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*Ministry of Infrastructure and the
Environment*

Fatal accident on board a Dutch freezer-trawler 7 September 2011

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Contents

Credits—3
Contents—4

Summary—5

1 Introduction—6

- 1.1 Background—6
- 1.2 Aim of the Investigation—6
- 1.3 The Investigation—6
- 1.4 Ship—6

2 The accident—9

3 Findings—10

- 3.1 Investigation by the crew—10
- 3.2 Situation and work on the aftdeck—10
- 3.3 The trawl winch—11
- 3.4 The crew—12
- 3.5 Communication and safety awareness—12
- 3.6 Risk identification and evaluation (RI&E)—13
- 3.7 Developments within the shipping company—13
- 3.8 Supervision by the Inspectorate—14

4 Analysis—15

- 4.1 Cause of the accident—15
- 4.2 Situation and work on the aftdeck—15
- 4.3 Operation of the winch—15
- 4.4 Supervision / management on deck—17
- 4.5 Communication—18
- 4.6 RI&E—18
- 4.7 Developments within the shipping company—19
- 4.8 Safety awareness among the crew—19
- 4.9 Supervision by the Inspectorate—20

5 Conclusions, lessons and recommendations—21

- 5.1 Conclusions—21
- 5.2 Lessons—21
- 5.3 Recommendations—22

6 Appendix—23

- 6.1 Previous incidents on the afterdeck of stern trawlers—23
- 6.2 Relevant legislation—23

Summary

On the morning of 7 September 2011, the Dutch freezer- trawler "Oceaan VII" was fishing in the English Channel. The boatswain and three sailors were busy hauling in the net on the aftdeck.

While hauling in the net, a deck wash hose became entangled in it. One of the Russian sailors untangled the hose and, while doing so, was standing in the net that was lying on the deck. The boatswain then made a hand signal to the bridge, which was interpreted as 'haul in'. Due to the hauling in on the winch, the sailor, who was busy with the hose, became trapped between the net and the winch.

The crew provided first aid by administering cardiopulmonary resuscitation (CPR) and oxygen. The French coastguard was alerted and sent a medical team by helicopter. However, attempts to revive the sailor were in vain and he succumbed to his injuries.

This accident followed a number of other (very) serious accidents on the aftdeck of freezer- trawlers. Since 1998, the Maritime Court of the Netherlands has investigated five similar incidents. The lessons learned from those investigations correspond largely to the lessons learned from this investigation.

The main conclusions are that crew members must be aware of the lines and nets on the aftdeck and that communication between crew members and the supervision of the work must be improved.

The investigation also concluded that there is room for improvement in the supervision by the Transport and Water Management Inspectorate, particularly with regard to risk identification and evaluation, which is an obligation for employers under occupational health and safety legislation.

The investigation has led to a number of lessons and recommendations to the shipping company, seafarers and the Inspectorate. The recommendations to the shipping company primarily concern measures to achieve an improved safety culture, and also to further investigate the possibilities of a safer aftdeck and alternative operation of the winch.

Crew members are advised to work together to create a safer working environment and to consult with one another in this respect.

The recommendations to the Inspectorate include expanding its supervisory activities to include adjustments to the identification of risks, monitoring the recommendations to the shipping company, and actively communicating the findings to other Dutch shipping companies in the sea fishing industry.

1 Introduction

1.1 Background

On 7 September 2011, a fatal accident occurred on board the Dutch freezer stern trawler. The ship was sailing in the English Channel and crew members were busy hauling in the net. A Russian crew member died as a result of this accident.

1.2 Aim of the Investigation

The Transport and Water Management Shipping Inspectorate (*Inspectie Verkeer en Waterstaat Scheepvaart*, hereinafter 'the Inspectorate') investigates accidents and incidents concerning maritime shipping. The aim of the Inspectorate's investigations is to prevent accidents and incidents. To this end, it is necessary to determine the immediate causes and, where possible, the underlying factors that have led to, or have played a role in, an accident or incident. The conclusions, lessons and recommendations that follow from an investigation are used to improve the Inspectorate's monitoring activities and to make shipping in general safer where possible. This report contains the findings, conclusions and recommendations.

1.3 The Investigation

To conduct its investigation, the Inspection visited the ship after it arrived in IJmuiden. Several interviews were conducted with the crew members and the shipping company. Because there have been previous serious accidents on the afterdeck of stern trawlers, the results of the investigations of those accidents were included in this investigation. A draft of this report was presented to the parties concerned, and their comments have been incorporated where applicable.

1.4 Ship

| | |
|---------------------------|---------------|
| Vessel name | Oceaan VII |
| Fishery registration code | SCH 333 |
| Vessel type | Stern trawler |
| Call letters | PEGR |
| IMO number | 8519071 |
| Year of construction | 1986 |
| Length overall | 90.2 |
| Gross tonnage | 2624 |
| Flag | Dutch |

The Oceaan VII (SCH 333) is what is known as a freezer stern trawler. Freezer stern trawlers are used in fishing for pelagic fish species¹ by means of nets over the stern. Once caught, the fish are processed, packaged, frozen and stored in the freezer holds. The trawlers can be deployed worldwide and a fishing trip generally lasts

¹ For example: herring, mackerel, horse mackerel, blue whiting and sardinella.

several weeks. The accident occurred towards the end of the fishing trip.

2 The accident

On the morning of 7 September 2011, the boatswain and three sailors (2 Russians and 1 Dutchman) were busy hauling in the trawl (the net) on the aftdeck of the SCH 333. The conditions under which everything happened were neither poor nor exceptional. There was a southwesterly wind, force 4 to 6, and the weather was good. There was no water washing over the deck.

The captain was on the bridge and was operating the trawl winch. While hauling in the net, a deck wash hose became entangled in it and was wound onto the net roller along with the net. The captain then stopped the winch to let out the net in order to disentangle the hose.

One of the Russian sailors untangled the hose and, while doing so, was standing in the net that was lying on the deck. The boatswain then made a hand signal to the bridge, which was interpreted as 'haul in'. The captain subsequently switched on the winch to continue hauling in the net. It later turned out that the hose had not yet been removed from the net and that the boatswain had given the 'let out' signal. Therefore the sailor was still standing near the winch, ready to remove the rest of the hose. Due to the hauling, the sailor, who was busy with the hose, became trapped between the net and the winch.

The crew provided first aid by administering cardiopulmonary resuscitation (CPR) and oxygen using the medical oxygen set available on board. The coast guard was alerted and a medical team was flown to the ship by helicopter. However, the sailor had succumbed to his injuries.



Figure 1: Reconstruction of the situation prior to the accident (photo taken by crew)

3 Findings

3.1 Investigation by the crew

After the accident, the situation during the accident could be partially simulated on board. The crew took photographs of this and made them available to the investigators. Some of these photographs are included in this report.

The boatswain was not fully in the captain's view. However, he was standing near the emergency stop behind the stairs.

3.2 Situation and work on the aftdeck

The aftdeck consists of a flat mid-section with spaces on the port and starboard side for depositing the fish into the tanks. Beside this there is space for equipment. At the back is the stern gantry, which is equipped with blocks and various lines for the nets.

While hauling in the net, the crew members are mainly on the aftdeck to deposit the catch on deck. The net is then hauled in on the net drum. The crew sometimes guides in the net, or parts thereof, while hauling it in. To do so, the crew stands on the middle deck and occasionally beside the winch drum.

Because the ship is almost always listing back, the fish collects at the back of the ship. In order to deposit the last of the fish in the tanks, the crew uses deck wash hoses to spray the fish from the back to the tank openings.

In this case, one of the hoses had rolled out over the middle deck from a deck wash hydrant near the winch. As a result, the hose was wound onto the roll with the net when the net was hauled in. According to the crew, the hose is not allowed to be there when the net is hauled in.

The work is relatively simple, but sometimes risky and physically demanding. Under favourable conditions, the work does not have to be dangerous. However, this changes in the case of bad weather, for example, with a rolling ship and water on the deck, or during the hours of darkness. Moving or taut lines and blocks can lead to dangerous situations which require concentration and experience. In general, the crew members learn on the job. A close eye is kept on inexperienced people and work is delegated if necessary.



Figure 2: Aftdeck, place of the accident

3.3 The trawl winch

The control console

The control console is located at the back of the wheelhouse on the starboard side. From here, the person at the console has a good overview of the aftdeck including the winch and the net drums. A number of blind spots on deck where work sometimes has to be carried out are provided with cameras (near the stern gantry). The monitors for these cameras are located beside the console.

A standard feature of Dutch stern trawlers is that they are equipped with the winch console at the back of the wheelhouse. Beside the control console for the winch is a manoeuvring console. Depending on the ship's movements, it may be necessary to perform manoeuvres while working with the winch. The idea behind having the consoles located side by side is that the captain retains a full overview and is able to manoeuvre or operate the winch at the same time.

There are selectors (levers) for the different drums and a control wheel to operate the winch. The control wheel can be turned in small steps, with different positions corresponding to different speeds. The wheel is turned to the left to let out the net, and to the right to haul in the net.

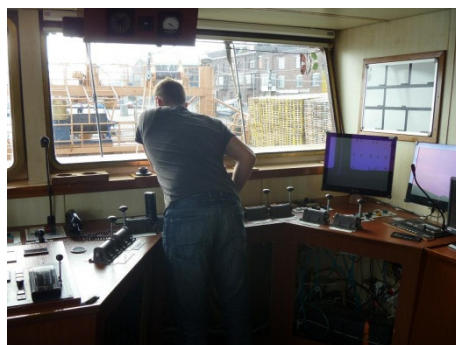


Figure 3: Control console



Figure 4: Control wheel

The winch

The trawl winch consists of a shaft with several drums. At the ends are drums for the fishing lines and in the middle are the net drum and the spare net drum above it. The four emergency stops on deck were functioning properly: two emergency stops at the back of the aftdeck on the pillars of the stern gantry, one right in front of the winch under the stairs that lead over the winch, and an emergency stop at the back of the winch between the winch and the accommodation. There is also an

emergency stop on the control console.



Figure 5: Emergency stop of the winch behind the stairs

3.4 The crew

The crew consisted of 29 crew members from the Netherlands, Russia and Lithuania. The majority were on board for fish processing in the factory. The ship's officers had Dutch nationality.

The captain and the boatswain had many years of experience on freezer stern trawlers and were on the same wavelength. As far as the work on the aftdeck is concerned, the captain had learned 'the trade' from the same boatswain. The captain is known as someone who takes safety seriously. "That this should happen to him of all people," was a comment made several times during the interviews.

The boatswain is in charge of the sailors during the work on the afterdeck. The accompanying responsibilities were not recorded or described. However, the work is done in this manner in practice. The captain bears overall responsibility and has the overall management. He acts in accordance with, and relies on, the instructions of the boatswain when operating the winch.

3.5 Communication and safety awareness

Communication

A functioning intercom system is available on the aftdeck for communication with the bridge. The captain can communicate directly to the deck with the system, while from the deck you have to push a 'call button' first. This system was used occasionally, depending on the person and the work concerned. Normally, there is a lot of surrounding noise during work on the aftdeck, which interferes with the audibility.

The crew members always work with hand signals. However, there are no fixed agreements about this.

In order to determine whether a language barrier could have played any role in the accident, the Inspectorate interviewed another Russian sailor. This was difficult, in broken English. The Inspectorate did witness the crew members figuring it out amongst themselves (Dutchmen with the Russian sailor). They were able to understand one another with a mixture of languages and word usage, primarily job-related.

Safety awareness

The shipping company pursues a safety policy with regard to certain issues and has indicated that it is actively improving safety, for example through education and training courses. There is no structured regular safety meeting on board the ships or between the crew and the shipping company. In general, the interpretation of safe working practices is left up to the captain without the shipping company requesting feedback or evaluation.

How safe working practices on board are dealt with depends on the people in charge. The Inspectorate shared the same impressions as a result of its inspections and investigations.

3.6 Risk identification and evaluation (RI&E)

The latest version of the RI&E dates from July 2008. The RI&E is amended in response to renovations or modifications that could result in changes to the risks. The RI&E was drawn up in part by the Dutch Sea Fishing Ship Owners Association (*Redersvereniging voor de Zeevisserij*)² and approved by a Maritime Medical Service. The RI&E is often drawn up in a situation in which the ship is not fully operational (when the ship is moored). There are no adjustments to the RI&E in response to risks identified in the interim.

On enquiry, it turned out that there was no structured form of evaluation in use with which risks can be identified and re-identified. Other than communication, lessons learned from previous investigations have not been included in the RI&E.

One of the risks described in the shipping company's RI&E is "communication on aftdeck". I quote: "*Communication with the crew takes place by means of hand signals, via the intercom and by shouting. Communication is not always clear and unambiguous.*" A recommendation following from this is to provide a properly functioning system between the bridge and the aftdeck. Accordingly, this recommendation was followed up in the accompanying Plan of Approach. The risk identification contains no further risks about working on the aftdeck.

3.7 Developments within the shipping company

Risks concerning communication have been recognised previously. The shipping company is completing a test phase with a communication system that is integrated in helmets. The findings are positive and the system will be implemented on the ships. The intention is that the manager on deck (the boatswain in this case) can talk to the captain behind the console and that other crew members on deck can

²http://www.pvis.nl/organisatie/wie_zijn_wij/visserijcentrum/redersvereniging_voor_de_zeevisserij/

listen in.

Developments are underway within the shipping company to establish job descriptions and accompanying responsibilities. In addition, the Dutch Sea Fishing Ship Owners Association is being consulted regarding the improvement of occupational safety. In principle, the possibility of eliminating risks at the source must be examined. Viewed in the context of serious accidents that have taken place in the past, the source here is: the aftdeck.

They fear too much paperwork if more attention is spent on laying down working agreements, procedures and safety instructions. Many instructions from the shipping company are viewed with suspicion by those on board. The ship owner experienced this when laying down tasks and responsibilities in writing.

3.8 Supervision by the Inspectorate

The area of influence of supervision extends to checking compliance in static situations. This means that the occupationally safe organisation of the workplaces is examined in practice. Whether work is carried out safely or whether a prescribed method is observed on board cannot be checked by the Inspectorate and is only investigated after the fact in response to incidents.

The Inspectorate does not actively monitor adjustments to the RI&E in response to experiences gained from incidents. Likewise, the Inspectorate does not check the implementation of the Plan of Approach.

4 Analysis

4.1 Cause of the accident

The victim was standing with his foot in or too close to the net, which made it possible for him to be dragged along. This may have been inevitable for the work with the hose. He was standing there because the hose had not been put away. While he was standing there, the boatswain gave the 'let out' hand signal, which the captain interpreted as 'haul in'. The accident could have been prevented if the victim had not been standing in or too close to the net, if the boatswain had seen that he was standing in or too close to the net, and if the captain had correctly interpreted the 'let out' signal. If the hose had been put away in time, the situation would not have occurred at all.

4.2 Situation and work on the aftdeck

The situation on the aftdeck changed from standard to abnormal because the deck wash hose wound up in the net. The hose should not have been lying there under those conditions. In retrospect there was no need for the hose to be lying there. There are other connection points on the deck as a result of which the hose does not have to lie there on the aftdeck. Should the hose be needed there in order to carry out the work, the person in charge should ensure that the hose is removed before the nets are hauled in. There was a certain degree of negligence in that respect. It is up to the person in charge on the afterdeck – the boatswain in this case – to ensure that the work is carried out properly.

4.3 Operation of the winch

By operating the winch from the wheelhouse, a reasonably full overview can be achieved. The captain was able to take in the overall situation sufficiently from the control console. The problem turned out to be in the overview of the details. Had the captain seen that the sailor was being dragged towards the winch drum by his foot, he would have stopped the winch immediately. The Inspectorate concludes that the captain did not see this, although it probably was possible from the control position. It depends what the captain is looking at, or, in other words, what holds (or requires) his attention at the time.

All in all, a reasonably good overview is possible from the control position, but this gives the false appearance that a good overview of the details is also possible. In any case, this accident shows that the view from the control console is not sufficient. The photographs below taken by the crew members confirm this. The captain must always call on the people on deck for a good overview of the details. The work must be properly supervised there. The captain must be able to rely on this, and only perform operations with the winch in accordance with the corresponding and agreed signals.



Figure 6: Visible details from console. Boatswain is partly visible; sailor is in view.



Figure 7: Visible details from console. Boatswain is not visible.

As luck would have it, the boatswain was standing close to an emergency stop, precisely the emergency stop that was installed in a rather inconvenient place, namely under the stairs. It all happened very quickly, so it is unlikely that activating this emergency stop could have prevented it unless someone already had his hand near the stop. This indicates that an emergency stop is only of relative use in preventing sudden incidents.

The design and operation of the winch console did not play any considerable role in the accident. Nothing failed. It has already been indicated in the findings why the parties concerned do not wish to control the winch from the deck. The Inspectorate is able to agree to this partly, but has doubts with regard to the 'overview' argument. This accident shows that the overview from the wheelhouse cannot be effective in all places at the same time. The addition of extra cameras would also require the captain to absorb even more information, and his attention can only be on one place at a time.

Making the operation of the winch safer

The Inspectorate sees possibilities for enabling the winch to be operated more safely. A dual control could be a solution to such risks. This could concern a main control in the wheelhouse and an activation unit on deck. The winch is only released by the manager on deck when it is safe. Only then can the winch be operated from the console. This prevents the unfortunate consequences of incorrect interpretation of communication. This way the winch can be stopped from the deck in dangerous situations, without having to walk to a fixed emergency stop first. An appropriate recommendation will follow.

4.4 Supervision / management on deck

The investigation revealed that there is a separation of duties among the personnel on the aftdeck. Although not laid down in writing, it is generally assumed that the boatswain is in charge and supervising. Responsibilities have not been laid down. The captain actually did not have a clear enough view of the boatswain. And it is not clear whether the boatswain had a sufficient view of the situation on deck at that time. In that case he could have seen that a sailor was standing in the net and the only correct instruction should have been: "stop!"

The lack of supervision / management on the afterdeck, or the execution thereof, has come up several times in investigations (see Appendix 6). The same findings were revealed during this investigation, with regard to the failure to remove the hose as well as failing to see the sailor standing in the net. Furthermore, it was revealed that the shipping company could play a more active role in increasing quality awareness and supervision. Actively instructing managers to do so could contribute significantly to the prevention of accidents. An appropriate recommendation will follow.



Figure 8: Simulation of the situation prior to the accident. The boatswain (left) was unable to see clearly that the victim (centre) was standing in the net.

4.5 Communication

Between the captain and the crew on deck

Communication between the captain and the people on deck took place by means of hand signals. The intercom system was not in standard use and the shipping company did not provide any instructions in this respect. The hand signals used were based on feeling and experience and were not always clear and unambiguous. The boatswain was standing halfway behind the stairs when he gave the signal, which the captain interpreted incorrectly.

Communication is another recurrent issue in the lessons learned from similar accidents (see Appendix 6). The shipping company indicated the same as a risk in its RI&E. The investigation showed that this risk with hand signals has not yet been dealt with. However, the fact that the shipping company has started testing a communication system is positive.

The Inspectorate concludes that the hand signals used do not provide sufficient clarity and that the boatswain was not sufficiently in view to be able to show this clearly. Use the standard hand signals and perform them clearly. Make sure that the person giving the hand signals is clearly visible to the recipient. This recommendation will follow.

Communication between crew members on deck

The communication between the crew members on deck was subject to a language barrier. The Russian sailor who spoke with the Inspectorate spoke no Dutch and hardly any English. However, the crew members were able to convey work-related information to one another.

Although this may be sufficient for standard activities, in abnormal situations, and particularly in emergency situations, the Inspectorate considers this unacceptable; not to mention a new Russian crew member who comes on board and still has to familiarise himself with the ship, the customs and the specific working language. The choice for other nationalities is made for economic reasons, and also due to a lack of new Dutch crew members for these specific jobs. The shipping company will have to take measures in this area to provide a safe opportunity for people of other nationalities to settle into the job and to master the communication. An appropriate recommendation will follow.

4.6 RI&E

The RI&E were drawn up in cooperation with occupational health and safety experts in the sea fishing industry in a situation in which the ship was not fully operational.

The communication risk is included in the RI&E. The 'unclear hand signals' risk mentioned was not picked up. However, the communication risk has been addressed by testing a new system, which is to be implemented in the future.

The other risks identified in the investigation do not occur in it. The RI&E falls short on these issues. After all, it is prescribed by law that the RI&E must be amended "as dictated by experience gained, changes to current scientific theory and professional service." This includes the outcomes of accident investigations, particularly if one of them has been instituted following an accident on a ship belonging to the same shipping company.

It is advisable to introduce a system to identify and/or evaluate risks. Under this system, the risk identification should take place when the ship is fully operational, thus preferably at sea.

4.7 Developments within the shipping company

During the discussion of this report, the shipping company indicated that it would set to work with the lessons and recommendations and that they fit within the safety policy already in place.

Recent developments with a communication system integrated in the helmets have been positive. This is going to be applied on all ships and will be a major step forwards in tackling the communication problem between the deck and the pilothouse. The developments with job descriptions and the list of tasks and responsibilities are also positive.

The process instituted with the ship owners association to achieve a safer working environment must be pressed home. There must be a focus on tackling the problem at the source, such as the layout of the aftdeck. It is important to think out of the box when considering safety at the source. Have questions addressed, such as: "Why are people needed on the deck?" and "Why are the controls on the bridge?"

4.8 Safety awareness among the crew

In practice, a culture focused on safety on board ships is related to the type of shipping, safety-related behaviour of crew members and the safety culture of the organisation or sector. Based on the findings of accident investigations, the Inspectorate's perception is that the fishing industry in general is lagging behind other sectors such as the tanker shipping industry and the passenger shipping industry. However, there are signs that the freezer stern trawler fishing industry is catching up.

The fact that this accident took place under the command of a captain known for his attention for safety is unfortunate. However, it indicates an important factor. Safety is not something you can achieve on your own. Thus, it is extremely important that all crew members become more aware of safe working practices. Keeping a critical eye and paying attention to one another, and holding regular safety meetings, will result in more attention for safe working practices. Creating a safe working environment is something you do together.

There are various ways of stimulating safety awareness among personnel. The shipping company expressed concerns regarding the creation of a paper tiger for its crews. The Inspectorate shares these concerns. Take the requirement of a Safety Committee on board, for example, as seen in the merchant shipping industry. If safety is not widely supported among the crew, this results in an extra administrative burden that overshoots its goal.

It would be less effective to leave this entirely up to the crew itself, without stimulating this from the shipping company. With this in mind, the Inspectorate recommends producing a plan of approach to systematically further increase safety awareness among both the shipping company and the personnel on board its ships.

4.9 Supervision by the Inspectorate

The Inspectorate cannot monitor whether work is carried out safely and in accordance with procedures. What the Inspectorate can do, however, is monitor whether the RI&E is actually amended after security risks are identified. Specifically, this can be measured after incidents have taken place. The Inspectorate can then determine whether 'new' risks have been identified and whether measures have been taken to eliminate them. An employer is obliged to do this. The Inspectorate can also monitor the implementation of the plan of approach.

The Inspectorate currently has no answer to tackling the reduction of risks closer to the source of the danger. Together with the parties concerned (other shipping companies in the sea fishing industry), it must be possible to find a solution in due course to make it safer at the source.

5 Conclusions, lessons and recommendations

5.1 Conclusions

The accident occurred because the victim was standing in, or too close to, the net when the captain hauled it in. He was busy with a hose that had not been put away before hauling in commenced.

The captain interpreted an unclear hand signal from the boatswain incorrectly, and started hauling in instead of letting out the net. The sailor was dragged along with the net and was fatally injured between the net and the winch drum.

The investigation revealed a lack of good, effective supervision and attentiveness by the manager on the aftdeck and good communication with the operator of the winch in the wheelhouse. Communication went wrong with the hand signal to the wheelhouse. The shipping company was already in the advanced stages of testing a new communication system, and this will be implemented.

There have been previous very serious accidents on the aftdeck of stern trawlers. The lessons and recommendations resulting from those accidents concerned communication between the crew members themselves and with the wheelhouse, and a lack of good supervision of the work on deck. No specific adjustments had been implemented on this ship to improve this.

Although the shipping company did employ a policy to promote safe working practices, it will have to work to pursue this and to continue to improve it. The shipping company does have some developments in progress, but, considering the safety culture and the safety awareness among the majority of its crews, there is still room for improvement.

The Inspectorate's supervision could be improved in certain areas, particularly with regard to compliance with occupational health and safety legislation, and specifically the RI&E.

5.2 Lessons

Personal safety

- Crew members must always try to avoid standing in wires, ropes or nets while work is being carried out. If this is unavoidable, make this clear to the manager.
- If people are standing near the winch, only use it at its lowest speed.

Communication

- Make clear agreements on giving and following signals.
- Hand signals must be clear. If a signal is unclear, do not do anything!
- The person giving the signal must ensure that he has a good overview of the situation before giving a signal and that he is clearly visible in order to perform the signal correctly.
- Use the intercom system.

Supervision

- Good supervision of the work and good management on deck improves safety.

5.3 Recommendations

To crew members of freezer stern trawlers

- Creating a safe working environment is something you do together. Consult one another on risky situations, keep one another alert and hold one another accountable with regard to unsafe work practices, preferably in a structured meeting.

The shipping company

- Develop a Plan of Approach to increase safety awareness among the seafarers.
- Organise the procedures on the aftdeck in such a way that there is good, effective supervision on deck and a clear separation of duties with accompanying responsibilities.
- Amend the RI&E with all previously known risks and eliminate the risks as much as possible, preferably at the source.
- Investigate the extent to which a remote 'dual control' on the winch can contribute to safe working practices.
- Investigate possibilities in which the required hose is no longer needed or in which it can no longer wind up on the mid-section of the deck.
- Implement procedures from the shipping company on how to deal with new crew members on board when a language barrier exists, in order to facilitate clear communication with other crew members and safe working practices.
- Work with seafarers to continuously and effectively investigate risks on a regular basis and on a fully operational ship, preferably organised according to a set structure or system.
- Continue the consultation with the ship owners association and other ship owners in the sea fishing industry with regard to dangers on the aftdeck, and try to eliminate the risks at the source.

The Inspectorate

- Expand supervision to include amendments to risk identification reports when risks are identified.

- Check whether parts of the Plan of Approach have been implemented during regular inspections.
- Monitor the developments at the shipping company in response to the abovementioned recommendations.
- Actively communicate the findings to other Dutch ship owners in the sea fishing industry.

6 Appendix

6.1 Previous incidents on the afterdeck of stern trawlers

Incidents on the afterdeck of stern trawlers were examined. Only those incidents that have occurred since 1998 and which were fully investigated are listed below.

| Year | Ship | Cause | Consequence |
|------|--------------------|---|----------------|
| 1998 | Oceaan VII SCH 333 | Hit by tightly drawn rope | Injured |
| 1998 | Carolien SCH 81 | Hit by tightly drawn net | Fatal |
| 1999 | Friesland SCH 21 | Wire of the warping end | Fractured bone |
| 2003 | Maria SCH 118 | Man overboard due to tightly drawn wire | Fatal |
| 2006 | Alida SCH 6 | Hit by tightly drawn wire | Fatal |

The accidents above occurred by working with or near wires that were already or came to be under tension. It is similar to standing in or near moving rigging. As a result, a crew member can become entangled, with all the associated consequences. Similarities can be found in the considerations, lessons and recommendations from these investigations.

- Lessons relating to safe working practices / being in the vicinity of ropes / wires
- Lessons relating to communication
- The importance of good supervision while working on the afterdeck.

6.2 Relevant legislation

Occupational health and safety legislation is relevant to this accident. In the chapter on occupational health and safety policy, the employer is obliged to limit dangers and risks at the source as much as possible. If this is not possible, other effective measures must be taken³.

³ Dutch Working Conditions Act, Chapter 2, Article 3.1.

The law also prescribes that the employer must identify and lay down the risks, as well as the risk-reducing measures and a plan of approach to take measures. The RI&E must be modified if there is a reason to do so⁴. The employer must ensure that employees are effectively informed on the risks and how they can be reduced, and monitors compliance with the instructions⁵.

The employer is obliged to provide for his own safety and that of others⁶.

Article 3

1. The employer shall safeguard employee health and safety with regard to all work-related aspects and shall pursue an appropriate policy aimed at providing the best possible working conditions and, taking the current levels of knowledge and professional services into consideration, observing the following:

- a. unless such cannot reasonably be required, the employer shall organise the work in such a way that it is in no way detrimental to the employee's health and safety;
- b. unless such cannot reasonably be required, the dangers and risks to the employee's health and safety will in the first instance be prevented or restricted at the source as far as possible; insofar as such dangers and risks cannot be prevented or restricted at the source, other effective measures will be taken with measures aimed at collective protection prevailing above measures aimed at individual protection; only if it cannot reasonably be expected that measures are taken aimed at individual protection will effective and suitable personal protection equipment be issued to the employee;
- c. where this can reasonably be required, the design of the workplaces, the working methods and the tools used, as well as the actual work, shall be adapted to the employees' individual characteristics;
- d. monotonous work and work that needs to be carried out at a particular speed shall be avoided, where this can reasonably be required, and if not, shall be limited;
- e. appropriate measures shall be taken in respect of first aid in the event of accidents, fire-fighting and the evacuation of employees and other individuals present, and appropriate contact shall be maintained with the relevant external emergency services;
- f. every employee must be capable of taking the necessary appropriate action in the event of a serious and immediate threat to his own safety or that of others, taking his technical skills and the available resources into account, in order to counter the consequences of such a threat, with analogous application of [Article 29, paragraph one, third sentence](#).

Article 5

1. In pursuing the occupational health and safety policy the employer shall prepare a risk identification and analysis, laying down in writing the risks the work entails for the employees. This risk identification and analysis shall also describe the dangers and risk-reducing measures and the risks for specific categories of employees.
2. The risk identification and analysis will also focus on employee access to an expert employer or person, as referred to in [Articles 13 and 14](#), or to the occupational health and safety service (*arbodienst*).
3. A plan of approach, specifying which measures are to be taken in connection with the intended risks and the correlation between them, in accordance with [Article 3](#), will constitute part of the risk identification and analysis. The plan of approach will also specify the term within which these measurements are to be taken.
4. The risk identification and analysis will be amended as dictated by experience gained, changing working methods or conditions, or changes to current scientific theory and professional service.

⁴ Dutch Working Conditions Act, Chapter 2, Article 5.

⁵ Dutch Working Conditions Act, Chapter 2, Article 8.

⁶ Dutch Working Conditions Act, Chapter 2, Article 11.

5. If the employer assigns work to an employee made available to him he will provide whoever makes the said employee available with the description set out in the risk identification and analysis of the dangers and risk-reducing measures and of the risks to the employee at the appropriate work place, in good time before the work commences, to enable this person to issue the description to the employee concerned.

6. The employer shall ensure that every employee can take note of the risk identification and analysis.

Article 8

1. The employer shall ensure that employees are given appropriate information about their duties and the associated risks, and on the measures in place to prevent or limit these risks.

The employer shall also ensure that the employees are properly informed about the way in which the expert assistance, as referred to in [Articles 13, 14, 14a](#) and [15](#), is organised in his company or institution.

2. The employer shall ensure that the employees are given proper instruction adapted to their separate tasks in relation to the working conditions.

3. If personal protective equipment is made available to the employees, and if safety devices are fitted to work equipment or other objects, the employer shall ensure that the employees are aware of their purpose and operation and the way in which they should be used.

4. The employer shall supervise compliance with the instructions and rules aimed at preventing or limiting the risks referred to in the first paragraph, as well as the correct use of personal protective equipment.

5. If employees younger than 18 years of age work within the company, the employer shall, in the implementation of obligations imposed by the preceding paragraphs, take special account of the limited work experience and incomplete physical and mental development of these employees inherent to their age.

Article 11

Employees are obliged to take due care in relation to their own safety and health, and that of other individuals concerned, in what they do or do not do at the workplace, in accordance with their training and the instructions given by the employer. In particular, they are obliged to:

- a. use work equipment and dangerous substances correctly;
- b. use personal protective equipment made available to them properly, and store it in its designated place after use, unless a provision is established by virtue of this Act stating that employees are not obliged to use their protective equipment as referred to above;
- c. not to modify safety devices fitted to work equipment or other objects or to remove them unnecessarily, and to use them correctly;
- d. participate in the training provided for them as referred to in [Article 8](#);
- e. immediately notify the employer or person in charge on site of any dangers to safety or health of which they become aware;
- f. assist the employer, employees and other experts, referred to in [Article 13, paragraphs one to three](#), the individuals referred to in [Article 14, paragraph one](#), and the occupational health and safety service, where necessary, in fulfilling their obligations and tasks pursuant to this Act.



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