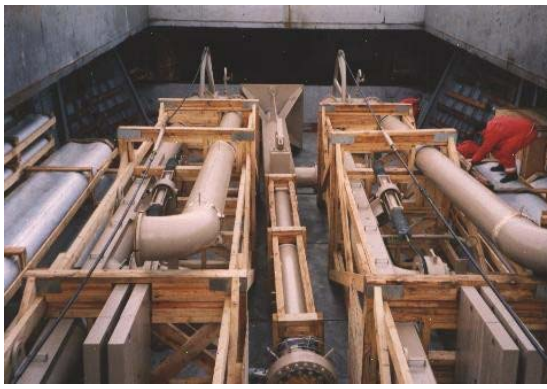
After lunch break, at 1230, the 2 long marine loading arms were loaded into the tween deck No. 1 aft part, one of them at the port side close to the already loaded pipes, the second one close to the already loaded pipes at the starboard side.



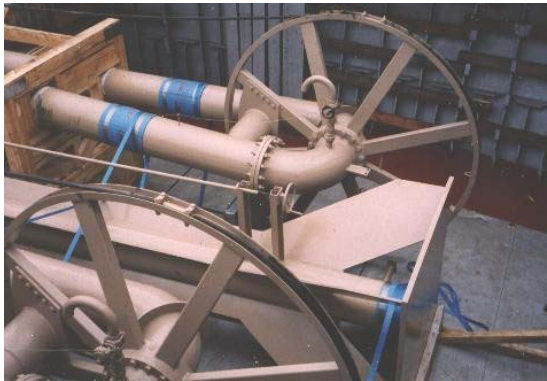
Then the first of the base risers was loaded and stowed in the middle of the tween deck, between the 2 marine loading arms. This base riser was stowed as far aft as possible with the foundation plate pointing forward approximately 3 m from the forward bulkhead.

The second base riser was loaded in starboard side on top of two crates with steel pipes with sufficient square dunnage between the base riser and the pipes to spread the weight and in order to avoid any damage to the pipes. This one was stowed with the foundation plate pointing aft.





The crew did the lashing of the cargo. For the marine loading arms and the base risers the surveyor had recommended 5 lashings on each side.





At 1520 the surveyor carried out a final securing inspection together with the chief officer. They found the securing of the cargo satisfactory, and the surveyor was satisfied that the handling, stowage and securing of all cargo was carried out in context with his recommendations and proposals.

### Distress call and rescue operation

Via MRCC Aarhus the Investigation Division has received reports on communication etc. from JRCC Stavanger, MRCC Rome and RCC Malta, which all were involved in the rescue operation.

The following are extracts from the reports. Time is local time (UTC+1).

#### **18/2**

0736: JRCC Stavanger receives Inmarsat C distress from KARIN CAT in position 35°21' N 019°25' E (approx. 250 n.m. East of Malta), sinking.

0741: JRCC Stavanger relays the distress call to MRCC Rome.

0751: JRCC Stavanger acknowledges the receipt of the distress call to KARIN CAT – no answer.

0753: MRCC Rome relays the distress call to RCC Malta.

0831: JRCC Stavanger transmits broadcast to all ships on Inmarsat – A and C with a request to assist in rescue.

Several ships in the area report in to JRCC Stavanger and to RCC Malta.

About

1100: BUNGA PELANGI DUA reports, that all 7 crew members of KARIN CAT have been saved and that KARIN CAT is still afloat at 35°18.7' N 019°25.1' E.

The rescue operation is called off.

1859: The tugboat AEGEAN PELAGOS is proceeding to the area.

#### **19/2**

0220: M/V MUNKEBO MAERSK reports to RCC Malta that KARIN CAT is still afloat in position 35°13.03' N 019°35.05' E.

0954: RCC Karup receives the last EPIRB transmission from KARIN CAT.

1600: AEGEAN PELAGOS arrives in the area but KARIN CAT is not sighted.

### The Weather

According to JRCC Stavanger the weather in the area was wind from North – 15 kts (8 m/sec.).

According to RCC Malta the weather forecast at 0915 (UTC) for Malta and 50 nautical miles radius for 18/2-2003, 1000 to 2200 (UTC), was mainly cloudy with showers which might be thundery at times, wind Southwest 3 to 4 becoming West to Northwest force 5 to 6, locally force 6, sea slight to moderate becoming rough and swell moderate East Northeast becoming low to moderate.

### Supplementary statement by the chief officer of KARIN CAT

On 18 June KARIN CAT's chief officer met with the Investigation Division.

The report from the Marine & Cargo Surveyor for the Antwerp cargo was looked over and the mate could agree to the content of the report. His written statement, which was presented at the Shipping Inquiry at the Danish Embassy in Cairo, was written after his memory and could very well be inaccurate in respect of the actual form, size and stowage of the loading arms in question.

The chief officer, however, is quite certain that the loading arms were lashed with 8 lashes on each side. This is also based on his memory but also on subsequent talks he had with crew members. After the surveyor had left the ship in Antwerp he and other crew members further secured the loading arms with timber against the forward bulkhead and the forward recess.

The owner had given instructions that the tween deck of hold No. 2 should be kept free, because there was some uncertainty about supplementary cargo, which may be could be a container load. When the ship left Antwerp this question was still not yet decided.

After Antwerp there was no rearrangements of the cargo in hold No. 1 or in No. 2 lower hold.

In Ridham stevedores did the loading and stowage at the forepart of the tween deck in hold No. 2 and the crew did the lashing of the cargo under the supervision of the chief officer.

In Cherbourg the ship had to wait for four days due to holidays. It was the stevedore from Ridham, who also was in charge during the loading in Cherbourg. The boxes were stowed at the aft part of the tween deck in hold No. 2. The radar truck was stowed in the middle. The crew did the lashing and especially the radar truck was carefully lashed and secured with dunnage and timber.



On its way South they had fine weather in the Biscay but encountered bad weather when off Cap Finisterre.

The loading in Talamone was quick. It was a small load of only 17 ton on 18 pallets. They were all stowed in the middle of hold No. 2, tween deck.

Only half an hour after the ship had left Talamone they had to return due to a broken stay bolt at cylinder no. 3. After repair the ship left again and the course was set towards a waypoint south of Sicily. From there the course was set to 104°, north of Malta and direct towards the Suez Canal.

During the morning on 18 February the chief officer was on watch alone on the bridge. The ship was proceeding all right although he estimated the sea to be about 5 meters high. Although there was a lot of noise from the wind and from the engine he wonders at the fact that neither he nor others of the crew heard any noise from the shifting of the cargo.

After he and afterwards the master had observed the conditions in hold No. 1 the crew assembled on the bridge. During the next couple of hours they pumped from the holds. Soundings from hold No. 2 did not indicate water at which he wondered, as the bulkheads between the two holds were not watertight.

When they found the situation to be so dangerous that it was decided to abandon the ship, it was deemed too risky to go downstairs to collect any personal documents or other personal belongings. The ships logbook was on the bridge but no one thought of bringing it on board the rescue boat.

They spent about 3 hours in the life raft before they, about 1100 were rescued by BUNGA PELANGI DUA.

After the loss the chief officer had thought quite a lot of how the cargo in hold No. 1 could shift as it did. He was still of the opinion that the cargo had been very well secured when the ship left Antwerp, and that the check of cargo and the adjustments of the lashings during the voyage had been well performed.

However, he saw by himself the total collapsed and to the starboard shifted cargo, when he inspected the hold during the morning of 18 February.

#### The inspection by the Danish Maritime Authority in Antwerp

According to the Danish inspector, who visited KARIN CAT on 27 January, he did not issue any requirements in relation to the safety certificates of the vessel.

The inspector witnessed a discussion between the master and a representative from the stevedores and also a telephone conversation between the master and the ship's agent about who should do the lashing of the cargo. The question was not settled, when the inspector left KARIN CAT.

## 7. Analyses

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### The shift of the cargo

In the morning of 18 February the chief officer and afterwards the master saw that the cargo at the tween deck of hold No. 1 had shifted to starboard. They also saw that the foundation plate of one of the loading arms (in the report of the German surveyor described as base riser) had punched a hole in the side plating of the vessel.



The bosun found the cargo in hold No. 2 tween deck secured and in place. The lower holds were not checked.

Based on the statements mentioned above the Investigation Division is of the opinion, that a total shift of the cargo in hold No.1, tween deck, had occurred and that it had caused the hole in the hull. The Investigation Division also assumes, that initially the rest of the cargo was still secure and in its stowed position.

There is no firm evidence as to how and exactly when the shift of the cargo took place.

During the inspection of the holds by the master and the bosun in the morning of 17 February the cargo was found to be in place and the lashings were adjusted. At that time and until and during the next morning the vessel was rolling, pitching and heaving due to heavy swell.

When the chief officer took over the 00 – 06 watch on 18 February nothing seemed wrong and it was not before the end of his watch, between 0500 and 0600 that the chief officer realized that the vessel was rolling more to starboard than to port.

Based on these statements the Investigation Division is of the opinion that the shift of the cargo took place around 05.00 in the morning of the 18 February.

An explanation of the cargo shift can only be speculative. The movements of the vessel in the heavy swell could have caused the wooden frames of the loading arms and the wooden stays to collapse with the consequences of slackening and breaking of the lashes followed by the shift of the loading arms.

The fact that during the voyage the crew on several inspections had adjusted the lashings, at the latest on 17 February, indicates that there were minor settlings of individual cargo items.

### The securing of the cargo

The chief officer had served as such on board KARIN CAT since 1995. He was used to handle special cargoes like the one loaded in Antwerp.

The loading of the Antwerp cargo was supervised by a surveyor appointed by the freight forwarder of the cargo. According to the report of the surveyor he was satisfied with the condition of the vessel and also with the handling, stowage and securing of the cargo, which was carried out in context with his proposals and recommendations.

During the actual loading the stevedoring firm, which handled the loading from the quay to the stowage position in the holds of the ship, protested to the master because the crew itself did the lashing. The protest was not acted on and the crew continued the lashing.

The surveyor's recollection is, that the loading arms and the base risers were secured with 5 span-sets on each side. According to the chief officer's recollection, confirmed by subsequent talks with other crew members, they used 8 span-sets on each side. The crew did some further securing of the cargo after the surveyor had left.

There were no rearrangements of the Antwerp cargo after the vessel had departed Antwerp.

According to the evidence available to the Investigation Division the measures taken in connection with the loading, stowage and securing of the cargo in Antwerp could be considered safe and satisfactory for the intended voyage.

The sequence of events, however, proved that this was not the case and that the securing of the cargo in hold No.1, tween deck, was insufficient under the circumstances encountered by the vessel during the last part of its voyage.

## **8. Conclusion**

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The foundering of KARIN CAT was caused by a shift of the cargo on the tween deck of hold No.1 whereby a hole was punched in the ship's plating through which seawater poured into the ship at a rate which could not be controlled by the ship's pumps.

The cargo shifted because it was insufficiently secured to withstand the movement of the vessel during the prevailing rough sea.

The rough weather and heavy swells, which caused the rolling, pitching and heaving of the vessel during the last part of the voyage, has been a contributory cause to the foundering.

## **9. Enclosures**

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Enclosure 1 : The cargo stowage plan for the actual voyage.

Enclosure 2 : Map with a sketched track of KARIN CAT's voyage from Talamone to the position of the foundering.

Niels Mogensen  
Deputy Chief of Division

KARIN CAT  
ATT  
FRANCO

27 01 03 DEPART. ANTWERP  
30 01 03 DEPART. RIDHAM  
04 02 03 DEPART. CHERBOURG  
14 02 03 DEPART. TALAMONE

FRM.  
ERIK

