MINISTRY OF JUSTICE OF THE REPUBLIC OF LITHUANIA
TRANSPORT ACCIDENT AND INCIDENT INVESTIGATION DIVISION

Less serious accident with Hong Kong (China) flag Bulk carrier Pearl Island (IMO 9801720) that occurred on 6 August 2020 in Klaipėda State Seaport, the Republic of Lithuania

SAFETY INVESTIGATION REPORT

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FOREWORD

The safety investigation is conducted in accordance with Casualty Investigation Code, adopted by IMO resolution MSC.255(84), Commission Regulation (EU) No. 1286/2011 of 9 December 2011 adopting a common methodology for investigating marine casualties and incidents developed pursuant to Article 5(4) of Directive 2009/18/EC of the European Parliament and of the Council, Article 48 of the Maritime Safety Law of the Republic of Lithuania and Description of the procedure on drawing up and submission of reports and safety recommendations for safety investigations into maritime accidents and incidents, approved by the Order No. 1R-386 of the Minister of Justice of the Republic of Lithuania on 30 December 2015.

The purpose of the safety investigation is to prevent the occurrence of accidents and incidents in the future, rather than establish blame or liability. The safety investigation is conducted independently of any judicial or administrative proceedings, to apportion blame or liability, are not related to them, and have no impact thereupon.

Each safety investigation shall be concluded with a report in a form appropriate to the type and seriousness of the accident or incident. The report shall contain, where appropriate, safety recommendations, which shall in no case create a presumption of blame or liability for accident or incident.

The safety investigation report shall not be used as evidence in a judicial or administrative process seeking to apportion blame or liability, because this was not established in the course of the safety investigation and it is not compatible with the objective of the safety investigation.

The information is published to inform the maritime industry and the public of the general circumstances of the accident or incident. Extracts may be published without specific permission providing that the source is duly acknowledged, the material is reproduced accurately and it is not used in a derogatory manner or in a misleading context.

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General information

Event	Less serious accident	
Date and Time	6 August 2020, 11:28 hrs	
Location	Klaipėda State Seaport, Republic of Lithuania	
Name of ship	Pearl Island	
Type of ship	Bulk Carrier	
Flag of ship	Hong Kong (China)	
IMO number	9801720	
Owner of the ship	‘Pearl Island Ltd’	
Operator of the ship	‘Pacific Basin Shipping HK Ltd’	
Voyage type	International	
Persons on Board	Crew – 20	Passengers – None
Injuries	Crew – None	Passengers – None
Nature of Damage	Hull bent in starboard side, above the waterline, ballast water tank’s watertightness lost, hold No 2 partially flooded.	
Other Damage	Less serious damages to shore infrastructure	

Synopsis

On 6 August 2020, at 11:58[1], bulk carrier Pearl Island, IMO 9801720, registered in Hong Kong (China), while mooring at berth No 67A, with assistance of two tugs, contacted with berth fender. Pilot was on board. The contact caused hull bent in starboard side, ballast water tank's watertightness was lost, causing hold No 2 be partially (about 50 cm) flooded by ballast water. No damage to the environment nor to people was sustained.

Safety investigation

On 6 August 2020, 14:46 Lithuanian Transport Safety Administration notified Investigator-In-Charge of Maritime Accidents and Incidents, appointed by the Minister of Justice of the Republic of Lithuania (hereinafter – Investigator-In-Charge) about the accident.

The preliminary assessment of the accident was carried out and on 11 September 2020 it was decided to conduct safety investigation into the less serious accident.

1. FACTUAL INFORMATION

1.1. Narrative

The circumstances of the accident are described on the basis of the testimonies of the Pearl Island's crew, the crews of the tugs Klasco 1 and Klasco 2, the pilot, who was on board the ship Pearl Island at the time of the accident, AIS[2] historical data, video data, provided by SE Klaipėda State Seaport Authority and Operator of the ship, also on the basis of other information, audio of the radio communication between pilot and tugs Klasco 1 and Klasco 2 and Safe Sea Net Ecosystem graphical user interface (SEG).

1.1.1. Course of the accident

On 6 August 2020, Pearl Island was proceeding to the Klaipėda State Seaport, the planned mooring place of the ship was berth No 67A.

It was a bright time of day, visibility was good. Southwest wind 3-4 m/s prevailed, water flow in the port - 0.6 knots towards the sea.

10:20 while the Pearl Island was at sea, the pilot boarded.

10:35 the ship passed Klaipėda State Seaport's breakwaters.

10:50 in the port channel tugs Klasco 1 and Klasco 2 met the ship Pearl Island and were made fast with tug ropes on the port side of the ship - Klasco 1 at the forward, Klasco 2 - at the aft. In the water area of Klaipėda stevedoring company 'Bega', the ship 'Pearl Island' was stopped and turned over the starboard side by the tugs Klasco 1 and Klasco 2 and by means of the ship's propeller. At the start of the mooring operation, the master of Pearl Island and the pilot were standing on the starboard wing of the navigating bridge. The pilot, using VHF[3], in Lithuanian language communicated orders to the tugs Klasco 1 and Klasco 2 on the required direction of their movement and the mode of operation of their engines. These orders, given in Lithuanian, were not explained by the pilot to the Pearl Island's bridge team, so these orders were not understood by the Pearl Island's bridge team. At the same time pilot was giving orders in English to the Pearl Island's master regarding the required ship's main engine operation regime. Master repeated these orders to the chief mate, who was passing them to the engine room for execution.

[1] Local time is used in the report.
[2] Automatic Identification System.
[3] Very high frequency radio communications.

11:22 the direction of the water current was towards the starboard side, both tugs were operating in pull modes. At a distance of about 40 m from the starboard side to berth No 67A, the vessel gradually approached it and was moving backwards parallel to the berth No 67A (Fig. 1) towards the required position.

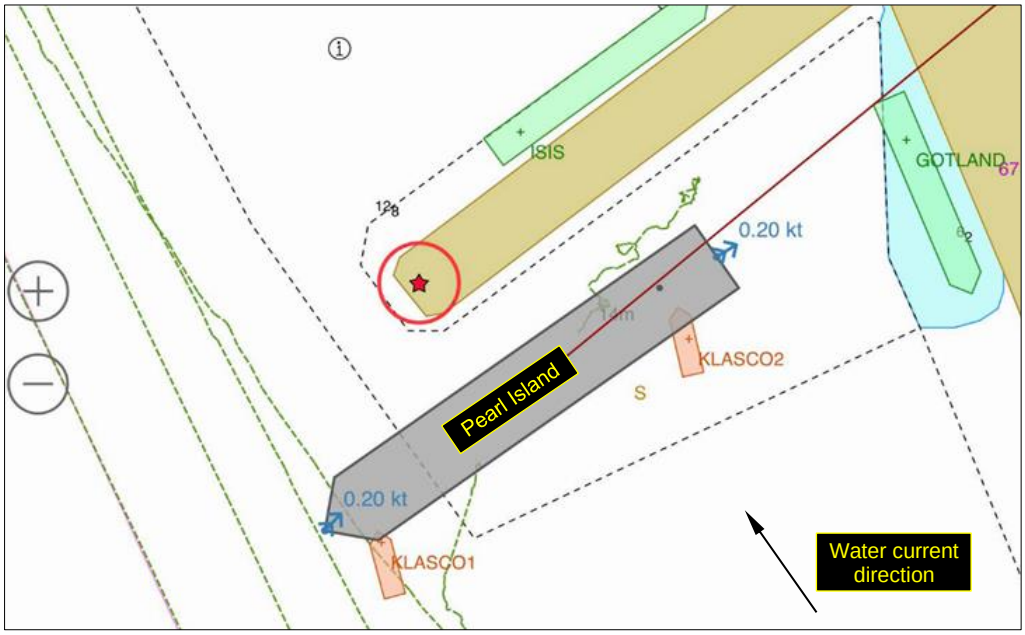

Fig. 1. Position of Pearl Island and tugs Klasco 1 and Klasco 2 at 11:24.
(SE Klaipėda State Seaport Authority)

11:24 both tugs were operating in pull modes. Pearl Island approached berth No 67A and stopped approaching when she was about 25 to 30 m away from it, but was still moving backwards at a speed of 0.2 knots. The position of the vessel was parallel to the berth No 67A (Fig. 1). The pilot ordered tugs Klasco 1 and Klasco 2 to stop.

11:26 pilot ordered tug Klasco 1 master to 'get ready to push'. Further communication (in Lithuanian) between the pilot and tugs Klasco 1 and Klasco 2 masters is presented in Table 1.

Table 1. Layout of radio communications between pilot and tugs

Time	Speaker and content of communications		
	Pilot	Klasco 1 master	Klasco 2 master
11:27:18	'minimum push'	'minimum pushing'	
11:27:40	'first[4], add'	'first slow'	
11:27:46	'second, stop'		'two on stop already'
11:27:51	'two, minimum push'		'minimum pushing'
11:27:57	'first, half'	'half'	
11:28:13	'first, full'	'first full'	
11:28:23	'second, add'		'second adding'
11:28:38	'two, stop'		'stop'
11:28:50	'first, working in full mode, yes?'	'yes yes'	
11:30:19	'Klasco 1, and what, you are pushing?'	'yes, you ordered me to push'	
	'I ordered you to pull !'		

[4] Word 'first' was used to address the tug Klasco 1. Tug Klasco 2 was addressed by word 'second', 'two'.

During the period from 11:27:40 until 11:28:13, the 2nd mate who was on duty in the forward part of the ship, via VHF reported to the “Pearl Island” master about the rapidly decreasing distance between the starboard side of the ship and the berth. According to the Pearl Island master, he requested the pilot to give command to the fore tug to move "full astern". According to pilot, during the mooring and manoeuvring, the Pearl Island master was silent and only when the bow was rapidly approaching the berth, commented that something is going wrong. According to the pilot, pilot replied that the tug Klasco 1 is pulling from the berth.

As both tugs pushed, the forward starboard part of the vessel approached the berth and with a speed of 1.34 knots at 11:28:30 contacted the berth’s fender (Fig. 2).

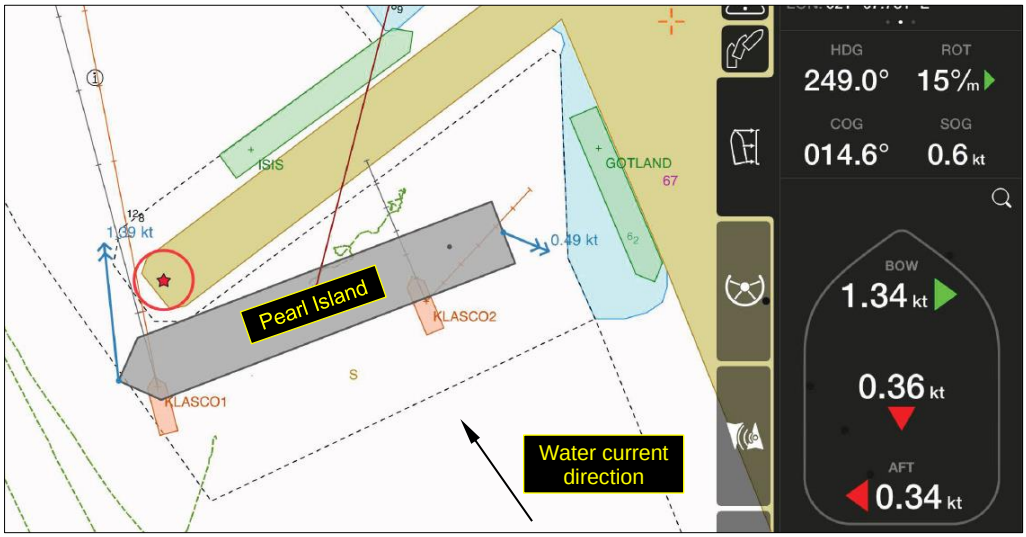

Fig. 2. Position of Pearl Island and tugs Klasco 1 and Klasco 2 at the moment of contact with the berth’s fender *(SE Klaipėda State Seaport Authority)*

1.1.2. Shore authority involvement and emergency response

Not applicable.

1.2. Ship’s particulars

Particulars of bulk carrier Pearl Island (Fig. 3) are provided in Table 2.

Fig. 3. Bulk carrier Pearl Island *(www.vesselfinder.com)*

Table 2. Pearl Island particulars

Flag, registration	Flag of the Hong Kong (China); registered in the Hong Kong (China)
Classification society	American Bureau of Shipping (ABS)
Identification	International Maritime Organisation (IMO) number: 9801720 Call sign: VRRX9 Maritime Mobile Service Identity (MMSI number): 477183400
Main characteristics	Tonnage (GT) 35606 Length 199,9 m Breadth 32,26 m
Building yard of ship	Tsuneishi Group (Zhoushan) Shipbuilding INC
Year of build	2018
Minimum safe manning	Number of crew, indicated in the minimum safe manning document - 14
Cargo allowed	Bulk cargo

1.3. Tugs‘ particulars

Particulars of tugs Klasco 1 and Klasco 2 are provided in Table 3.

Table 3. Klasco 1 and Klasco 2 particulars

	Klasco 1	Klasco 2
IMO number	9534731	9568847
Year of build	2008	2009
Flag, registration	Flag of the Republic of Lithuania Ships are registered in the Register of Seagoing Ships of the Republic of Lithuania	
Classification society	Russian Maritime Register of Shipping (RMRS)	
Main characteristics	Tonnage (GT) 277 Length 29 m Breadth 10 m Capacity of main engines 3370 KW	
Building yard of ship	‘Pella’ shipbuilding yard, Russian Federation	
Minimum safe manning	Number of crew, indicated in the minimum safe manning document, when navigating within port area – 3	

1.4. Data about the Pearl Island crew

At the time of the accident, there were 20 seafarers on board, who were citizens of the Russian Federation, Ukraine and the Philippines. Master was STCW[5] II/2 qualified, able to communicate in English and did not speak Lithuanian.

1.5. Data about the pilot

The pilot was a citizen of the Republic of Lithuania, had a first class pilot’s qualification and was qualified to communicate in English and Lithuanian.

In accordance with the provisions of Annex 1 to the description of the procedure on pilots’ training, examination and qualification requirements, to be complied by persons who are entitled to provide pilotage for certain sizes of vessels,

[5] STCW – International convention on standards of training, certification and watchkeeping for seafarers 1978, as amended.

approved on 6 August 2019 by the order No 2BE-233 of director of Lithuanian Transport Safety Administration ‘Concerning the approval of the description of the procedure on pilots’ training, examination and qualification requirements, to be complied by persons who are entitled to provide pilotage for certain sizes of vessels’, the pilot was entitled to assist the master of a ship of any size, to steer and moor the ship.

1.6. Data about communication

Bridge officers of tugs, providing towage services in Klaipėda State Seaport, including masters of tugs Klasco 1 and Klasco 2, are qualified to communicate in Lithuanian and in English when performing towing or mooring operations.

Pilots providing services in Klaipėda State Seaport are also qualified to communicate in Lithuanian and in English.

It is a well-established practice in Klaipėda State Seaport, according to which the pilots on board the vessel and the bridge officers of tugs communicate with each other in Lithuanian, unless the master of the vessel instructs the pilot otherwise. After the pilot boarded the Pearl Island, the master of the vessel did not express a wish that pilot communicate in English with the tugs Klasco 1 and Klasco 2.

1.7. Information about human factor

The safety investigation did not identify factors such as fatigue, health problems, inadequate psychological condition, alcohol or drug abuse, that could have influenced the actions of the pilot or ship's crew during the accident.

1.8. Data about the damages

During the accident, the Pearl Island’s hull sustained bent above the waterline in the starboard side, (Fig. 4a, the outside view), the watertightness of ballast water tank was lost, hold No 2 was partially flooded (Fig. 4b, view from inside the hold, photograph of the Operator of the ship).

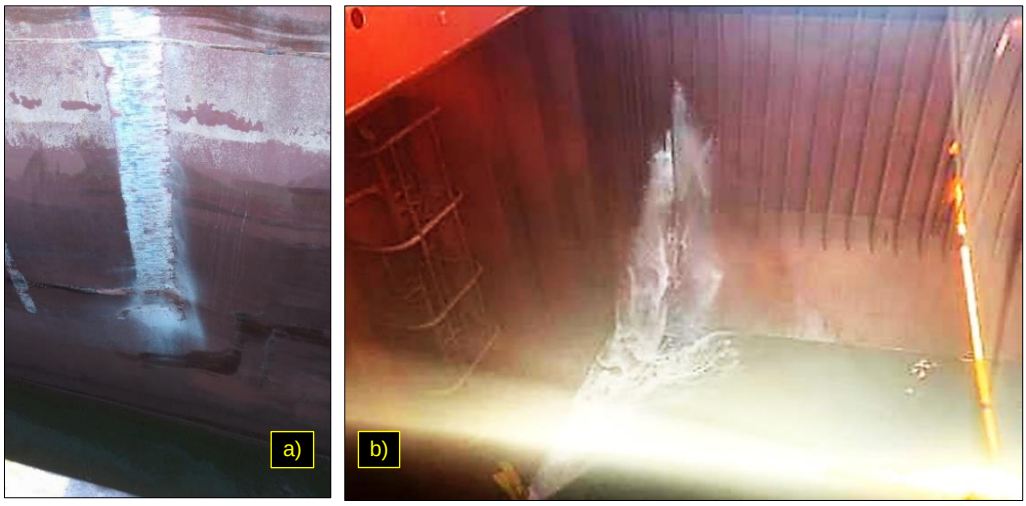

Fig. 4. Damages to Peal Island

The shore infrastructure was also less seriously damaged during the accident: at berth No 67A, in the area of mooring column No 68 damaged concrete wheel stopper, bended metal ladder and scratched berth facade slab.

1.9. Actions taken by the Operator of the ship after the accident

Following the accident, the Operator of the ship conducted an investigation, identified the 'lessons learned' and reported them to ships of her fleet:

> *'1) Even under pilotage, Master and Navigating Officers are responsible and accountable for safe navigation and safe mooring operation at all times and always take early and substantial actions.*
>
> *2) Keep good communications between pilot and bridge team; always request Pilot to communicate with tugs, other parties in English instead of local language.*
>
> *3) Bridge team shall not hesitate to take overriding actions well in time to avoid 'One Man Error'.*
>
> *4) Master has full authority to abort a berthing / unberthing manoeuvre, if he considers it unsafe.*
>
> *5) Masters must assess the prevailing weather conditions, berth restrictions, space availability, ship's manoeuvring characteristics and any other limitations before entering or leaving port and decide on the tug requirements.'*

In order to reduce the risk of recurrence of similar accidents in the future, on 4 September 2020, Operator of the ship alerted the masters of the 116 vessels of her fleet about the following:

> *'1) Even in the presence of pilot, Master and Navigating Officers are responsible and accountable for safe navigation and safe mooring operation of vessels at all times.*
>
> *2) To keep good communications between pilot and bridge team; Ask Pilot to communicate with tugs, other parties in English instead of local language. If the use of local language cannot be avoided, the pilot should relay the order to Master in English. <…>*
>
> *4) We will highlight this incident in our safety seminars for officers (we hold at least 5 training seminars every year), during pre-joining briefing before joining and on board training by our managers during visit on board.'*

1.10. Additional information

1.10.1. Participation in the mooring operation of random ship in Klaipėda State Seaport

To better understand how pilots and tugs' bridge officers communicate, on 22 of September 2020 the Investigator-In-Charge participated in the unmooring operation of one randomly selected foreign flag vessel, while being in the wheelhouse in one of the two port tugs that unmoored the vessel. All communication between pilot and tugs was in Lithuanian. The phrases used mainly referred to the direction of movement and power mode of the tug, however a few phrases contained only the tug's power mode: 'minimum', 'slow'.

1.10.2. Communication recommendations

Paragraph 6 of Annex 2 to the Recommendations on Training and Certification and on Operational Procedures for Maritime Pilots other than Deep-Sea Pilots, adopted by International Maritime Organisation's Assembly on 5 of December 2003 by Resolution A.960(23), (hereinafter – IMO Recommendations), provides following provisions concerning communication language:

> *'6.2 Communications on board between the pilot and bridge watchkeeping personnel should be conducted in the English language or in a language other than English that is common to all those involved in the operation.*

6.3 When a pilot is communicating to parties external to the ship, such as vessel traffic services, tugs or linesmen and the pilot is unable to communicate in the English language or a language that can be understood on the bridge, the pilot should, as soon as practicable, explain what was said to enable the bridge personnel to monitor any subsequent actions taken by those external parties.'

There are no international or national requirements or guidelines by which a pilot should formulate orders for tugs regarding their direction of movement and operating mode of the power plant.

1.10.3. Coordination of mooring operations

Regulations of Navigation of Klaipėda State Seaport, approved on 10 of September 2008 by the Order No 3-327 of the Minister of Transport and Communications of the Republic of Lithuania 'On approval of the regulations of navigation of Klaipėda state seaport' (hereinafter - Regulations of Navigation of Klaipėda State Seaport) provides:

'153. The master of the vessel shall coordinate and lead mooring operations.'

2. ANALYSIS

2.1. Formulation and repetition of orders

Before the Pearl Island hit the berth, the last three phrases 'slow', 'half', 'full' communicated by the pilot and repeated by the master of the tug Klasco 1 did not indicate the direction of movement of the tug. As the pilot before giving these three orders had ordered Klasco 1 master to push – 'get ready to push', 'minimum push', these orders were carried out by the Klasco 1 master in push mode, – i.e. in the direction, mentioned in the latest pilot's order.

While bow quickly approached the berth, the pilot told Pearl Island master that Klasco 1 is operating in pull mode. After the contact, the pilot said to the Klasco 1 master: Klasco 1, and what, you are pushing? I told you to pull! From this it can be understood that the pilot gave those three orders before the Pearl Island hit the berth in the hope that the Klasco 1 tug would pull.

Communicating with phrases that do not contain the direction of movement, increases the likelihood of error in confusing the required direction of movement of the tug, as both the pilot and the bridge officer of the tug must remember which direction of movement of the tug was ordered last. Such an error led to this accident.

Investigator-In-Charge while participating in the unmooring operation of a randomly selected ship in Klaipėda State Seaport observed more cases when there was communication in phrases without defining the direction of the tug's movement.

There are no international or national requirements or guidelines by which a pilot should formulate orders for tugs regarding their direction of movement and operating mode of the power plant. Nevertheless, all communication between the pilot and the tug should be smooth and understandable. Such good communication practices would reduce the likelihood of a communication error and, in cases where pilot-to-tug communication is in a language understood by the ship's bridge team, would also help the bridge team to understand the content of the communication correctly. Taking this into account:

SR-2021-L-01
It is recommended to SE Klaipeda State Seaport Authority, together with companies providing towing services in Klaipeda State Seaport, review the communication practices of pilots and tugs and make decisions to ensure that communication between pilots and tugs is always smooth and understandable.

2.2. Communication language

During Pearl Island mooring operations, the pilot communicated orders to the tugs Klasco 1 and Klasco 2 in Lithuanian language. The pilot did not translate or explain these orders to the Pearl Island master, so the master did not understand the pilot's orders.

The provisions on communication language set out in paragraphs 6.2 and 6.3 of the Annex 2 to the IMO Recommendations state that 'Communications on board between the pilot and bridge watchkeeping personnel should be conducted in the English language or in a language other than English that is common to all those involved in the operation. When a pilot is communicating to parties external to the ship, such as vessel traffic services, tugs or linesmen and the pilot is unable to communicate in the English language or a language that can be understood on the bridge, the pilot should, as soon as practicable, explain what was said to enable the bridge personnel to monitor any subsequent actions taken by those external parties'. IMO recommendations are not binding, however, if they were followed, the pilot would have given orders to the tugs in a language understood by the Pearl Island bridge team, or in Lithuanian, but in latter case he would have had to explain them.

Bridge team, while understanding what the pilot and tugs are talking about, has the opportunity to spot communication gaps and take necessary overriding action without delay to improve the situation. Without understanding pilot's orders given to tugs, mooring ship's bridge team cannot know if there have been any misunderstandings in communication, it is more difficult to understand in which direction tugs are moving or in what mode.

Taking into account that for the bridge team of a ship engaged in pilotage or in mooring is important to understand what the pilot and the navigation officers of tugs are talking about and that there are no requirements or guidelines at national level for the language of communication between the pilot, the bridge team and tugs:

SR-2021-L-02
It is recommended to the Ministry of Transport and Communications of the Republic of Lithuania to implement the provisions of paragraphs 6.2 and 6.3 of the Annex 2 to the Recommendations on Training and Certification and on Operational Procedures for Maritime Pilots other than Deep-Sea Pilots, adopted by International Maritime Organisation's Assembly on 5 of December 2003 by Resolution A.960(23) concerning the use of language understood by all parties concerned, by reviewing and supplementing the Regulations of Navigation of Klaipėda State Seaport.

2.3. The role of the bridge team in ensuring safety

In order to avoid miscommunication, the bridge team and the pilot should exchange information on a regular basis and have a clear understanding of each other's intentions regarding the navigation and safety of the ship. While mooring Pearl Island, the pilot directly led the tugs, giving them orders in Lithuanian and without explaining these orders to the ship's bridge team.

Pursuant to paragraph 153 of the Regulations of Navigation of Klaipėda State Seaport, the master of the vessel shall coordinate and lead mooring operations. Communication between the pilot and the tugs was not understandable to the Pearl Island master. Under such circumstances the master could not reliably assess whether the mooring operation is carried out properly and the master's ability to lead and coordinate the mooring operation is jeopardised.

Less than 50 seconds before the accident, Pearl Island master instructed the pilot to give order to the fore tug to move 'full astern'. The pilot, while being

confident that the fore tug Klasco 1 is operating in pull mode, ordered the latter's master to increase the engines' power. The period of less than 50 seconds was too short for the pilot and the master of the Pearl Island to find out in which mode – pull or push the Klasco 1 was actually operating and take the necessary steps to rectify the situation. Therefore, the ship's bridge team should not wait for a dangerous situation to arise, but make every effort to understand the pilot's orders given to tugs and, if these orders are not clear – request clarification immediately.

In the event of an emergency the bridge team should take the necessary action immediately, including the necessary overriding orders to the tugs regarding their direction of movement and the mode of operation of the power plants.

The Operator of the ship identified this safety issue and took safety actions, as described in section 1.9 of this report, which are considered to be appropriate.

3. CONCLUSIONS

3.1. Cause of the accident

The accident occurred due to lack of communication between the pilot, the Pearl Island's bridge team and the tug Klasco 1, while mooring the ship Pearl Island to the berth.

3.2. Safety deficiencies and safety issues

1. While mooring the ship 'Pearl Island' communication between the pilot and the tug Klasco 1 was not smooth and clear.

2. The pilot and the bridge officers of the tugs Klasco 1 and Klasco 2 communicated in Lithuanian. The content of this communication was not understandable to the bridge team of Pearl Island.

3. The Pearl Island's bridge team did not make sufficient efforts to understand the pilot's orders to the tugs, did not request explanations from the pilot about his orders and did not ask the pilot to communicate with the tugs in a language understood by everyone.

4. Less than 50 seconds before the accident, Pearl Island master instructed the pilot to give order to the fore tug Klasco 1 to move 'full astern'. The pilot, while being confident that the Klasco 1 is operating in pull mode, ordered the latter's master to increase the engines' power. The period of less than 50 seconds was too short for the pilot and the master of the Pearl Island to find out in which mode – pull or push the Klasco 1 was actually operating and take necessary steps to rectify the situation.

It was also established that communication between the pilot and tugs in Klaipėda State Seaport is:

1. Not always smooth and understandable.

2. When conducted in Lithuanian language which is not understandable to the ship's bridge team, not always explanation of communication content is provided. This has a negative effect for master to lead and coordinate the mooring operation.

4. SAFETY RECOMMENDATIONS

Safety recommendation means a proposal of a safety investigation authority, based on information derived from a safety investigation or other sources such as safety studies, made with the intention of preventing accidents and incidents

Safety recommendations shall in no case create a presumption of blame or liability for an accident or incident.

The following safety recommendations are made in this report:

SR-2021-L-01
It is recommended to SE Klaipėda State Seaport Authority, together with companies providing towing services in Klaipėda State Seaport, review the communication practices of pilots and tugs and make decisions to ensure that communication between pilots and tugs is always smooth and understandable.

SR-2021-L-02
It is recommended to the Ministry of Transport and Communications of the Republic of Lithuania to implement the provisions of paragraphs 6.2 and 6.3 of the Annex 2 to the Recommendations on Training and Certification and on Operational Procedures for Maritime Pilots other than Deep-Sea Pilots, adopted by International Maritime Organisation's Assembly on 5 of December 2003 by Resolution A.960(23) concerning the use of language understood by all parties concerned, by reviewing and supplementing the Regulations of Navigation of Klaipėda State Seaport.