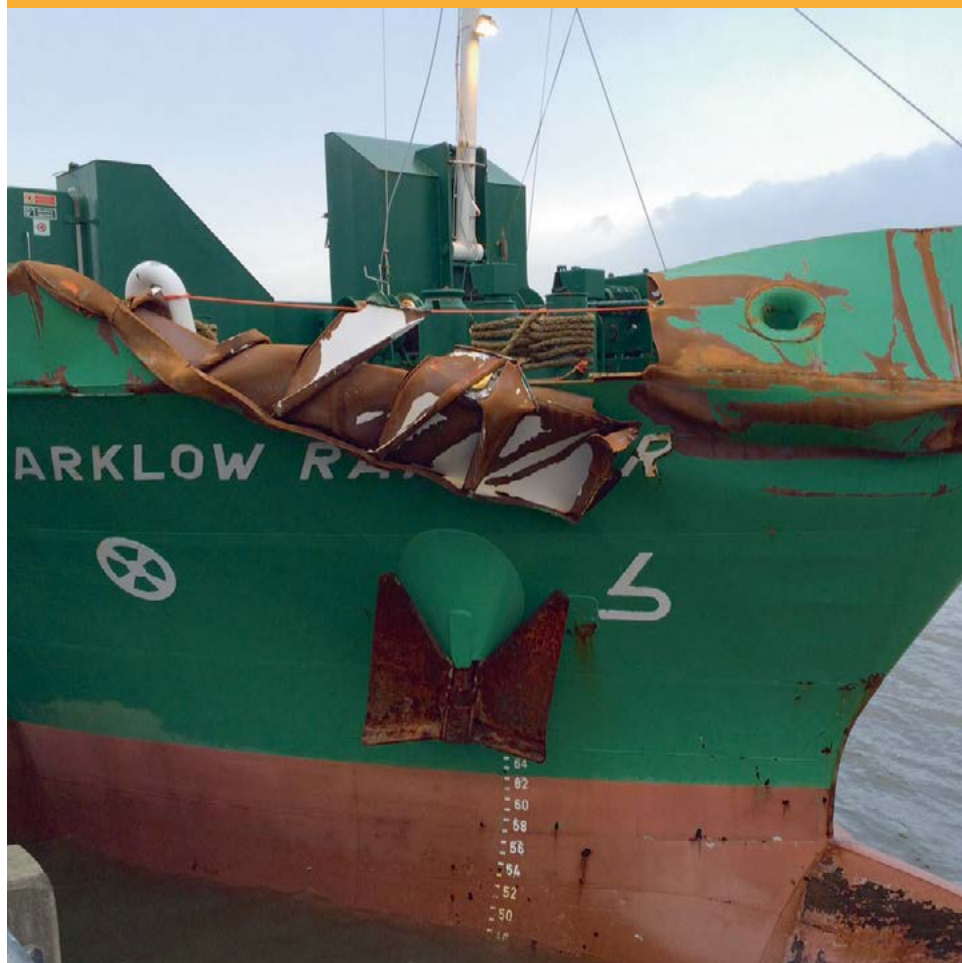




ONDERZOEKRAAD
VOOR VEILIGHEID

Collision in anchorage area

MS Arklow Rambler & MT Atlantic Jupiter,
Maas Approach



Collision in anchorage area

MS Arklow Rambler & MT Atlantic Jupiter, Maas
Approach, 8 February 2016

The Hague, February 2017

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Dutch Safety Board

When accidents or disasters happen, the Dutch Safety Board investigates how it was possible for them to occur, with the aim of learning lessons for the future and, ultimately, improving safety in the Netherlands. The Safety Board is independent and is free to decide which incidents to investigate. In particular, it focuses on situations in which people's personal safety is dependent on third parties, such as the government or companies. In certain cases the Board is under an obligation to carry out an investigation. Its investigations do not address issues of blame or liability.

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NB: This report is published in the Dutch and English languages. If there is a difference in interpretation between the Dutch and English versions, the Dutch text will prevail.

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On Monday, 8 February 2016, the Hong Kong tanker Atlantic Jupiter collided with the Dutch cargo vessel, Arklow Rambler. Both ships were seriously damaged.

The collision occurred in anchorage area 4E, close to the Port of Rotterdam, where both ships were at anchor. Due to adverse weather conditions, the anchors of both ships provided insufficient grip and both ships drifted from their position. The Atlantic Jupiter decided to hoist anchor and wait for the weather to improve while under power. During the manoeuvre, the distance between both ships became increasingly smaller, up until the point at which a collision was unavoidable.

This involved a serious accident as specified in the Casualty Investigation Code of the International Maritime Organization (IMO) and EU Directive 2009/18/EC. This means that The Netherlands, as flag state, has the obligation to make an initial assessment of the accident for possible significant safety lessons (assessment).

The conclusion of this assessment was that there were times when it appeared that the accident could have been prevented. Since the accident did nevertheless occur, the Dutch Safety Board assessed that there were safety lessons to be learned and the Dutch Safety Board must therefore ensure that a safety investigation is carried out. This duty to investigate is also laid down in the Besluit Onderzoeksraad voor Veiligheid ('Dutch Safety Board Decree'). This report is the result of this safety investigation.

Investigation question

The following question was formulated to be answered for the purpose of the investigation.

"Which safeguards and control measures are there for the safety of ships in an anchorage area and where did these safeguards and control measures fail in this incident?"

To answer this question, the following sub-questions were investigated.

- Which procedures and agreements are there among ships that are within an anchorage area and how were these followed by the Arklow Rambler and Atlantic Jupiter?
- What is the role of the Vessel Traffic Service (VTS) in the prevention of collisions and the risk control after a collision in an anchorage area and how did they implement this?
- Which procedures and agreements are there for ships and the VTS regarding the restriction of subsequent damage/risk control after a collision has occurred?

Investigative approach

The investigation made use of interviews with those involved, VTS radar and sound recordings, AIS¹ and information, video and photo materials provided by the shipping companies involved. It was not possible to use data from the Voyage Data Recorder (VDR). The Atlantic Jupiter is required to have a working VDR on board, but it was not operating at the time of the incident. The Arklow Rambler is not required to have a VDR on board, nor did it have one.

For the analysis of this incident, a Timeline analysis and a Bow-Tie analysis were conducted. The Bow-Tie analysis assumes that accidents occur because safety provisions, otherwise known as barriers, did not work or were not present. The direct and underlying causes of absent or non-functioning safety barriers are being investigated. On the one hand, this applies to the barriers between the cause and the accident and, on the other hand, between the accident and the consequence(s).

¹ Automatic Identification System, transponder that sends and receives information via VHF concerning, among other things, the position and speed of the ship and nearby ships.

FACTS AND BACKGROUND INFORMATION

Circumstances

On 8 February 2016, at approximately midnight, the Dutch flagged cargo ship, Arklow Rambler, arrived at Maas Approach, close to Rotterdam. The ship was loaded and headed for Rotterdam. The weather conditions were poor with a southwestern wind of wind force 7, with gusts of up to wind force 8.

After the Arklow Rambler had sought contact with the Maas Approach Vessel Traffic Service (VTS), it appeared that the berth in the port was not available until 02:00 hours LT² the following morning. The captain therefore decided to anchor in anchorage area 4E (Figure 1).

Anchoring

An anchor is a part of the equipment of a ship that is thrown overboard to secure the ship at locations where it is not possible to moor (anchoring). Traditionally, an anchor is an iron or steel construction with several large arched flukes that can bury into the sea bottom. The anchor is connected to the ship by means of the anchor chain. By lowering the anchor to the seabed and adjusting the chain length, the ship's drift is restricted.

Dragging anchor

When the wind force and/or current increases, a situation may occur where the anchor offers insufficient holding power, so that the ship no longer remains in position and the anchor is pulled along due to these influences. This is called a dragging anchor. By extending the length of the chain, this can be prevented. If the wind force is so powerful that the maximum chain length cannot keep the ship in place, the anchor must be hoisted and propulsion must be used.

Anchorage areas

Not all ships can sail directly into the Port of Rotterdam. The berth may be occupied, for example, or the ship is waiting for final orders to load cargo in Rotterdam. To ensure that these waiting ships provide as little disruption as possible for passing traffic, special areas are designated anchorage areas. The anchorage areas are located outside of the traffic lanes. A ship is free to determine its own suitable anchorage area and anchor position. In some cases, an anchorage area is assigned by the Maas Approach VTS.

² All times are specified in Local Time (LT): Dutch winter time (GMT +1).

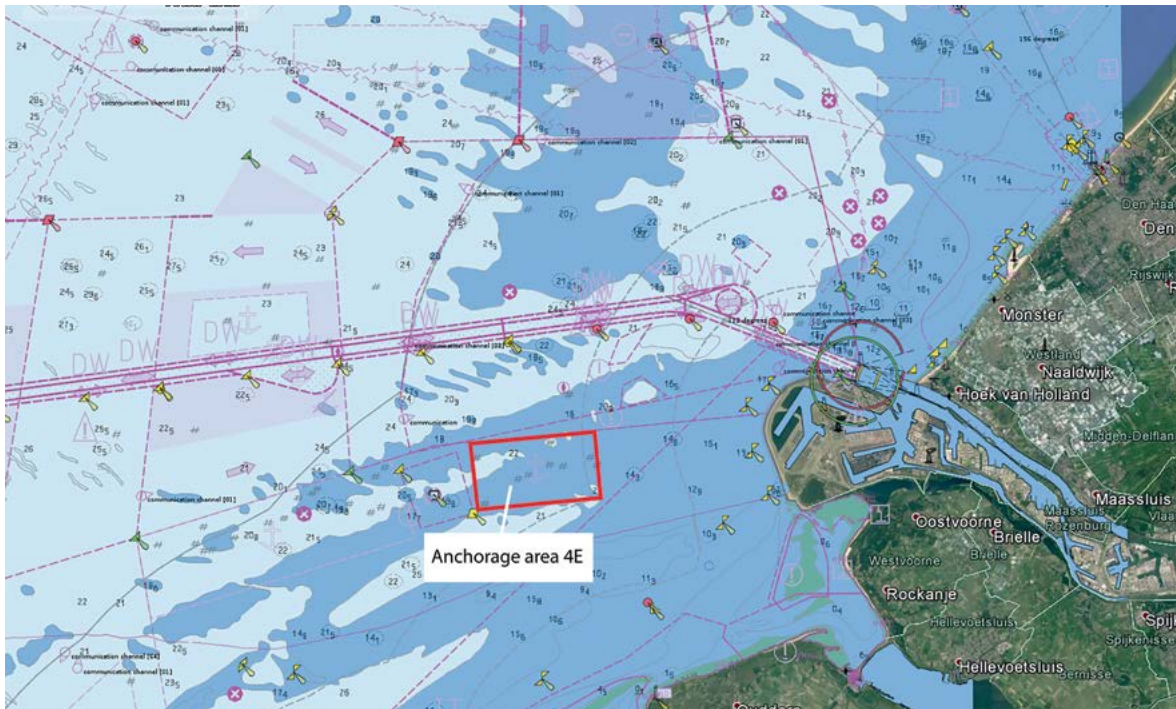


Figure 1: Anchorage area 4E near Rotterdam port. (Source: Google Earth)

At 00:20 hours, the Arklow Rambler entered anchorage area 4E and decided to anchor in the northeastern corner of the area. At that time, there were 15 ships waiting in anchorage area 4E.

At 00:30 hours, the Arklow Rambler reported to Maas Approach VTS that the ship was anchored. At that time, it was almost spring tide.³ Because of this, the water was flowing at a speed of ± 2 knots in a northeastern direction. This, combined with the powerful southeastern wind, caused the Arklow Rambler’s anchor to begin to drag. At 02:09 hours, the Arklow Rambler, while being dragged, was blown out of the anchorage area in a northeastern direction into the nearby traffic lane (Figure 2).

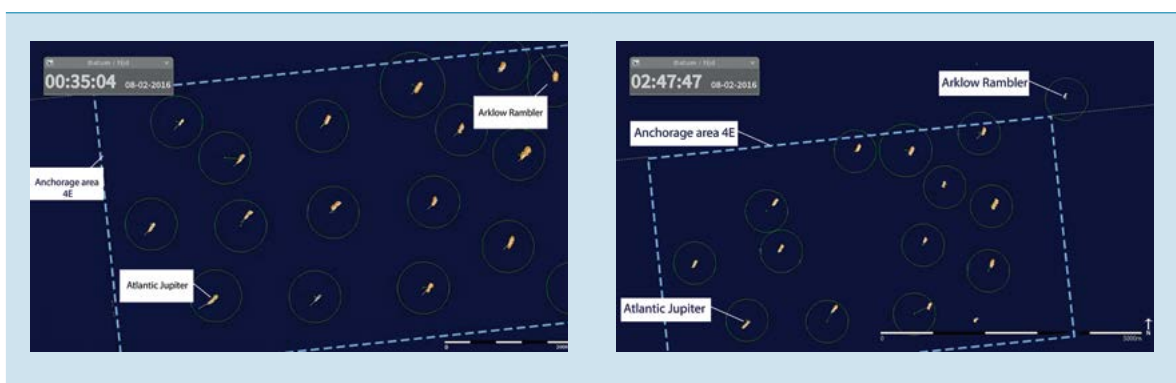


Figure 2: Initial anchor position of the Arklow Rambler and the Atlantic Jupiter (left). After some time, the Arklow Rambler’s anchor began to drag and it ended up in the traffic lane north of the anchorage area (right) (Source: Radar images from the VTS Port of Rotterdam).

3 Spring tide: is the period of the tide in which the difference between high and low water is the greatest. Not only is the high tide higher than average, but the low tide is also lower than average. Because of this, the water column moves at a greater speed.

As a result, at 03:45 hours, the captain decided to hoist the anchor on board and to try again in a different anchor position. This time, he decided to anchor his ship in the southwestern corner of the anchorage area. At approximately 04:00 hours, the Arklow Rambler reported to Maas Approach VTS that it was once again anchored. The ship was now remaining in position. The current had decreased in the meantime to ± 1 knot in a northeastern direction. The wind force had also decreased to 6/7.

The Atlantic Jupiter was anchored 0.8 nautical miles⁴ north of the new anchor position of the Arklow Rambler. This tanker, registered in Hong Kong, had arrived in the anchorage area two days earlier, on 6 February, and was waiting for a new load and destination.

The wind force gradually increased as the morning progressed. Several ships in the anchorage area had reported dragging anchors. The Arklow Rambler and the Atlantic Jupiter were dragged downwind, at intervals, in a northeastern direction. This caused the distance between the two ships to decrease from 0.8 to 0.5 nautical miles.

In the afternoon, the tidal flow began again in a northeasterly direction. The wind force had also increased: more than 8 at approximately 13:30 hours. The Arklow Rambler was dragged backwards at the speed of 1 knot, and the Atlantic Jupiter at 1.8 knots. The Atlantic Jupiter had no load on board. Because of this, the ship was sitting high in the water and the strong wind therefore had more influence on the ship in comparison with the loaded Arklow Rambler.

At 13:36 hours, the captain of the Atlantic Jupiter called the Maas Approach VTS, reported that the ship was unable to maintain its position because of the strong wind, and would hoist the anchor on board. It was agreed that the Atlantic Jupiter would sail south of the anchorage area until the wind had died down somewhat.

At 14:06 hours, the Atlantic Jupiter had its anchor on board and was sailing slowly in a southerly direction. Because of the change in course, the Atlantic Jupiter was at an angle in front of the Arklow Rambler.

4 Nautical mile: distance indicator - 1 nautical mile = 1852 metres.

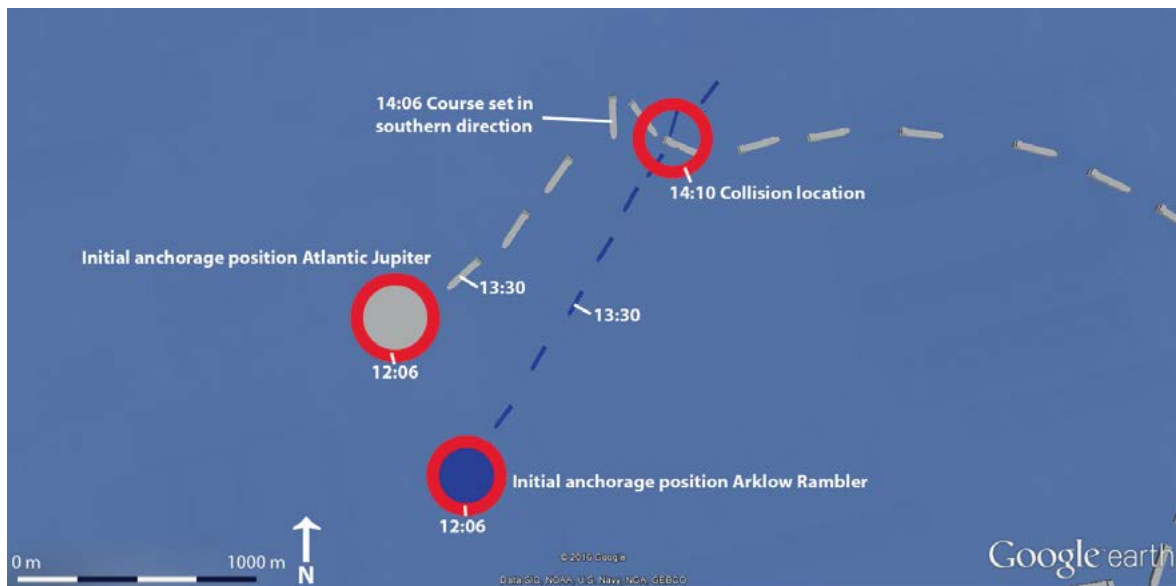


Figure 3: The ships were dragged backwards out of the anchorage area, after which the Atlantic Jupiter hoisted anchor and planned to sail south. While executing this manoeuvre, the Atlantic Jupiter hit the Arklow Rambler. (Source: Google Earth)

The captain of the Arklow Rambler was uneasy with this new situation and attempted to contact the Atlantic Jupiter by maritime radio at 14:08 hours. In the meantime, the distance between both ships decreased.

The Atlantic Jupiter, assuming that Maas Approach VTS was calling the ship (maritime radio conversation 1), stated that it was underway to a position south of the anchorage area. However, it was actually the Arklow Rambler, attempting to make contact on several maritime radio channels.

At 14:10 hours, the stern of the Atlantic Jupiter hit the bow of the Arklow Rambler. The bow of the Arklow Rambler was dented and small holes appeared above the waterline (Figure 4). The blow tore open the hull of the Atlantic Jupiter at the level of the machine room, causing a 15-metre long horizontal gash above the waterline (Figure 5).



Figure 4: Damage to the bow of the Arklow Rambler. (Source: Dutch Safety Board)



Figure 5: From inside the Atlantic Jupiter, looking out through the 15-metre long gash. (Source: Dutch Safety Board)

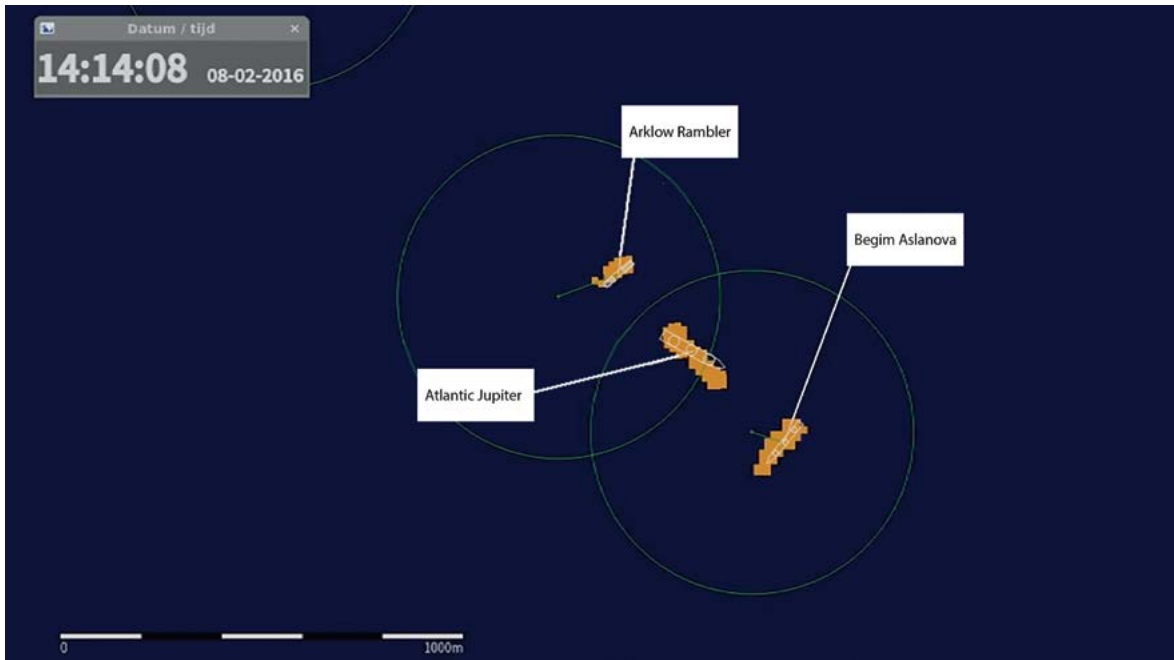


Figure 6: The Atlantic Jupiter is headed toward the Begim Aslanova after an earlier collision with the Arklow Rambler. (Source: Radar images from the VTS Port of Rotterdam).

At 14:12 hours, a nearby ship (the Begim Aslanova), also anchored there, hailed the Atlantic Jupiter on the Maas Approach VTS working channel and requested that the Atlantic Jupiter pass behind (Maritime radio conversation 1). There was no response. The concerned ship made three subsequent calls on maritime radio channel 16. Maas Approach VTS also attempted to make contact with the Atlantic Jupiter at 14:13 hours. The Atlantic Jupiter responded to this and confirmed that it would navigate behind the Begim Aslanova. At approximately 14:16 hours, the Atlantic Jupiter passed behind the Begim Aslanova at a distance of 0.1 nautical miles.

Maritime radio conversation 1

Communication between the Atlantic Jupiter (AJ), the Arklow Rambler (AR) and the Maas Approach VTS (MA) just prior to and after the collision. The collision occurred at 14:10 hours.

- 14:08:12 AJ - Maas Approach, Maas Approach, Atlantic Jupiter Victor Romeo Echo Yankee 5 (VHF01)
- 14:08:22 AR - Atlantic Jupiter, Atlantic Jupiter (VHF01)
- 14:08:23 AJ - Yes sir, we are under way now and we will be on the southern anchorage (VHF01)
- 14:08:36 AJ - Maas Approach, Atlantic Jupiter (VHF01)
- 14:08:41 MA - Atlantic Jupiter, Maas Approach (VH01)
- 14:08:42 AJ - Yes sir, we are heading south of the anchorage and we will be drifting (VHF01)
- 14:08:50 MA - You will drift south of the anchorage. Understood, Atlantic Jupiter. Thank you for the report. Stand-by 01 over (VHF01)

14:12:00 MA - Atlantic Jupiter, Maas Approach (VHF01)
 14:13:40 MA - Atlantic Jup... (VHF01)
 14:13:45 MA - Atlantic Jupiter, Maas Approach, over (VHF01)
 14:13:49 AJ - Yes Maas Approach, copy, moving out (VHF01)
 14:13:53 BA - Atlantic Jupiter, Aslanova (VHF01)
 14:13:55 AJ - Yes, copy, going (VHF01)
 14:13:58 BA - Atlantic Jupiter, Aslana, keep my astern, keep my astern. Not to
 aship, not to aship (VHF01)
 14:14:04 AJ - Yes sir, we're going astern (VHF01)
 14:20:20 MA - Arklow Rambler, Maas Approach (VHF01)
 14:20:28 MA - Arklow Rambler, Maas Approach, over (VHF01)
 14:20:37 MA - Arklow Rambler, Arklow Rambler, Maas Approach, over (VHF01)

In the meantime, on board both ships, the crew examined the area that had been damaged. Although both ships were damaged above the waterline, water nevertheless entered at fairly regular intervals. The crew of the Arklow Rambler were able to secure the holes provisionally. However, the hole in the hull of the Atlantic Jupiter was too large. The captain then decided to manoeuvre in such a way as to keep this area out of the wind and waves as much as possible and, where possible, to cover it with wooden and steel plates.

Once completed, the captain of the Atlantic Jupiter called Maas Approach VTS at 14:30 hours and, after receiving no response, at 14:34 hours reported the collision.

Maritime radio conversation 2

Conversation between VTS Maas Approach and the Atlantic Jupiter, 20 minutes after the collision.

14:30:58 AJ - Maas Approach, Maas Approach, Atlantic Jupiter (VHF01)
 14:34:46 AJ - Maas Approach, Maas Approach, this is Atlantic Jupiter (VHF01)
 14:34:48 MA - Maas Approach over (VHF01)
 14:34:46 AJ - Maas Approach, Atlantic Jupiter (VHF01)
 14:34:57 MA - This is Maas Approach, bring your message over (VHF01)
 14:34:58 AJ - Maas Approach, this is Atlantic Jupiter, we have been in contact with
 Arklow Rambler which is also drifting (VHF01)
 14:35:02 MA - Atlantic Jupiter, this is Maas Approach, understood, thank you.
 (VHF01)

Maas Approach VTS captured the communication from the Atlantic Jupiter ("*Maas Approach, this is Atlantic Jupiter, we have been in contact with Arklow Rambler...*") as radio contact between both ships and did not undertake any follow-up action (Maritime radio conversation 2). The Atlantic Jupiter also left it at that.

At 14:46 hours, the Arklow Rambler contacted the Maas Approach VTS and reported the collision. After acknowledging the communication, the Maas Approach VTS asked if the other ship, the Atlantic Jupiter, was still in the anchorage area. The response was a negative. A few minutes later, the Maas Approach VTS instructed the Atlantic Jupiter to contact the Arklow Rambler on a different maritime radio channel to exchange details.

At 15:07 hours, Arklow Shipping, the shipping company of the Arklow Rambler, contacted the port terminal where they were supposed to berth on 9 February at 05:00 hours. Arklow Shipping asked permission to berth as soon as possible, considering the damage sustained by the Arklow Rambler. This was possible with an additional fee, which Arklow Shipping accepted.

At 15:17 hours, the Maas Approach VTS once again contacted the Arklow Rambler and asked about the extent of the damage. It also communicated that the berth in the port was available. The Arklow Rambler indicated that the railing section of the bow had been bent and that it had several small holes in the hull that had already been provisionally closed. It was agreed that the Arklow Rambler would be at the pilot station at 16:30 hours. The Arklow Rambler finally moored in the Port of Rotterdam at 19:00 hours.

At 15:22 hours, the Maas Approach VTS then also contacted the Atlantic Jupiter to ask about its damage (Maritime radio conversation 3). After this communication, it became clear to Maas Approach VTS that the Atlantic Jupiter had incurred major damage above the waterline and therefore notified the Dutch Coast Guard.

Maritime radio conversation 3

More than an hour after the collision, the VTS Maas Approach had a complete overview of the consequences of the collision.

- 15:22:46 MA - Atlantic Jupiter, this is Maas Approach over (VHF01)
- 15:22:48 AJ - Maas Approach, this is Atlantic Jupiter (VHF01)
- 15:22:48 MA - Atlantic Jupiter, do you have some details about your damage, please? (VHF01)
- 15:23:08 AJ - damage on the engine room, stern part, slightly above waterline (VHF01)
- 15:23:22 MA - It is at the stern part, at height of the engine room, correct? (VHF01)
- 15:22:26 AJ - Yes, it is the engine room part, but above water line
- 15:23:30 MA - Is there a hole in it or not? (VHF01)
- 15:23:32 AJ - Yes, there is major damage and we have to go somewhere to repair (VHF01)
- 15:23:40 MA - Say again? (VHF01)
- 15:23:42 AJ - Need repairs to get it out. Major damage (VHF01)
- 15:23:47 MA - It is major damage on the stern in the engine room, and there is also a hole in it, correct? (VHF01)
- 15:23:54 AJ - Yes, that is correct (VHF01)
- 15:23:59 MA - Thank you (VHF01)

At 15:38 hours, the Dutch Coast Guard contacted the Atlantic Jupiter. It was not until the following morning at 09:42 hours that the ship entered the Port of Rotterdam for inspection and repairs.

Arklow Rambler

Arklow Shipping Nederland B.V. is the owner and manager of the Dutch flagged Arklow Rambler, and manages approximately 45 other ships as well. The Arklow Rambler was built in 2002 by Bijlsma Lemmer B.V Shipyard and is an 89.95-metre long cargo ship. For the most part, the ship sails to ports on the North Sea and the Bay of Biscay. At the time of the collision, the crew consisted of seven people. The captain, first mate and first engineer are Ukrainian nationals, the second mate is a Russian national and the three sailors are Philippine nationals.

Atlantic Jupiter

The Hong Kong-flagged ship, Atlantic Jupiter, is the property of Heroic Lynx Incorporated and is managed by MTM Ship Management. MTM Ship Management, located in India, manages more than 60 ships. The Atlantic Jupiter was built in 2009 by Hyundai Mipo Dockyard Company Ltd. and is a 184.33-metre long chemical and oil tanker. The ship is mainly deployed between Southeast Asia and Europe. At the time of the collision, the crew consisted of twenty-one people. The captain, second mate, third mate and the first engineer are Indian nationals. The first mate is a Russian national. Other crewmembers are Indian, Sri Lankan and Ukrainian nationals.

Maas Approach VTS

The vessel traffic service area outside of the Port of Rotterdam, also known as the 'Maas Approach', is managed by a Vessel Traffic Service (VTS).

The main objectives of a VTS are: assisting shipping traffic in the safe use of the waterways; ensuring the efficient flow of traffic through the waterways and assisting in the prevention of environmental pollution.⁵ This is done by way of direct communication with ships in the area.

The vessel traffic service is performed by VTS operators from a vessel traffic service centre. This is done with the help of, among other things, the view they have of the waterways, cameras, radar and AIS, together with communication means such as the maritime radio and Digital Selective Calling (DSC). There is an Operator on duty for Maas Approach at all times of the day.

Authority of the VTS

A VTS has several authorities within a legally determined area: the vessel traffic service area. The services it provides can be classified into three groups:

- Information service: essential and current information to support navigation, such as ship movements and hydrographic and meteorological information.
- Vessel traffic service: providing ships with information, advice and instructions that identify and manage potentially dangerous traffic situations and for the safe and efficient flow of traffic.
- Navigation assistance service: a more intensive provision of information in the event of, for example, calamities, where assistance is provided in navigation decisions on board a ship.

Anchorage area 4E is located outside of the vessel traffic service area. This means that the Maas Approach VTS may only provide an information service, but has no legal powers in this area.

In the anchorage area where the Arklow Rambler and Atlantic Jupiter were anchored, there is one barrier in place to prevent collisions: maintaining sufficient distance between ships. To ensure that ships maintain sufficient distance from each other, the anchorage area has various checks:

- There are three checks carried out on the ship. The first is selecting the position to drop anchor. The second is the anchor, and the third check is the anchor watch. The anchor watch keeps an eye on the position of the ship and the surrounding ships.
- Additionally, the Maas Approach VTS monitors this and warns ships if they start to drift. They have VTS operators at their disposal who, with the help of radar, keep an eye on the anchorage areas. However, they have no jurisdiction or duty to conduct this supervision in the anchorage area and provide this as an additional service by the Port of Rotterdam.
- Good communication between ships and the VTS is essential to maintain sufficient situational awareness and to therefore be able to estimate whether or not the distance from other ships is still sufficient. In addition to making contact and receiving responses, good communication entails that a message is understood by the originating party and that the sending party also knows that the message is understood by the receiving party.

Distance

One of the risks in an anchorage area is that ships may have to deal with a dragging anchor during strong wind conditions. This risk is greater in combination with the spring tide. The crew must be extra alert to the surroundings and take timely action when the distance between the ships in the anchorage area decreases or when dragging cannot be properly controlled. It is then customary to hoist the anchor on board and wait for better weather elsewhere, or to drop anchor again in a different spot.

The initial distance of 0.8 nautical miles between the Arklow Rambler and the Atlantic Jupiter is not unusual in a busy anchorage area. The distance of 0.5 nautical miles that arose due to dragging was, given the weather conditions, risky. However, neither ship took any action to increase the distance. That the Atlantic Jupiter finally hoisted anchor in order to sail was because it felt it had drifted too far from its initial anchor position.

There is no rule for the distance that ships must maintain between one another. The Safety Management System of the Arklow Rambler and the Atlantic Jupiter did not require any specific distance. Here, the principle of "good seamanship" was used. This principle assumes that the professional assessment framework of the sailor on duty must be guiding. This means that, in the event of anchoring in an anchorage area, the weather conditions, the state of the ship, the presence of any dangerous loads and other aspects,

such as the strength of the current, are constantly re-considered in order to determine a safe distance with regard to other ships in the anchorage area. When parameters change, this can lead to a modified safe distance at the discretion of the sailor.

The crew of the Arklow Rambler was aware of the bad weather and, with it, the greater chance of a dragging anchor. Moreover, earlier on the day of the collision, they had already experienced a dragging anchor, the result of which was ending up in the traffic lane next to the anchorage area. After the Arklow Rambler had been in the traffic lane for a fairly long time, approximately one hour, it hoisted anchor and sailed to the most southwestern point of the anchorage area. There it was moored at 0.8 nautical miles from the Atlantic Jupiter, which, according to the captain of the Arklow Rambler, was sufficient distance. When the distance between both ships became less and less and was reduced to under 0.5 nautical miles, the Arklow Rambler took no action and assessed the situation as being under control. Because the ships were dragging almost parallel to each other, they saw no risk in the short distance.

The captain of the Atlantic Jupiter felt that the Arklow Rambler was getting too close, but felt that it was the task of the VTS to say something and did not undertake any action himself. However, anchorage area 4E is not officially a VTS area, and Maas approach VTS has no jurisdiction. Even if the anchorage area were to fall under the jurisdiction of Maas Approach VTS, it is still the responsibility of the ships themselves to maintain an appropriate distance. There are only a few anchorage areas, including the port of Singapore, where the VTS determines the location of ships, rather than the captain of the ship.

The VTS does keep an eye on the distances between the anchored ships by means of an anchor watch function, visible on the VTS operator's radar as a circle around a ship. If a ship goes outside of the circle, an alarm goes off to warn the VTS. The VTS can then contact that ship to notify them about a possible dragging anchor. In the case of the Atlantic Jupiter and the Arklow Rambler, this was not necessary, as they both knew that they had dragging anchors. This had already been reported.

Manoeuvre by the Atlantic Jupiter

Because the Atlantic Jupiter felt it had drifted too far from its original anchor position, the Atlantic Jupiter decided to lift anchor and sail to the south of the anchorage area. In the meantime, the distance between the Atlantic Jupiter and the Arklow Rambler had decreased to 0.5 nautical miles.

The Atlantic Jupiter was insufficiently aware of the environmental factors after the anchor had been lifted and had little control over the ship. What exactly happened in the time after the anchor had been lifted is not known due to the lack of VDR data. Because of the sudden change in course by the Atlantic Jupiter, the Arklow Rambler was no longer able to take timely preventative measures.

When hoisting the anchor on board, there is a moment when the ship has poor manoeuvrability. This critical moment is just after the anchor is freed from the sea floor. The anchor no longer holds the ship in position, but the ship also does not yet have any forward speed. Speed is needed to generate rudder pressure and thus be able to steer.

In both situations, it is important to anticipate the surroundings and factors such as wind speed, current and surrounding shipping traffic. It is wise to create sufficient rudder pressure first by building up forward speed prior to changing course.

The Atlantic Jupiter and the Arklow Rambler were dragging parallel with one another in a northeasterly direction. The Atlantic Jupiter was dragging at a greater speed than the Arklow Rambler. This brought the Atlantic Jupiter to a position even with the Arklow Rambler. The Atlantic Jupiter felt that it was drifting too far; it was decided to raise anchor and sail to the south of the anchorage area. Because the VDR of the Atlantic Jupiter was not operating at the time of the accident, it is not known exactly what happened on board the Atlantic Jupiter. It is clear that the Atlantic Jupiter, immediately after the anchor was on board, attempted to sail in a southerly direction. This brought the Atlantic Jupiter into a lateral position with regard to the wind and current in front of Arklow Rambler, at a low forward speed. Because the ship was empty, it had a lot of surface area that caught the wind and it was subsequently blown in the direction of the Arklow Rambler, after which the stern of the Atlantic Jupiter hit the bow of the Arklow Rambler.



Figure 7: Just prior to the collision, viewed from the bridge of the Arklow Rambler. (Source: Arklow Shipping)

At the time of the collision, the Arklow Rambler was still at anchor, with its engine on stand-by. Although the crew of the Arklow Rambler saw the accident coming approximately 3 minutes beforehand, the captain decided not to send his crew forward to lift anchor because the Atlantic Jupiter was going to hit the Arklow Rambler at that point of the ship and he did not want to put his crew into danger. In addition, the chance that they would be in time to avoid the collision was small.

Actions after the collision

After the collision, various control measures were available to prevent more serious consequences. On board both the Atlantic Jupiter and the Arklow Rambler, much was done as a result of the immediate consequences of the collision. However, various control measures were not used, or were used insufficiently.

Because of the damage, both ships were occupied after the collision with following emergency procedures and taking inventory of damage and damage repairs. This reduced attention to navigation and a delay in the provision of information to the VTS. When the collision was communicated to the VTS, it was not clear from the message that a collision had taken place. An incorrect choice of words and a lack of urgency in the message contributed to this (more on this under "Communication and situational awareness"). Thus, the Atlantic Jupiter remained at sea an unnecessarily long time, despite the considerable damage.

During an emergency, the ship, in addition to emergency procedures, must always execute two other actions. The primary action is that of maintaining safe navigation. If that is not possible, the other shipping traffic must be notified as soon as possible. Secondly, the captain must make contact with the Designated Person Ashore (DPA) as soon as possible. The chief task of the DPA is to relieve the captain as much as possible while managing an emergency situation. To that end, the DPA takes over the link with the management team ashore, local authorities, insurers, inspection bodies and other parties so that the captain can concentrate on keeping his ship safe. The DPA can also advise the captain when making follow-up decisions. This does not detract from the fact that the captain remains ultimately responsible for his ship. Both the Atlantic Jupiter and the Arklow Rambler had made contact with their respective DPAs.

However, on board the Atlantic Jupiter, the primary task of maintaining safe navigation was not given enough attention. A few minutes after the collision between the Arklow Rambler and the Atlantic Jupiter, there was almost a second collision. The Atlantic Jupiter was drifting straight towards the Begim Aslanova, which was anchored nearby. The Begim Aslanova saw this and attempted to contact the Atlantic Jupiter, but to no avail. Just before the ships passed each other at a very close distance, 0.1 nautical miles, the Atlantic Jupiter notified it that it would sail behind it. The wind and the current, which had caused the collision with the Arklow Rambler at an earlier stage, helped the Atlantic Jupiter pass behind the Begim Aslanova in this situation.

Because of the size of the hole, the crew of the Atlantic Jupiter was unable to close the hole in their ship and they ran the risk of taking water. Yet they did not feel it any urgency to enter the port. After the accident, the crew sailed with a hole in the ship for nine and a half hours. Despite the state of the ship, the crew did not feel they were unsafe. The main reason was that the hole was above the waterline.

However, given the turbulent weather, the hole in the Atlantic Jupiter did pose a risk. The Port of Rotterdam has procedures for cases where a ship is in need. Despite the fact that the Atlantic Jupiter had not followed the standard registration procedure - it had not been planning to enter the Port of Rotterdam - with the emergency procedure it would have been able to acquire a spot in the port if the urgency had been communicated clearly. Moreover, according to the SMPEP,⁶ it is customary for a ship that has incurred damage after a collision to sail (if it still can) to a suitable location for repairs.

6 Shipboard Marine Pollution Emergency Plan.

The crew of the Arklow Rambler were able to close the holes in the ship provisionally. Furthermore, the Arklow Rambler notified Maas Approach VTS immediately after the situation on board was under control. Ashore, Arklow Shipping took actions to have quicker access to the berth in the port. The berth of the Arklow Rambler in the port was released shortly after the notification.

Communication and situational awareness

Before, during and after the collision, communication between the involved parties - the Arklow Rambler, the Atlantic Jupiter and Maas Approach VTS - did not go well. Reporting was slow or did not take place and was often open to several interpretations. Moreover, the Atlantic Jupiter and the VTS were not nearly aware of all that was happening; the situational awareness was low.

For example, the captain of the Atlantic Jupiter neglected to contact the Arklow Rambler or the VTS about the anchor position of the Arklow Rambler, despite the fact that he felt it was too close to his ship. The captain of the Atlantic Jupiter thought that this was the responsibility of the VTS.

When the Atlantic Jupiter raised anchor in order to sail, it communicated this to the VTS, as it should have. From that communication, it appeared as though it had everything under control. This, and the parallel course of the ships, reassured the Arklow Rambler, because of which it was not aware of a possible collision. However, when things went wrong, there was no communication between the Atlantic Jupiter, the Arklow Rambler or the VTS between the time of the awareness and the collision. On board the Atlantic Jupiter, it was believed that the Arklow Rambler had caused the collision because the Arklow Rambler had changed course after hoisting its anchor. However, as described earlier, the Arklow Rambler was still at anchor at the time of the collision.

Maas Approach VTS has no authority in the anchorage area because it is outside the VTS-area designated by Dutch regulations.⁷ The VTS does provide an information service, with which communication with ships in the anchorage area is possible and with which informal advice is given. In that role, the VTS would have notified the ships about the dragging anchor. This was not done, however, because both ships were already aware of the dragging anchor. Both ships had also notified the VTS about this. Even with authority, this would not have occurred differently. For this reason, Maas Approach VTS had fulfilled its task as prescribed.

There are a number of things that stand out when examining the communication and the situational awareness of the Maas Approach VTS.

After the collision, it took 36 minutes before the VTS knew that a collision had occurred. 10 minutes after the collision, the VTS did attempt to contact with Arklow Rambler, but Arklow Rambler did not respond.

⁷ Artikel 5a Regeling opleidingen en bevoegdheden nautische beroepsbeoefenaren (Regulations regarding training and authority of maritime professionals).

14 minutes after the accident, the Atlantic Jupiter notified that it had had contact with the Arklow Rambler, but this ambiguous communication ("*Maas Approach, this is Atlantic Jupiter, we have been in contact with Arklow Rambler, which is also drifting*") was not interpreted by the VTS as a collision but as radio communication between the ships. This is also not surprising. In the event of a collision, the IMO Standard Marine Communication Phrases (SMCP) states that the following standard sentence must be used: "*I have/MV has collided with*" (see Appendix B). "*I have been in contact*", suggests that there was communication between both ships. Due to the lack of the use of the English term 'collision' or 'collided', there was no communicative urgency in the communication from the Atlantic Jupiter.

Once the VTS realized, as a result of the communication from the Arklow Rambler, that a collision had occurred, it took another 40 minutes before the VTS was completely up to date regarding the damage to both ships. The VTS Maas Approach could have asked this immediately. Once the VTS was clear about the situation, quick action was taken by involving the Coast Guard. The Coast Guard sought contact with the Atlantic Jupiter, but it indicated that it did not need any assistance.

Voyage Data Recorder

As indicated above, the VDR of the Atlantic Jupiter was not operating at the time of the collision. Upon closer inspection, it became apparent that the VDR had not been operating for several days already and had displayed an error on the bridge. Although the crew was aware of this, they did not know how to get the VDR working again. It is not known what caused the disruption, but restarting the VDR appeared to suffice in getting it working again.

The VDR, also called the black box or voyage data recorder, was developed to assist in improving safety. The data that is stored on the VDR can be used by investigators to determine the causes of an accident. The objective of the investigators is to learn from the accident and to prevent similar accidents from happening again.

The lack of a functioning VDR made it difficult to determine what took place on board the Atlantic Jupiter while making the manoeuvre immediately after raising anchor. Because of this, no reasons could be found for the low situational awareness while implementing the manoeuvre, which caused the Atlantic Jupiter to drift in the direction of the Arklow Rambler due to the wind and the current.

According to IMO guidelines,⁸ the ship owner is the owner of the VDR data. After an accident, investigators must be granted access to the original data stored in the VDR.

VDRs record a diversity of data, including:

- Speed
- Location
- Position of the rudder
- noise on the bridge and VHF communication

8 SOLAS Regulation V/10, see also Regulation V/20 for regulations concerning the VDR.

Because the hard drive of the VDR is not large enough, data is overwritten after a period of time. In order not to lose the important data after an accident, the captain must ensure that the data is saved permanently, usually done by pressing a 'save' button on the bridge.

The anchorage area in the Port of Rotterdam has one barrier for preventing collisions, which is maintaining sufficient distance. Various checks, incorporated for that purpose, could not have prevented the occurrence of a collision:

- Distance between ships: the Arklow Rambler and the Atlantic Jupiter did not maintain sufficient distance to be able to respond to an unexpected situation.
- Anchor: by raising the anchor of the Atlantic Jupiter and because of the subsequent manoeuvre, there was insufficient control of the ship.
- Communication: the communication between the parties involved was unclear prior to, during and after the collision. The ships did not use the Standard Marine Communication Phrases (SMCP).
- Situational awareness: the captain on the Atlantic Jupiter was not aware of the effect that the wind and current would have on his ship after hoisting the anchor.

On board the Atlantic Jupiter and the Arklow Rambler, the crew executed many actions after the collision. However, a number of control measures were not implemented or were insufficiently implemented.

- Safe navigation: immediately after the collision, not enough attention was given to safe navigation on board the Atlantic Jupiter, because of which a second collision almost occurred.
- Communication: Maas Approach VTS was not aware of the collision for quite some time due to unclear communication and the lack of urgency in the communications from the Atlantic Jupiter and the Arklow Rambler. The ships did not use the Standard Marine Communication Phrases (SMCP).
- VTS could have persisted in asking questions sooner once it was known that a collision had occurred, thereby gaining a better overview of the situation.
- Safe port: due to actions taken by Arklow Shipping, Arklow Rambler was able to enter the port quickly. However, the Atlantic Jupiter took a risk by sailing for a long period of time in bad weather with a large hole in the ship.

LESSONS FROM THE INCIDENT

- Ships in an anchorage area are themselves responsible for maintaining sufficient distance from other ships. Given the complex situation, it is not possible for everything to be regulated by rules, and good seamanship is required. Factors such as the weather and the load of the ship have to be taken into account. Sufficient distance means that a ship is capable of anticipating unexpected situations and the movements of other ships.
- The VTS and ships must ensure smooth, clear communication, in order to be able to make timely decisions using the correct information. The Standard Marine Communication Phrases (SMCP) of the International Maritime Organization have been developed specifically for this purpose. The command of the SMCP is a minimum requirement for officers who are charged with the navigation watch and must be observed.
- Take no unnecessary risks by continuing to sail with major damage to the ship: find a safe port as soon as possible. Extra costs associated with this should not outweigh the safety of the crew.
- If having a VDR on board is required, make sure that it works as well. The VDR contributes to determining the cause of an accident, and thereby to the lessons that can be learned and to maritime safety.


SHIP'S DATA

Arklow Rambler	
Call sign:	PBGS
IMO number:	9250426
Flag state:	The Netherlands
Ship type:	Cargo ship
Classification society:	Bureau Veritas
Year of construction:	2002
Shipyard:	Bijlsma Lemmer
Overall length (LOA):	89.95 m
Length between perpendiculars (LPP):	84.85 m
Beam:	14.4 m
Actual draught:	7.31 m
Gross Tonnage:	2999
Engines:	MAK Marine Diesel 6M25
Propulsion:	1 Propeller - Controllable Pitch
Maximum propulsive power:	1825 kW
Maximum speed:	11.0 knots

Atlantic Jupiter	
Call sign:	VREY5
IMO number:	9383962
Flag state:	Hong Kong
Ship type:	Chemical and Oil Tanker
Classification society:	Korean Register of Shipping
Year of construction:	2009
Shipyard:	Hyundai Mipo Dockyard Company Limited
Overall Length (LOA):	184.33 m
Length between perpendiculars (LPP):	176 m
Beam:	27.4 m
Actual draught:	17.2 m
Gross Tonnage:	23342
Engines:	B&W Marine Diesel 7S50MC
Propulsion:	1 Propeller - Fixed Pitch
Maximum propulsive power:	9481 kW
Maximum speed:	15.0 knots

IMO STANDARD MARINE COMMUNICATION PHRASES

INTERNATIONAL MARITIME ORGANIZATION



ASSEMBLY
22nd session
Agenda item 9

A 22 / Res.918
25 January 2002
Original: ENGLISH

Resolution A.918(22)

**Adopted on 29 November 2001
(Agenda item 9)**

IMO STANDARD MARINE COMMUNICATION PHRASES

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO resolution A.380(X) by which it adopted the Standard Marine Navigational Vocabulary,

RECALLING FURTHER the provisions of regulation V / 14.4 of the International Convention for the Safety of Life at Sea, 1974, requiring that on all ships to which chapter I thereof applies, English shall be used on the bridge as the working language for bridge-to-bridge and bridge-to-shore safety communications as well as for communications on board between the pilot and bridge watchkeeping personnel unless those directly involved in the communications speak a common language other than English,

RECOGNIZING that the standardization of language and terminology used in such communications would assist the safe operation of ships and contribute to greater safety of navigation,

RECOGNIZING ALSO the wide use of the English language for international navigational communications and the need to assist maritime training institutions to meet the objectives of safe operations of ships and enhanced navigational safety through, *inter alia*, the standardization of language and terminology used,

HAVING CONSIDERED the recommendations of the Maritime Safety Committee at its sixty-eighth and seventy-fourth sessions,

1. ADOPTS the IMO Standard Marine Communication Phrases set out in Annex 1 to the present resolution;
2. AUTHORIZES the Maritime Safety Committee to keep the IMO Standard Marine Communication Phrases under review and to amend them when necessary in accordance with the procedure set out in Annex 2 to the present resolution;
3. RECOMMENDS Governments to give the IMO Standard Marine Communication Phrases a wide circulation to all prospective users and all maritime education authorities, in order to support compliance with the standards of competence as required by table A-II / 1 of the STCW Code;
4. REVOKES resolution A.380(X).

Figure 8: IMO resolution A.918(22).

.3	Aanvaring	Collision
.1	Ik heb / schip ... heeft een aanvaring gehad ~ met schip ... ~ met onbekend schip / voorwerp / ... ~ met ... (<i>naam</i>) lichtschip. ~ met zeemerk ... (<i>naam in de kaart</i>). ~ met ijsberg / ...	I have / MV ... has collided ~ with MV ... ~ with unknown vessel / object / ... ~ with ... (<i>name</i>) light vessel. ~ with seamark ... (<i>charted name</i>). ~ with iceberg / ...
.2	Meld schade.	Report damage.
.2.1	Ik heb / schip ... heeft schade boven / onder de waterlijn.	I have / MV ... has damage above / below water line.
.2.2	Ik ben / schip ... is onmanoeuvrbaar.	I am / MV ... not under command.
.2.3	Ik / schip ... kan schade niet vaststellen.	I / MV ... cannot establish damage.
.2.4	Ik / schip ... kan schade niet repareren.	I / MV cannot repair damage.
.2.5	Ik / schip ... kan alleen met lage snelheid varen.	I / MV ... can only proceed at slow speed.
.3	Wat voor hulp is nodig?	What kind of assistance is required?
.3.1	Ik heb / schip ... heeft begeleiding / sleepboothulp / ... nodig.	I require / MV ... requires / escort / tug assistance / ...

Figure 9: Example of Standard Marine Communication Phrases with a collision.

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