

Report on the joint investigation of the collision
between the LNG Carrier
mts **AL ORAIQ** and the mv **FLINTERSTAR** off
the coast of Belgium on 6 October 2015 with the
total loss of the mv **FLINTERSTAR**



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Extract from European Directive 2009/18

Since the aim of the technical safety investigation is the prevention of marine casualties and incidents, the conclusions and the safety recommendations should in no circumstances determine liability or apportion blame.

Extract from IMO MSC Resolution MSC.255(84) Adoption Of The Code Of The International standards and Recommended Practices For a Safety Investigation Into a Marine Casualty or Marine Incident (CASUALTY INVESTIGATION CODE)

The objective of this Code is to provide a common approach for States to adopt in the conduct of marine safety investigations into marine casualties and marine incidents. Marine safety investigations do not seek to apportion blame or determine liability. Instead a marine safety investigation, as defined in this Code, is an investigation conducted with the objective of preventing marine casualties and marine incidents in the future. Where it is practicable and consistent with the requirements and recommendations of this Code the marine safety investigating State(s) should seek to facilitate maximum co-operation between substantially interested States and other persons or organizations conducting an investigation into a marine casualty or marine incident.

The investigation into the collision between mts AL ORAIQ and mv FLINTERSTAR, on 6 October 2015, off the Belgian Coast was jointly conducted between the Belgian Independent Unit, created on ad hoc bases by ministerial decree, The Dutch Safety Board and Republic of the Marshall Islands Maritime Administrator.

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1. Glossary of abbreviations and acronyms

AB	Able Bodied Seaman
ARPA	Automatic Radar Plotting Aids
ECDIS	Electronic Chart Display Information System
ETA	Estimated Time of Arrival
Fv	fishing vessel
GMDSS	Global Maritime Distress and Safety System
kW	Kilowatt
LNG	Liquefied Natural Gas
Mt	metric tons
Mts	motor tank ship
Mv	Motorvessel
PPU	Personal Pilot Unit
STCW	Standards of Training, Certification and Watch-keeping
SWATH	Small Waterplane Area Twin Hull
VHF	Very High Frequency
VTS	Vessel Traffic Services

2. Synopsys

2.1 Factual Information

The mv FLINTERSTAR had left the Port of Antwerp on 5 October 2015 at around 2145 hours Local Time¹, bound for Bilbao in Spain, via the River Scheldt and Flushing. The vessel was laden with steel plates and some parts of machinery.

At Antwerp, a River Pilot² boarded the vessel and the vessel sailed to Flushing with the Master on watch. On 6 October 2015 around 0235 a Pilot change was performed at Flushing roads. A Sea Pilot, from the Flemish Pilotage, boarded the vessel and the River Pilot disembarked. At about the same time, the Chief Officer relieved the Master on the bridge, and from there onward the Chief Officer was on watch as officer in charge.

The vessel proceeded under Pilotage via Wielingen and Scheur, two buoyed fairways, towards the Wandelaar Pilot Station, consisting of a SWATH vessel and auxiliary launches.

¹ All times are in the 4 digit hour/minute format and are expressed in local time UTC +1 unless otherwise stated

² See section 7 - Pilot services off the Belgian Coast page 50

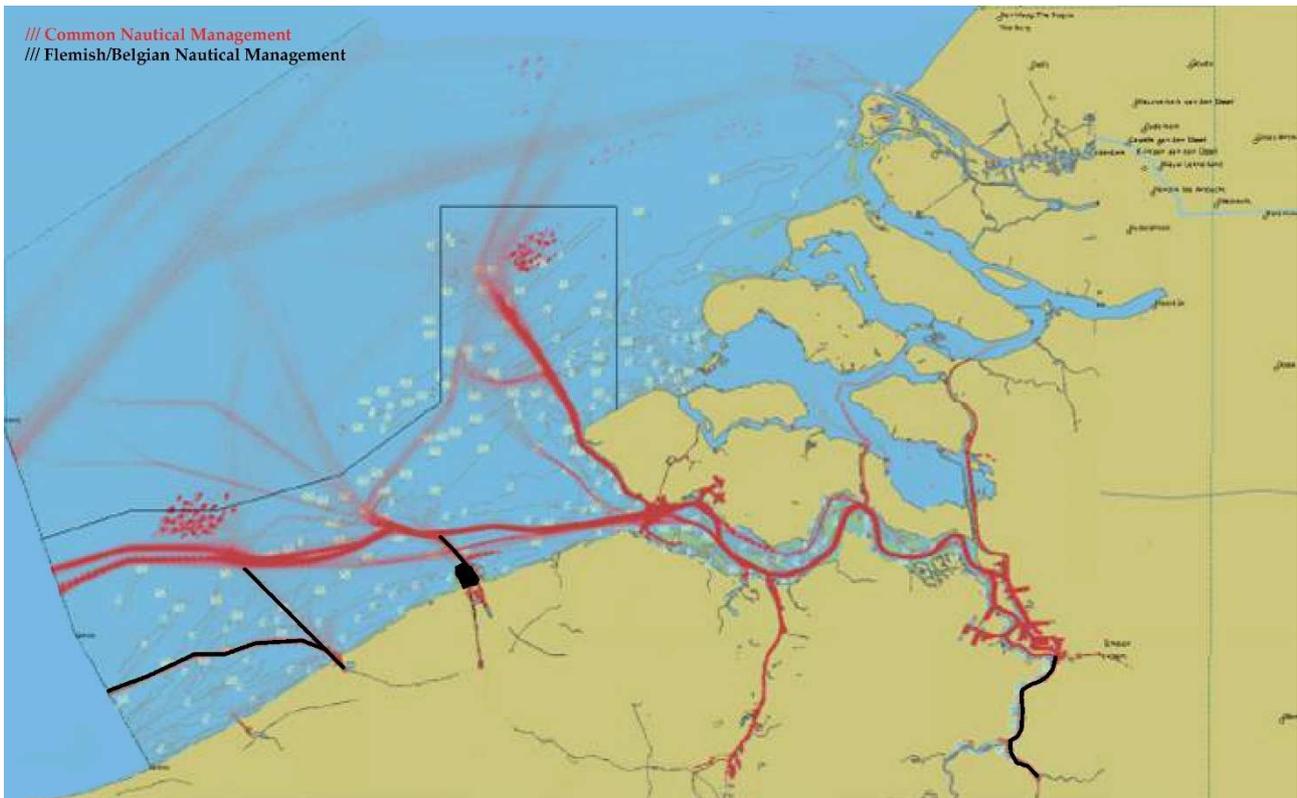


Figure 1 - Region where collision occurred and applicable legislation

Picture by Agentschap Maritieme Dienstverlening en Kust

The mts AL ORAIQ had left the port of Ras Laffan in Qatar bound for Zeebrugge, Belgium; fully laden with a cargo of Liquefied Natural Gas, with ETA of 6 October 2015, around 0630 alongside. On that same day, 6 October 2015, two Coastal Pilots from Flemish Pilotage, and a senior tug Master from the towing company at Zeebrugge boarded the vessel at 0251, near the Wandelaar Pilot station.

It was decided by the Pilots to proceed via the A1 fairway and not the VAARGEUL (deep water fairway).

At 0357 both vessels, the mv FLINTERSTAR and mts AL ORAIQ, collided in the vicinity of the S3 buoy.

For preventing mv FLINTERSTAR to sink in the confined fairway, it was agreed between the Pilots on both vessels that the mts AL ORAIQ would push the mv FLINTERSTAR onto a sand bank, which subsequently happened.

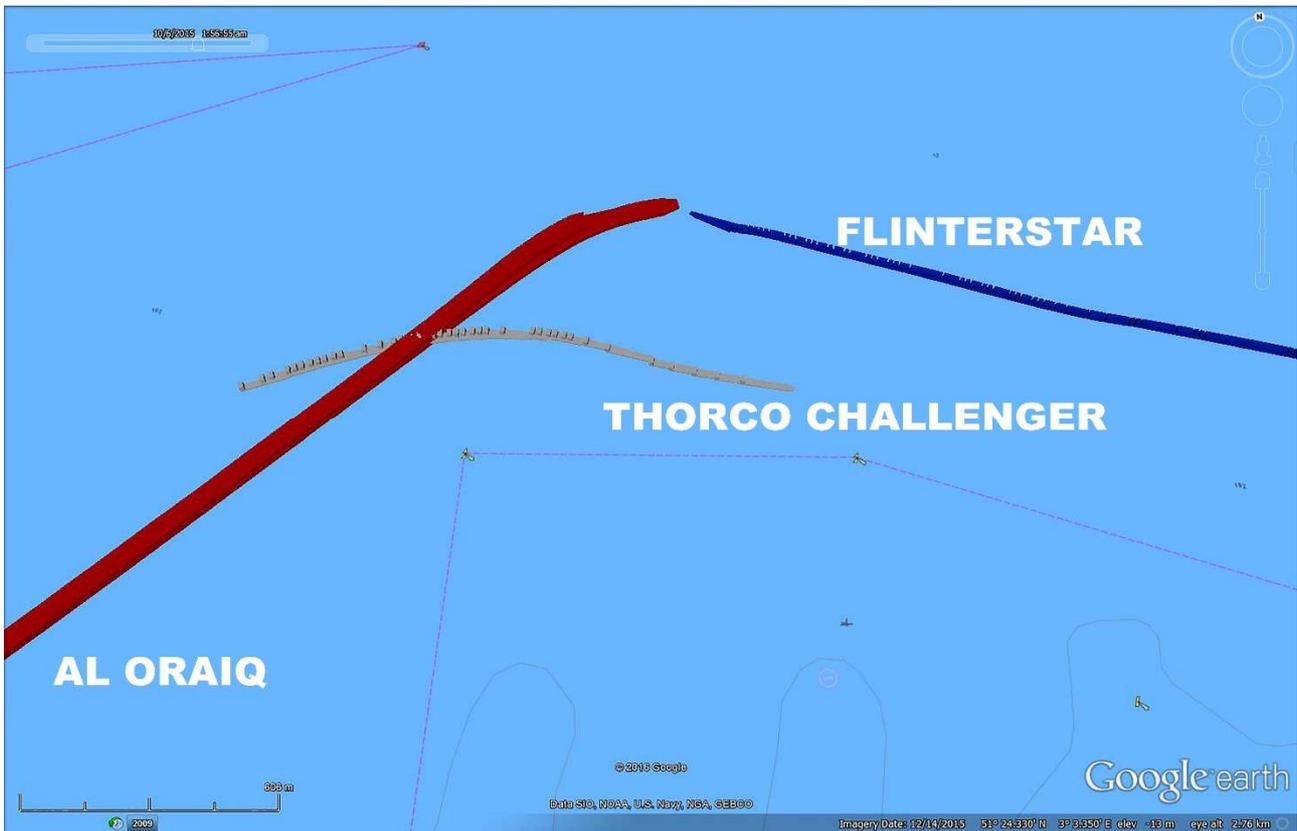


Figure 2 - Tracks of last minutes before the collision

An ad hoc search and rescue operation was launched immediately thereafter. All of the crew of the mv FLINTERSTAR were rescued from the water and everyone survived.

The damage to the mv FLINTERSTAR was to such an extent that the vessel sunk almost immediately after the collision onto a sand bank. Only the superstructure of the mv FLINTERSTAR remained above water level, after the vessel had sunk.



Figure 3 - Mv FLINTERSTAR after the collision lying on a sand bank

The mts AL ORAIQ, which had suffered relatively minor damage, proceeded, after the collision, to an anchorage off the Port of Zeebrugge and was later that day allowed to proceed to its intended berth, quay 615, at the Port of Zeebrugge to unload the cargo of LNG, where the vessel safely berthed in the afternoon of 6 October 2015.

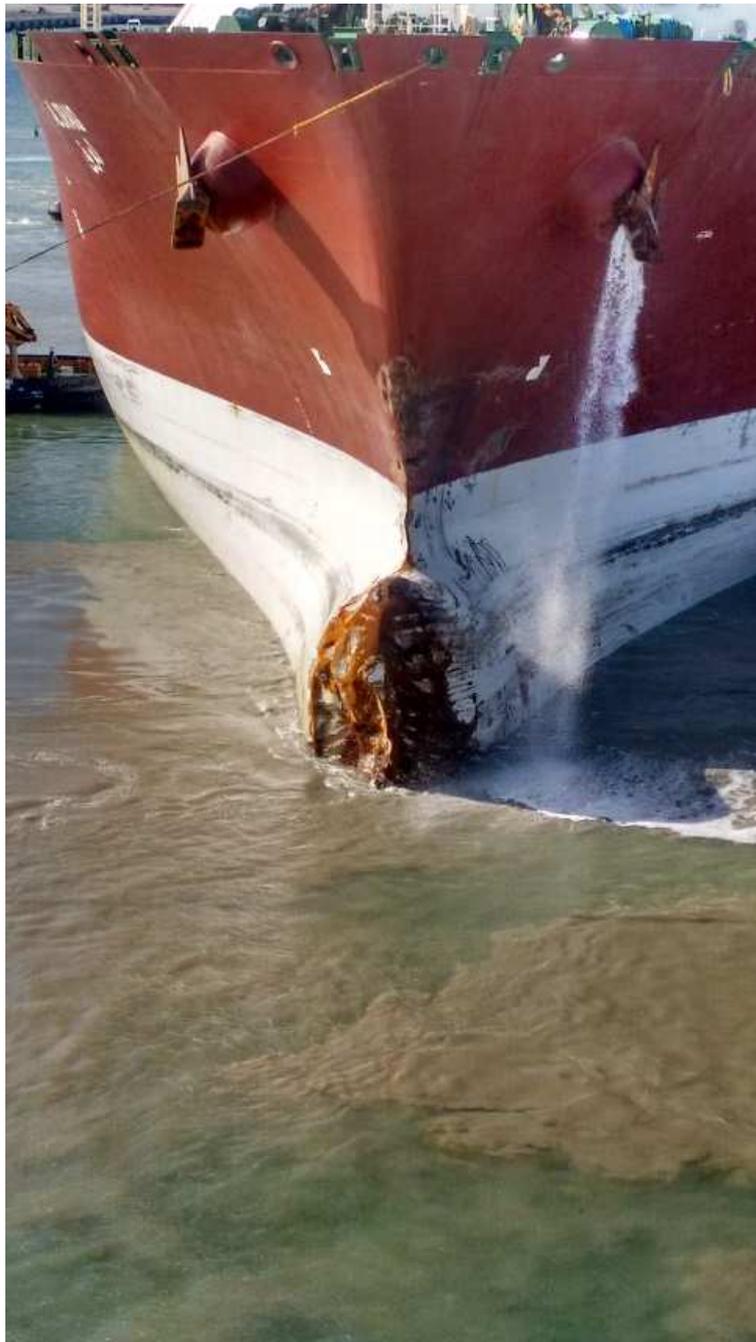


Figure 4 - Damage to the mts AL ORAIQ after the collision

Picture by FPS Mobility and Transport

2.2 Particulars of mv FLINTERSTAR

IMO Number	9243758
Flag/Registry	The Netherlands 
Ship type:	General cargo/multipurpose
Call sign:	PBGY
Gross tonnage (GT):	6577
Ship length:	129,4 m over all
Beam:	17,31 m
Draught:	5,80 m
Keel laying date:	23 October 2001
Delivery date:	27 June 2002
Dead weight:	9120 mt
Shipyard name:	Ferus Smit BV
Main engine (kW):	4350
Classification Society:	Bureau Veritas

2.3 Particulars of mts AL ORAIQ

IMO Number:	9360790
Flag state/Registry:	Marshall Islands 
Ship type:	Gas carrier
Call sign:	V7OE5
Gross tonnage (GT):	136685
Ship length:	315 m over all
Beam:	50 m
Draught:	10,8 m
Keel laying date:	23 April 2007
Delivery date:	13 June 2008
Dead weight:	122079 mt
Shipyard name:	Daewoo Shipbuilding & marine engineering
Main engine (kW):	16589 (each engine)
Engines for propulsion:	2
Classification Society:	American Bureau of Shipping

3. Management and Operation

3.1 mv FLINTERSTAR

The mv FLINTERSTAR, a Dutch registered, general cargo vessel was managed by the Dutch company Flinter Management BV from Barendrecht, The Netherlands. Flinter Shipping BV manages more than 20 vessels of several tonnage, all dry cargo/breakbulk vessels. The crew of the mv FLINTERSTAR consisted of Dutch, Russian and Philippine crewmembers.

3.1.1 The Master of the mv FLINTERSTAR

The Master of the mv FLINTERSTAR was 51 years old at the time of the collision between the mts AL ORAIQ and the mv FLINTERSTAR. He had started his career in 1984. He sailed as Master from 2001 onward on bulk carriers, general cargo and container ships.

The Master of the mv FLINTERSTAR held the following credentials at the time of the ship's collision with the mts AL ORAIQ:

- STCW II/2 – Master of a ship of 3.000 GT or more – No limitations – Certificate of Compliance issued by the Kingdom of the Netherlands on 12 September 2012.
- General Operator – GMDSS – Certificate of Compliance issued by the Kingdom of the Netherlands on 12 September 2012.

3.1.2 Bridge equipment and visibility

The mv FLINTERSTAR 's primary aid to navigation was ECDIS. Two independent units were fitted. The mv FLINTERSTAR was fitted with one X band radar, and one S band radar. The starboard radar display was used by the Pilot and was set on the 3nm range scale. The

display was in relative motion and was off-centred to extend the coverage ahead of the vessel to about 4.5nm.

One VHF radio set was sited at the chart table in the aft section of the wheelhouse on starboard side, with a repeater unit on the centre console and a second VHF radio set was mounted into the centre console.

The mv FLINTERSTAR was loaded with 2.554,852 metric tons of cargo, consisting of steel coils and crane parts, all cargo was stowed under deck. No cargo was impairing the visibility from the wheelhouse.

3.1.3 Manoeuvrability

Mv FLINTERSTAR was fitted with a balanced rudder with maximum rudders angles of 60°. The elapsed time from hard to starboard to hard to port was 42 seconds. The engine on board the mv FLINTERSTAR was a Wärtsilä 6L38B with a maximum output rating of 4350 kilowatt.

The vessel was equipped with a counter clock-wise rotating pitch controlled propeller and a bow thruster of 500 kilowatt.

The time needed to manoeuvre from full ahead to full astern was 70 seconds and the engine rated 80% of its maximum output in reverse.

3.2 mts AL ORAIQ

The mts AL ORAIQ is a 2008 built LNG carrier managed by "K" Line LNG Shipping (UK) Ltd from London, United Kingdom. "K" Line LNG Shipping (UK) Ltd manages 8 LNG carriers, all of which had a capacity between 142.000 and 211.000 m³. The mts AL ORAIQ regularly called at the Port of Zeebrugge prior to the collision. The crew of the mts AL ORAIQ consisted of Latvian, Polish, Croatian and Philippine crewmembers. At the time of the collision between the mts AL ORAIQ and the mv FLINTERSTAR the number of deck officers on board the mts AL ORAIQ was 5.

For the purpose of the Agentschap voor Maritieme Dienstverlening en Kust (MDK) LNG Shipping Procedures³ the mts AL ORAIQ is a large LNG carrier.

3.2.1 Master of the mts AL ORAIQ

The Master of the mts AL ORAIQ was 51 years old at the time of the collision between the mts AL ORAIQ and the mv FLINTERSTAR. He had started his career in 1982. He had sailed as Chief Officer from 1992 onward on bulk carriers, general cargo and container ships. He sailed as Master from 1996 till 2003. He returned to the rank of Chief Officer on LNG carriers in 2003 and has sailed as Master on board LNG Carriers since 2004. He called at the Port of Zeebrugge regularly.

³ Appendix 1 – Page 77 - NAUTICAL REGULATIONS – LNG Shipping procedures

3.2.1.1 Master's credentials

The Master of the mts AL ORAIQ held the following credentials at the time of the ship's collision with the mv FLINTERSTAR:

- STCW II/2 – Master of a ship of 3.000 GT or more – No limitations – Certificate of Compliance issued by the Republic of Croatia on 24 February 2014, Certificate of Endorsement issued on 27 May 2014 by the Republic of the Marshall Islands.
- General Operator – GMDSS – Certificate of Compliance issued by the Republic of Croatia on 24 February 2014, Certificate of Endorsement issued on 27 May 2014 by the Republic of the Marshall Islands.

3.2.2 Bridge equipment and visibility

The mts AL ORAIQ's primary aids to navigation was ECDIS. Two independent units were fitted. The ship was fitted with an X band radar, an S band radar and ARPA. The displays are located on a console in the forward part of the wheelhouse. There were two VHF radios, both of which are located on the navigation console.



Figure 9 – Mts AL ORAIQ's wheelhouse

Picture by Republic of the Marshall Islands Maritime Administrator

Both of the ship's main engines can be controlled from the bridge. The controls were located on the centreline immediately forward of the steering station.

The mts AL ORAIQ was fitted with cargo tank vents on the centreline as well as a pedestal mounted hose handling crane on the port and starboard sides.

3.2.3 Manoeuvrability

Mts AL ORAIQ was fitted with two MAN B&W 6S70ME-C engines that were each rated for 16589 kW with a maximum speed of 87 rpm. Each engine drives a fixed pitch, inboard turning propeller. The ship was fitted with twin, semi-balanced spade rudders that when amidships were both turned inboard 3°. The maximum rudder angle was 35°. The time from hard over to hard over is 12 seconds with two steering pumps energized and 24 seconds with one steering pump energized.

The time needed to manoeuvre from full ahead (60 rpm) to full astern was 552 seconds. The distance required for the mts AL ORAIQ when loaded to stop in an emergency is approximately 17.5 cables.

4. Marine Casualty Information

Date and time	6 October 2015, 0357 hours local time	
Type of marine casualty or incident	Very Serious Marine Casualty	
Location of incident	Scheur 3 buoy, off Zeebrugge, Belgian Coast	
Vessel's name	<i>mts AL ORAIQ</i>	<i>mv FLINTERSTAR</i>
Place on board	Bulbous bow	Portside mid to aft quarter
Injuries/fatalities	None	Hypothermia of the Master
Suffered damage / consequential pollution	Bulbous bow deformed and punctured	Vessel lost – Oil spill
Ship operation	On passage	On passage
Voyage segment	Transit	Transit
Meteorological conditions	Good	
Visibility	Good	
Precipitation	Slight Rain	
Persons on board	31	12

5. Narrative

5.1 Events leading up to the collision

5.1.1 On board mv FLINTERSTAR

On Board mv FLINTERSTAR on 5 October 2015, after having left the Port of Antwerp, the Master of the vessel had stood watch from the time the vessel had left the locks at Antwerp till approximately 0155 the next morning. At that time he was joined by the Chief Officer, and soon thereafter, having sailed free of incidents, under Pilotage of a River Pilot, towards the mouth of the River Scheldt, the mv FLINTERSTAR arrived at Flushing roads where the River Pilot was to be exchanged for a Sea Pilot.

Neither the Master nor the Chief Officer were aware of the existence of “NAUTICAL REGULATIONS – LNG Shipping procedures”⁴ in place at the time in front of the Belgian Coast and regulating traffic of LNG carriers from and to the Port of Zeebrugge. All masters sailing in that area should be aware of these regulations since all ships can be bound by them.

It was the second working day of the Sea Pilot’s working roster for the coming days, and he had been standing by since 1800 that same day. The Sea Pilot was poked around 0200 on 6 October 2015. After that, he went to the operational offices of the Flemish Pilotage to pick up his gear and his commissioning. In the preparation of his voyage the Flemish Sea Pilot was not made aware of any particularities. The Sea Pilot assessed visibility and meteorological conditions when underway from Flushing towards the mv FLINTERSTAR while being on board the Pilot launch.

After having boarded the mv FLINTERSTAR, around 0235 on 6 October 2015, and having exchanged the vessel’s particulars between the Master and the Sea Pilot, the Master left the wheelhouse for a rest at about 0300 on 6 October 2015, and left the Chief Officer at the

⁴ Appendix 1 – Page 77 - NAUTICAL REGULATIONS – LNG Shipping procedures

conn. The mv FLINTERSTAR proceeded the voyage via the fairways WIELINGEN and SCHEUR.

At Flushing roads the VHF radiotelephones were set to channel 14, Traffic Centre Vlissingen and channel 69, Traffic Centre Zeebrugge as described in the VHF sectors in VTS Scheldt Region ⁵.

When passing the W4 buoy en route from Flushing Roads to the Wandelaar Pilot area, the Sea Pilot set one VHF radio set from channel 14, Traffic Centre Vlissingen, to channel 65, Traffic Centre Wandelaar, so he could be informed of the traffic and meteorological situation at the Pilot station. He then reported that the mv FLINTERSTAR was passing the W4 buoy, outbound with an ETA at the SWATH (Pilot station) of 0530 on 6 October 2015.

On both VHF radio maritime channels communication between the mts AL ORAIQ, VTS-Operators, and other vessels, such as mv THORCO CHALLENGER, could be heard at the conning position on board the mv FLINTERSTAR at several occasions before the collision.

The Sea Pilot on board the mv FLINTERSTAR was not making any use of the Portable Pilot Unit, since the units had the habit of crashing when in the vicinity of the S3/S4 buoys, in the weeks prior to the collision. All navigation systems on board the mv FLINTERSTAR were in good working order. The Sea Pilot had set the starboard radar of the wheelhouse to a 3 miles range, and had off centred the image so that a forward area ranging to about 4.5 miles was visible. He regularly changed to a broader range of 6 nautical miles, however at the time of the incident the range was set to 3 nautical miles.

Music was playing in the wheelhouse of the mv FLINTERSTAR. The Sea Pilot and the Chief Officer were engaged in a casual conversation about holiday destinations and fuel prices. There were no exchanges of navigational information between the Sea Pilot and the Chief Officer.

The Sea Pilot had noted the approach to the S3 buoy of an oversized vessel ⁶, judging by the size of the echo on the radar and by the configuration of its mandatory lights.

⁵ Appendix 2 – Page 103 - VTS Sectors in VTS Scheldt Region

⁶ Appendix 4 – Page 108 - Extract from Politie- en scheepvaartreglement voor de territoriale zee, kusthavens en stranden

At 0354 hours the Pilot on board mv FLINTERSTAR moved the pointer of the mouse of the radar to the plotted mts AL ORAIQ on his ECDIS screen to check the AIS information of the vessel.

The mv FLINTERSTAR slightly altered its course to starboard to sail in the starboard half of the fairway. At the time of the collision the mv FLINTERSTAR was sailing on the starboard side of the fairway approaching the S3 buoy.

5.1.2 On board the mts AL ORAIQ

At approximately 0000 on 6 October 2015 the mts AL ORAIQ was transiting the English Channel en route the Port of Zeebrugge. The bridge team consisted of the Master, the Junior Second Officer (2/O Jr), who was the duty Officer Of the Watch, a Helmsman and a Lookout. A Deck Cadet was also on the bridge. The members of the bridge team were using closed loop communications.

At approximately 0200 the mts AL ORAIQ entered the Traffic Separation Scheme (TSS) At West Hinder. Approximately 10 minutes later AL ORAIQ contacted the Traffic Centre Wandelaar and was advised that the Pilots would board at approximately 0250. Based on the transit plan prepared by the Pilots this was when that ship was expected to be passing the AS buoy at this time. In preparation for approaching the Pilot station the Master assumed the conn at 0212. The mts AL ORAIQ's speed was approximately 10 knots, which was the speed indicated in the ship's voyage plan for this portion of the route.

Two Coastal Pilots⁷ and a tug master boarded the mts AL ORAIQ at 0243 when the ship was passing the AS buoy to starboard. The Master had not previously been informed that the tug master, who was on board to discuss mooring arrangements in Zeebrugge would be boarding with the Pilots. VTS-SG did not follow the procedure to broadcast the AL ORAIQ's planned route when she was passing this buoy.

⁷ Large LNG carriers bound to and from the Port of Zeebrugge are always boarded by two Pilots. One Pilot acts as the main advisor, hereafter called Acting Coastal Pilot, and the Backup Coastal Pilot acts as backup when the first Pilot gets incapacitated during the Piloted crossing. Usually the Backup Coastal Pilot performs the ship to shore radio communications.

The two Coastal Pilots who embarked the mts AL ORAIQ had received a telephone call at home, while being at rest, some 1.5 hours before a taxi would come and pick them up to be brought to the Pilot station at the Port of Zeebrugge. At the Pilot station the Acting Coastal Pilots compiled the final version of the sailing plan⁸ and sent it to all relevant parties as mentioned in NAUTICAL REGULATIONS – LNG Shipping procedures⁹.

Subsequently the two dedicated Coastal Pilots were shuttled to a Pilot launch which ferried them to the Pilot boarding area.

The Pilots and tug master arrived on the bridge shortly after embarking the mts AL ORAIQ and the Master / Pilot exchange was conducted. The Master / Pilot exchange included a review of data necessary for the transit to the Port of Zeebrugge, such as the manoeuvring characteristics of the vessel as displayed on the wheelhouse poster¹⁰, and the fact that ten minutes notice to the engine room was required when wanting to reduce speed. Immediately following this exchange, a Coastal Pilot contacted the Traffic Centres Wandelaar, Zeebrugge and Vlissingen, informing them that the mts AL ORAIQ was manned and en route and was on schedule. The Coastal Pilots informed the Master that 3 red mast lights should be turned on¹¹ and asked that the ship's speed be increased to 15 knots. Engine speed was Full Navigation (approx. 74 rpm). The ship's voyage plan indicated that the planned speed until reaching the S3 buoy was 10 knots. The Pilot's voyage plan required a speed over ground of approximately 12 to 13 knots.

The Acting Coastal Pilot positioned himself at the ship's S-band radar, which had been used by the ship's Master, and assumed the conn. The Backup Coastal Pilot, who was operating the PPU, positioned himself at the X-band radar, which had previously been used by the ship's officer of the watch.

⁸ Appendix 5 - Page 109 – Final version of sailing plan mts AL ORAIQ

⁹ Appendix 1 - Page 77 - NAUTICAL REGULATIONS – LNG Shipping procedures

¹⁰ Appendix 3 – Page 107 - Manoeuvring characteristics mts AL ORAIQ

¹¹ Appendix 4 – Page 108 - Extract from Politie- en scheepvaartreglement voor de territoriale zee, kusthavens en stranden

At approximately 0255 the Master went below to send the notice of readiness. At approximately the same time, the second rating for the 0000 – 0400 watch arrived back on the bridge after helping to secure the Pilot ladder and asked the officer of the watch if he was needed on the bridge. The officer of the watch allowed him to lay down below. The Pilots spoke with each other in Dutch with a local accent and did not interact with the officer of the watch while the Master was below. The only interaction that occurred was when the officer of the watch asked a Pilot to move the PPU off the navigation chart.

Mts AL ORAIQ proceeded to approach the Port of Zeebrugge via the southern route across the Akkaert Bank rather than by following the designated deep water route, which is to the North of the bank. Large LNG carriers are only permitted by the LNG Shipping Procedures to use this route under very specific circumstances, however these were not invoked for this voyage. This route was the one included in the ship's voyage plan as well as the voyage plan that the Pilots submitted to the traffic centre, however it was not substantiated by the Coastal Pilots why sailing via the indicated route was preferred over sailing via the mandatory route.

At approximately 0315 the Master returned to the bridge and began to speak with the tug master at the ship's chart table about the tug arrangements in the Port of Zeebrugge. The Master was informed that the mooring at the Port of Zeebrugge would differ from what he was used to, since a new jetty was under construction and therefore the rigging of the tug boats would be different, already anticipating the presence of the new jetty. The tug Master drew the proposed tug boat arrangement¹² onto the sailing plan. After returning to the bridge the Master did not ask either the officer of the watch nor the Pilots for an update regarding the ship's progress. Nor did the officer of the watch advise the Master that he had allowed the second rating to lay down below.

At approximately 0320, with the Master still being caught up in discussions with the tug Master behind the chart table, the mts AL ORAIQ overtook the mv SCOTT PIONEER which was perceived as a close quarter situation by the officers of the mts AL ORAIQ. The range between the two ships at the closest point of approach was approximately 0.17 nautical miles. The Pilots did not inform neither the Master nor the officer of the watch that they intended to overtake mv SCOTT PIONEER.

¹² Appendix 5 – Page 109 – Final version of sailing plan mts AL ORAIQ

At 0326 on 6 October 2015, the Backup Coastal Pilot on board mts AL OARIQ inquired with Traffic Centre Zeebrugge via VHF radiotelephone whether any news was received from the Maritime Police, and whether or not they would be patrolling the approaches to the Port of Zeebrugge by boat, to which VTS replied that no news had been received.

At 0331 after passing the A1 buoy, the Pilots informed Traffic Centre Zeebrugge that the mts AL OARIQ was approximately 10 minutes ahead of schedule. VTS did not acknowledge this message. The Pilots did not translate either of these transmissions into English, nor did the Master or officer of the watch ask the Pilot about the content. The Master continued to speak with the tug master about the ship's mooring arrangements and the Pilots continued to speak with each other in Dutch.

At 0338 the mts AL OARIQ began to overtake the mv THORCO CHALLENGER, who had been proceeding inbound ahead of mts AL OARIQ since the Pilot station. Based on mts AL OARIQ's ARPA, the mv THORCO CHALLENGER's speed was approximately 12 knots, which was 3 knots slower than the mts AL OARIQ's speed. The calculated time of closest point of approach was 13.5 minutes. The two vessels would be in closest vicinity just as the ships were approaching the S3 buoy where they would need to make a course change of approximately 50° to starboard. One of the Pilots on the mts AL OARIQ hailed the Pilot on the mv THORCO CHALLENGER over the VHF radiotelephone on channel 69 and proposed that the mts AL OARIQ would overtake the mv THORCO CHALLENGER on its starboard side. The Pilot on the mts AL OARIQ requested the mv THORCO CHALLENGER to give way so that the mts AL OARIQ could overtake the mv THORCO CHALLENGER on its starboard side before passing the S3 buoy. This was agreed to by the Pilot on board the mv THORCO CHALLENGER. This conversation was in Dutch and was not translated for the Master or officer of the watch. Neither did the Pilots inform neither the Master nor the officer of the watch of their intention to overtake mv THORCO CHALLENGER.

As the mts AL OARIQ was approaching the S1 buoy at approximately 0344, the Pilots observed that there was a difference between the ship's speed as indicated on their PPU, which received the speed information from the Automatic Identification System, and the ship's radar, which was receiving speed information from the GPS and the speed log. They contacted Traffic Centre Zeebrugge to inquire about the ship's speed. The Master then became involved in the discussion. It was determined that the speed shown on the radar was correct. At approximately this same time the Pilots' PPU began to crash. By this time

the ship was between the S1 buoy and the S3 buoy; the distance between these buoys is approximately 2 nautical miles. The PPU required approximately 1.5 minutes to restart, a process that was repeated three times.

At 0345 the officer of the watch called the Senior 2/O (2/O Sr) and the 3/O and they arrived on the bridge a few minutes later. The 3/O was the oncoming officer of the watch and the 2/O Sr would be in charge of the forward mooring station. The 2/O Jr after being relieved as the duty officer of the watch would be in charge of the aft mooring station. The AB who was the oncoming Helmsman was also called, and arrived on the bridge soon thereafter. A second rating, to serve as the Lookout according to ship's procedures, was not called. The Master began discussing mooring arrangements in the Port of Zeebrugge with two 2/O's almost immediately after the 2/O Sr arrived on the bridge. Initially this discussion was by the chart table and then in the forward portion of the wheelhouse. The oncoming AB relieved the Helmsman and the off going AB went down below.

At 0350 hours, the Pilot on board the mv THORCO CHALLENGER hailed the mts AL ORAIQ twice on VHF radiotelephone Channel 69, before eventually being replied to after a third attempt. The Pilot on board the mv THORCO CHALLENGER asked the Coastal Pilot on board the mts AL ORAIQ whether he was bound for the Port of Zeebrugge to which the Acting Coastal Pilot on board the mts AL ORAIQ replied positively. The Pilot on board the mv THORCO CHALLENGER then raised the question over VHF radiotelephone whether it would be wiser for the mts AL ORAIQ to stay behind the mv THORCO CHALLENGER, because of outbound traffic. The Coastal Pilot on board the mts AL ORAIQ agreed to do so by replying that he had already reduced the vessel's speed, and subsequently requested the speed of the mts AL ORAIQ to be reduced to full manoeuvring speed. The VHF radiotelephone exchange between the Pilots on the mts AL ORAIQ and the Pilot on board the mv THORCO CHALLENGER was not translated into English, nor did the Coastal Pilots on board the mts AL ORAIQ inform the ship's Master or officer of the watch of what had been said via the VHF radiotelephone.

Subsequently the Backup Coastal Pilot on board the mts AL ORAIQ hailed Traffic Centre Zeebrugge via VHF radiotelephone on channel 69, and requested the traffic centre to check their system and inform the mts AL ORAIQ what the actual speed over the ground of the vessel was at that time. Traffic Centre Zeebrugge informed the Coastal Pilots on board the

mts AL ORAIQ that according to their systems the speed over ground of the mts AL ORAIQ was 14.5 knots.

The mv THORCO CHALLENGER began to turn to starboard at approximately 0351. At 0354, the mts AL ORAIQ was passing the S3 buoy. By this time the mv FLINTERSTAR was less than 1.5 nautical miles off the mts AL ORAIQ's starboard bow and was approaching the S3 buoy from the southeast. There is no indication that the mts AL ORAIQ's Master, Officer of the watch or Pilots were aware that the mv THORCO CHALLENGER had started to turn, or of the proximity of the S3 buoy and the mv FLINTERSTAR.

When the S3 buoy was abaft the beam of the mts AL ORAIQ the Acting Coastal Pilot on board subsequently ordered the ship's rudders to starboard 5. By this time the mv FLINTERSTAR was less than 5 cables off the ship's starboard bow. Ten seconds after ordering starboard 5, the mts AL ORAIQ's Pilot ordered starboard 10. Ten seconds later the rudders were at starboard 10. After a period of approximately 30 seconds, the Pilot ordered starboard 20. At about the same time the mts AL ORAIQ's Master, officer of the watch and Pilots first became aware that the mv FLINTERSTAR was very close off the starboard bow. At 0357 Traffic centre Zeebrugge hailed the mts AL ORAIQ, however the call was not answered. Seconds later at approximately 0357 the mts AL ORAIQ and the mv FLINTERSTAR collided.



Figure 5 – Imminent collision between mts AL ORAIQ and mv FLINTERSTAR
as seen on VTS Radar Images

5.1.3 Post Collision Actions

At 3:57:30, the Pilot on board the mv THORCO CHALLENGER reported to Traffic Centre Zeebrugge via VHF radiotelephone Channel 69 that a fierce collision had taken place. Traffic Centre Zeebrugge affirmed the collision.

Soon thereafter the Backup Coastal Pilot on board the mts AL ORAIQ inquired with the Pilot on board the mv FLINTERSTAR whether he could be of any assistance and informed that the mts AL ORAIQ was still running ahead.

Around the same time several fishing vessels, fishing in the vicinity of the position of the collision, reported to Traffic Centre Zeebrugge that they were available to offer assistance and underway to the scene of the collision.

Several tug boats, standing by for the mooring manoeuvre at the Port of Zeebrugge of the mts AL ORAIQ, deployed soon thereafter and proceeded to the scene of the collision.

At 0403 The Backup Coastal Pilot on board the mts AL ORAIQ informed Traffic Centre Zeebrugge via VHF radiotelephone on Channel 69 that the mv FLINTERSTAR was caught on the bulbous bow of the mts AL ORAIQ. He also informed that no further information was available at that time but a deck officer from the mts AL ORAIQ had gone forward on deck to assess the situation. The Backup Coastal Pilot was asked about the situation/condition of the mv FLINTERSTAR but replied not to be in a position to report at that time.

The Pilot on board the mv FLINTERSTAR almost immediately thereafter informed Traffic Centre Zeebrugge via VHF radiotelephone on Channel 69, that the mv FLINTERSTAR was making water and was sinking.

Upon the message from the Pilot on board the mv FLINTERSTAR, the Backup Coastal Pilot on board the mts AL ORAIQ suggested to push the mv FLINTERSTAR onto a sandbank lying just south of the fairway. The Backup Coastal Pilot on board the mts AL ORAIQ informed the Pilot on board the mv FLINTERSTAR that the engines had been stopped but that the vessel was still making way. The Pilot on board the mv FLINTERSTAR affirmed that it was a good suggestion seen the situation. He also informed that the Master of the mv FLINTERSTAR was on the telephone, but the Pilot would revert later.

At 0407 on 6 October 2015, a Pilot on board the mv SCOTT PIONEER informed Traffic Centre Zeebrugge via VHF radiotelephone on Channel 69, that the mv FLINTERSTAR was now suffering from a total blackout, and inquired with Traffic Centre Zeebrugge if the mv SCOTT PIONEER should remain on scene.

Traffic Centre Zeebrugge replied that tugs were underway and it was up to the judgement of the mv SCOTT PIONEER whether or not the mv SCOTT PIONEER would remain on scene.

Seconds later the Pilot on board the mv FLINTERSTAR requested the Coastal Pilot on board the mts AL ORAIQ to push the mv FLINTERSTAR onto a sandbank after having consulted the Master of the mv FLINTERSTAR.

Apparently at 0408 on 6 October 2015 the mv FLINTERSTAR had come loose from the bulbous bow of the mts AL ORAIQ. The Backup Coastal Pilot on board the mts AL ORAIQ inquired about it with the Pilot on board the mv FLINTERSTAR via VHF radiotelephone Channel 69. Thereupon the Pilot on board the mv FLINTERSTAR replied positively. The Backup Coastal Pilot on board the mts AL ORAIQ stated that it would not be a good idea to

again put the engines in forward motion since the result would create another impact between the mts AL ORAIQ and the mv FLINTERSTAR. The Backup Coastal Pilot on board the mts AL ORAIQ subsequently suggested to launch the mts AL ORAIQ's lifeboats (rescue boat).

The Pilot on board the mv FLINTERSTAR replied that the abandon ship order had been given on board the mv FLINTERSTAR.

Subsequently the Backup Coastal Pilot on board the mts AL ORAIQ inquired with Traffic Centre Zeebrugge via VHF radiotelephone Channel 69, whether or not the tugs that had left the Port of Zeebrugge would be on scene soon, to evacuate the crew of the mv FLINTERSTAR.

The Master of one of the tugs replied that he was sailing at full speed towards the scene of the collision and that he would be on scene in 10 minutes time.

At 0410 on 6 October 2015, the Pilot on board the mv SCOTT PIONEER informed Traffic Centre Zeebrugge via VHF radiotelephone Channel 69, that they would swing the vessel around. Traffic Centre Zeebrugge asked whether the mv SCOTT PIONEER was proceeding towards the scene of the collision, whereupon the Pilot on board the mv SCOTT PIONEER replied affirmatively since now there were people in the water.

Thereupon Traffic Centre Zeebrugge hailed the fv VLISSINGEN 7 over the VHF radiotelephone Channel 69 and task the vessel to render assistance with the rescuing of the crew of the mv FLINTERSTAR.

Immediately thereafter the Backup Coastal Pilot on board the mts AL ORAIQ inquired with Traffic Centre Zeebrugge via radiotelephone Channel 69 whether a fishing vessel in the vicinity of the collision could be identified and summoned for immediate assistance. The Coastal Pilot informed Traffic Centre Zeebrugge that the rescue boat from the mts AL ORAIQ had been launched and that several people were now in the water. Traffic Centre Zeebrugge replied that the fishing vessel could be identified as fv VLISSINGEN 7 and that the vessel had been instructed in the meantime.

Somewhat later confusion arose amongst Pilots on board several other vessels sailing to and from Flushing roads via the Wielingen and Scheur fairways since no coordinated rescue mission appeared to have been started.



Figure 6 - mv SCOTT PIONEER & fv VLISSINGEN 7 on scene near mv FLINTERSTAR and mts AL ORAIQ
as seen on the VTS radar

The Backup Coastal Pilot on board the mts AL ORAIQ informed approaching fishing vessels, that were coming to lend assistance, that the wreck of the mv FLINTERSTAR was not fully submerged, but unlit.

The Pilot on board the mv SCOTT PIONEER inquired at 0420 on 6 October 2015, with Traffic Centre Zeebrugge via VHF radiotelephone Channel 69 whether a helicopter had been scrambled but no direct answer was given. In the meantime a skipper from one of the tugs that had come to the rescue inquired with a Coastal Pilot on board the mts AL ORAIQ whether the life raft of the mv FLINTERSTAR had been launched. The Pilot replied that not the raft but the life boat of the mv FLINTERSTAR had been launched, but the Pilot also informed the tug skipper that he had seen sea cell lights in the water.

At 0430 on 6 October 2015, the question was raised over the VHF radiotelephone Channel 69 by the Pilot on board the mv SCOTT PIONEER asking how many people were on board the mv FLINTERSTAR

At 0433 on 6 October 2015, the skipper of the tug UNION EMERALD requested all tugs boats, on scene, from the same company to switch to a private radiotelephone channel P1.

At 0436 the same day, a headcount amounted to 9 people rescued from the sea. Still no confirmation on how many people needed rescuing. 2 more people were reportedly awaiting rescuing at the poop deck of the mv FLINTERSTAR

The same morning at 0437, a Coastal Pilot on board the mts AL ORAIQ informed Traffic Centre Zeebrugge via VHF radiotelephone Channel 69 that the vessel had anchored with three shackles on deck, but most probably the number of shackles would be increased depending upon the situation.

At 0440 the same day, again confusion arose about the number of people to be rescued and the number already rescued. Eventually the total number is called out at 11 and reportedly 9 were already rescued at that time.

At 0441 the number of people initially on board the mv FLINTERSTAR was again adjusted to 12. The Pilot on board the mv FLINTERSTAR, at the time of the collision, had been forgotten in previous counts.

On 6 October 2015, at 0444 the Backup Coastal Pilot on board the mts AL ORAIQ informed Traffic Centre Zeebrugge via VHF radiotelephone Channel 69, that the rescue boat of the mts AL ORAIQ recuperated three persons from the mv FLINTERSTAR and from the water, and inquired whether all people from the mv FLINTERSTAR had been rescued in the meantime. Traffic Centre Zeebrugge could not confirm the total number of people on board the mv FLINTERSTAR prior to the collision.

Again confusion arose about the exact number of people on board the mv FLINTERSTAR prior to the collision, but suddenly the total number of people to be rescued was again adjusted to 14 people.

Traffic Centre Zeebrugge was informed via VHF radiotelephone Channel 69 at 0447 on 6 October 2015, that one rescued person was suffering from hypothermia and was currently on board the fv KORTGENE 9. Traffic Centre Zeebrugge replied that the SAR helicopter that was supposed to be underway, would be informed of the aforementioned.

After verification with the Chief Officer and the Second Officer of the mv FLINTERSTAR, who had been rescued by the mv SCOTT PIONEER, the total number of people to be rescued was again adjusted to 12.

At 0448 on 6 October 2015, the Backup Coastal Pilot on board the mts AL ORAIQ informed Traffic Centre Zeebrugge via VHF radiotelephone Channel 69, that the mts AL ORAIQ was

making water in the forepeak. On board pumps would be started and the Backup Coastal Pilot stated that the situation could most probably be managed on board.

Soon thereafter, at 0448 on 6 October 2015, an unidentified vessel announced via VHF radiotelephone, to all vessels involved in the rescue action, that the unidentified vessel had a medic on board and proposed to administer medical aid if needed.

Traffic Centre Zeebrugge identified the vessel offering medical assistance as the mv *STERKE DRIES* and directed the vessel towards the fv *KORTGENE 9* the fishing vessel that had mentioned earlier that a rescued crew member from the mv *FLINTERSTAR* currently on board the fv *KORTGENE 9* was suffering from hypothermia.

On 6 October 2015 at 0451, Traffic Centre Zeebrugge announced over VHF radiotelephone Channel 69 that the rescue helicopter was 2 to 3 minutes away from the scene. Soon thereafter at 0452 the skipper of another vessel, participating in the rescue mission, inquired with Traffic Centre Zeebrugge via VHF radiotelephone Channel 69, whether or not, all persons on board the mv *FLINTERSTAR* prior to the collision with the mts *AL ORAIQ* had been rescued from the water in the meantime. Traffic Centre Zeebrugge could not confirm nor deny since the total number of people on board the mv *FLINTERSTAR* prior to the collision with the mts *AL ORAIQ* was still not confirmed. Various sources were being consulted. Thereupon the Pilot on board the mv *SCOTT PIONEER* requested Traffic Centre Zeebrugge to consult the more detailed Automatic Identification System information from the mv *FLINTERSTAR* from which the total number of people on board, excluding the Pilot, could be derived. Traffic Centre Zeebrugge replied that they were just then busy doing that. Seconds later Traffic Centre Zeebrugge came back to the Pilot of the mv *SCOTT PIONEER* stating that the more detailed information page of the Automatic Identification System of the mv *FLINTERSTAR* had not been filled out.



Figure 7 - Detailed Automatic Identification System data from mv FLINTERSTAR not filled out as seen on VTS radar screen

The crew member suffering from hypothermia was later heliported to hospital. A decisive number of 12 people to be rescued was later confirmed.

During the afternoon of 6 October 2015, the mts AL ORAIQ proceeded towards the Port of Zeebrugge under her own power, and the vessel safely moored at quay 615 of the Port of Zeebrugge.

5.1.4 Collision damage

5.1.4.1 Damage to mv FLINTERSTAR

At the moment of impact the mv FLINTERSTAR was hit by the mts AL ORAIQ at her portside. The mv FLINTERSTAR sunk rather rapidly after the collision with the mts AL ORAIQ.

The mv FLINTERSTAR sunk onto a sandbank with its superstructure above water. Divers that had inspected the vessel soon after the collision had informed us that the mv FLINTERSTAR had been ripped open over a length of more than 30 meter, and that the engine bulkhead, between the engine room and the cargo hold, had been severely damaged, and a larger section of the engine room bulkhead on port side had been torn away.

The inside of the accommodation of the mv FLINTERSTAR had been destroyed on impact. Most of the non-structural bulkheads had collapsed. Most of the doors were removed from their door frames. The suspended ceilings all came loose and fell down.



Figure 8 - Inside of the accommodation of the mv FLINTERSTAR after the collision

5.1.4.2 Damage to mts AL ORAIQ

As a result of the collision between mts AL ORAIQ and the mv FLINTERSTAR, the mts AL ORAIQ suffered only relatively minor damage.

The bulbous bow of the mts AL ORAIQ was deformed and punctured. The mts AL ORAIQ was able to proceed under own power after the collision, first to the Port of Zeebrugge and consequently to a repair yard in Belfast, Northern Ireland.



Figure 9 - Damaged bulbous bow of the mts AL ORAIQ after the collision

Picture by FPS Mobility and Transport

6. Governance of the maritime traffic off the Belgian Coast

On 21 December 2005, Netherlands and Flanders, a Belgian Region, signed a treaty named “Verdrag inzake het Gemeenschappelijk Nautisch beheer” or freely translated into “treaty concerning the common nautical management”. The purpose of the treaty was to install a common nautical regime for all vessels calling at ports in the river Scheldt Region.

Belgium and the Netherlands have been working closely with each other since the first Scheldt treaty of 1839. In the meantime the Kingdom of Belgium evolved from a unitary state to a Federal Country with several states of which Flanders in one of them. The navigable part, for sea going vessels, of the River Scheldt and the Belgian territorial seas all lie in Flanders.

The treaty concerning the common nautical management of 2005 is the most recent one and stipulates the cooperation between Flanders and The Netherlands on

- Vessel Traffic Services
- Pilotage and supporting services
- Rules and regulations for shipping
- Policy on granting access to vessels
- Marking of fairways

6.1 Common Nautical Management

The common nautical management of the Scheldt Region has as purpose primarily to ensure a safe navigation in the fairways from and to ports in the Scheldt Region, including the approaches, in direct contact with the aforementioned waterways, with the exception of fairways to the Ports of Nieuwpoort, Oostende and Zeebrugge branching from the main fairways in the Scheldt Region. These branching fairways are not governed by the Common Nautical Management but are governed by the local government which governance over said branching fairways shall be in line with the Common Nautical Management. On following Figure 10 the area off the Belgian Coast, as part of the approaches to the river

Scheldt, were the Common Nautical Management is not in place at the time is delimited in yellow.

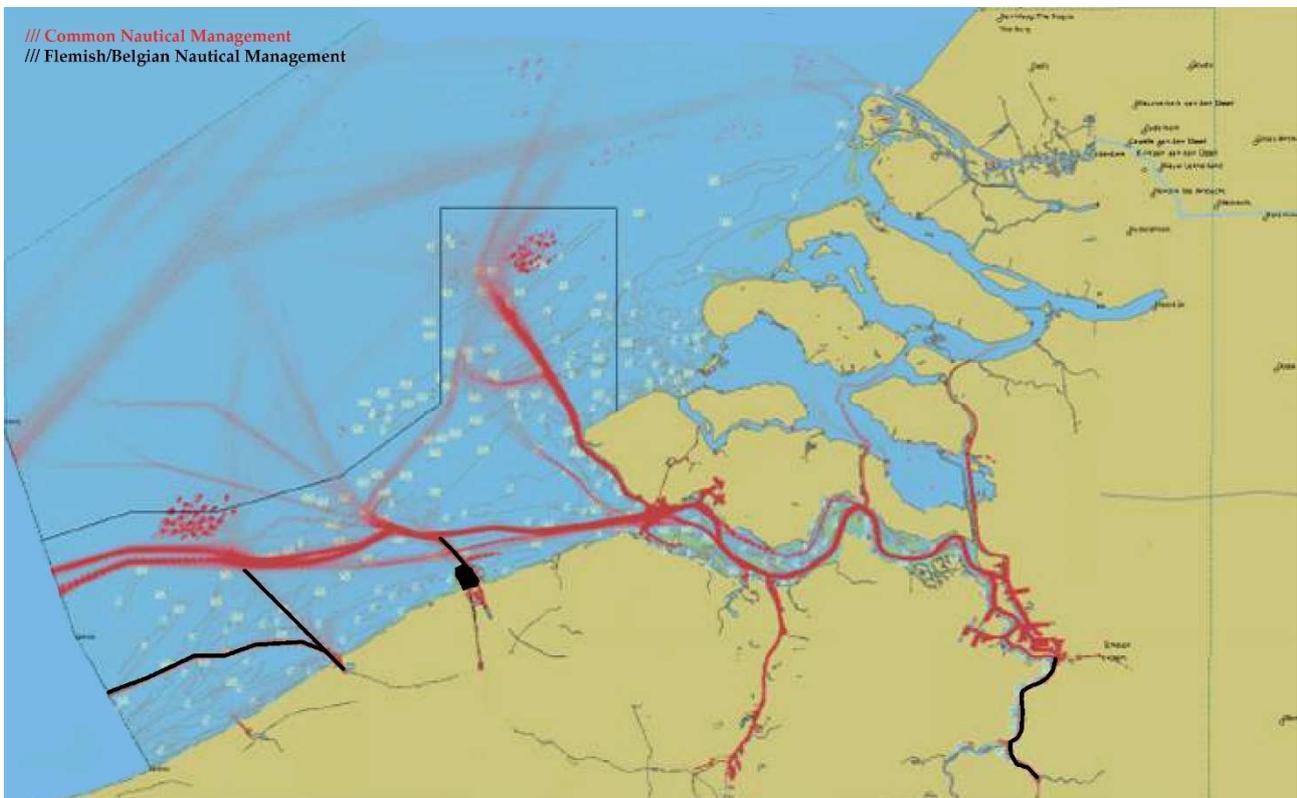


Figure 10 - Areas in black not governed by the Common Nautical Management

6.2 Regulation of traffic of the Belgian Coast

From the notices to mariners number 1 of the year 2015, issued by Agentschap voor Maritieme Dienstverlening en Kust (MDK) it is learned that:

“Following art. 3 of the Royal Decree of June 20th 1977 of the execution of the law of November 24th 1975 holding approval and execution of the treaty on the international regulations to prevent collisions at sea, 1972, with additional regulations and its annexes, and art. 34 § 4 of the Royal Decree of August 4th 1981 holding police and shipping regulations for the Belgian territorial sea, the harbours and the beaches of the Belgian coast, All mariners must:

- follow the general principles concerning the regulations of the shipping traffic as they appear in the annually issued Notices to Mariners nr.1 that each year is promulgated.
- take into account the dispositions applied by the functionaries and employees of the government concerning the safety of the vessels that are not subject to the Royal Decree of July 20th 1973 holding shipping regulations.
- observe, regarding the shipping, all notices published by the government, in particular the Notices to Mariners or the urgent notices to mariners (Maritime Safety Information).

6.2.1 Rules and regulations applicable off the Belgian Coast

From Notices to Mariners nr.1 it is learned which rules and regulation were in in place at the time of the collision between mts AL ORAIQ and mv FLINTERSTAR, until cancelation or alteration by a subsequent set of notices to mariners.

Under the header 1 / 2 of the Notices to Mariners nr.1 of the year 2015 we find

4. To the Belgian territorial sea, coastal ports and beaches:

- The police and shipping regulations of 1981.
- The decree of April 19th 1995 on the organisation and working of the Pilotage service of the Flemish Government and on the qualifications of port Pilots and boatmen, such as modified, and the additional executive decisions. The vessels that the various decrees apply to must have a copy of the proper regulations aboard, as well as an updated official chart of the area.
- Decree of 16 June 2006 concerning the guidance of the navigation on the maritime access routes and the organization of the Maritime Rescue and Coordination Centre.

6.2.1.1 The police and shipping regulations of 1981 (Federal Regulations)

The Politie- en scheepvaartreglement voor de Belgische territoriale zee kusthavens en stranden, hereafter called “The police and shipping regulations”, translate freely into: Police and shipping regulations for the Belgian territorial sea, coastal ports and beaches

From same Belgian territorial regulations it is learned from Article 1: “Dit reglement is van toepassing in de Belgische territoriale zee, in de havens en op de stranden van de Belgische kust” which freely translates into “These regulations apply to the Belgian territorial sea, the ports and beaches on the Belgian coast”.

The port of Zeebrugge is defined in said regulations and lying inside of an imaginary line connecting the outer points of the breakwaters of the Port of Zeebrugge.

So when the ms FLINTERSTAR and mts AL ORAIQ were sailing in Belgian territorial waters there were subject the police and shipping regulations.

Article 3 of the Belgian territorial regulations further state “3° Bovenmaats zeeschip: zeeschip dat wegens zijn lengte of zijn diepgang ten opzichte van de toestand van de vaargeul, door de Dienst van het Loodswezen als dusdanig wordt aangemerkt overeenkomstig de normen door die dienst bepaald en officieel meegedeeld aan zeevarenden (bericht aan zeevarenden nr. 1 – afgekort B.a.Z. nr. 1);” or freely translated: Oversized sea ship: a sea ship that because of its length and or its draught in comparison to the condition of the fairway, by the Pilot services has been designated as such and officially communicated to mariners (via notices to mariners N°1 – in short NtM n°1).

6.2.1.1 Oversized Commercial Vessels

From said Notices to Mariners n° 1 with respect to oversized commercial vessels in the area where the collision between mts AL ORAIQ and mv FLINTERSTAR occurred it is learned under header 1/17B Scheldt and its estuaries :

BaZ 1/17B - 2014 is cancelled - Following art. 2 § 1.4 of the Belgian K.B. of 23-09-1992 holding shipping regulations for the Lower Sea Scheldt (BS 17-10-1992), art 3.3 of the Belgian K.B. of 04-08-1981 holding police- and shipping regulations for the Belgian territorial sea, the ports and beaches of the Belgian coast (BS 01-09-1981) and art 2.1.d of the Dutch Resolution of 15.01.1992 holding shipping regulations for the Western Scheldt (Stb 1992, 53), art. 16.3° of Decree of 16 June 2006 relating to the escorting of shipping on maritime access-routes and the organisation of the Maritime Rescue and Coordination Centre (B.S. 26-10-2006), art 2 § 1d of the Belgian Royal Decree of 23-09-1992 holding the shipping regulations for the canal Ghent to Terneuzen, the directives for an oversized commercial vessel have been determined as follows:

2. Waterways on which the “Police and Shipping regulations for the Belgian territorial sea, coastal ports and beaches” apply, with exception of the coastal ports on the roads from and towards the access channels of these ports (norms provided in Section 1/20A), Western Scheldt and Lower Sea Scheldt, downwards towards the parallel of the Light "Blauwgaren”:

A draught of 10m and over and/or a length of 200m and over

In the area where the collision between mts AL ORAIQ and mv FLINTERSTAR occurred the mts AL ORAIQ was considered an oversized commercial vessel due both its length and its draught.

Further, Article 5 of said regulations states that: “Geen vaartuig mag de havens van de Belgische kust binnenvaren indien het om reden van zijn afmetingen of zijn diepgang of om enige andere reden een gevaar vormt of dreigt te vormen voor de veiligheid van het vaartuig zelf of van de scheepvaart, of voor de havens kunstwerken of voor het milieu in ‘t algemeen. Indien bijzondere omstandigheden dit vereisen kan de overheid echter in door

haar te bepalen voorwaarden een vaartuig, dat om een der bovengenoemde redenen niet in de havens van de Belgische kust mag binnenvaren, toegang tot een der Belgische havens verlenen” which freely translates into:

No vessel is allowed to call at the ports on the Belgian Coast, when, because of its dimensions and or draught or for any other reason, it can be a danger for the safety of the vessel itself, the shipping, the fixed installation in the ports and the environment in general. When specific circumstances so require, the government, through its set of specific conditions, can grant access to a Belgian port for vessels that are not allowed to call at Belgian coastal ports because of aforementioned regulation.

6.2.1.2 Oversized Commercial Vessels and their conduct

Further the Police and Shipping regulations for the Belgian territorial sea, coastal ports and beaches state that, under article 10 § 2. “Vaartuigen die de in artikel 13, § 2 voor bovenmaatse zeeschepen voorgeschreven lichten of het dagmerk niet voeren, moeten uitwijken voor vaartuigen die deze seinen wel voeren. Bovenmaatse zeeschepen die de in artikel 13, § 2 voorgeschreven seinen voeren moeten zich onderling gedragen naar de Voorschriften en naar de bepalingen van dit reglement” or freely translated “vessels not exhibiting the lights and signals for oversized commercial vessel, must give way to vessels that are exhibiting the lights and signals for oversized commercial vessels. Oversized vessels exiting the lights and shapes for oversized vessel shall mutually act according to the regulations.

In the past, the aforementioned rules were not always adhered to in a correct way. Since according to the LNG Shipping procedures, LNG carriers are to be considered as “oversized commercial vessels” and according to section 11.5.1 of same LNG Shipping procedures, a minimum safe distance of at least 2 cables from a LNG carrier is to be maintained at all times when overtaking, crossing and sailing in opposite directions . Earlier in 2015, on 8 August, while departing the Port of Zeebrugge the VESSEL 1 initiated an overtaking maneuver with the outbound mv VESSEL 2 based on the Pilot on board the mts VESSEL 1’s understanding that the aforementioned regulation gave the LNG carrier right of way, even though both ships were oversized commercial vessels and that the mts VESSEL 1 was overtaking the mv VESSEL 2. The Pilot on board the mv VESSEL 2 did not advise the

master of the mv VESSEL 2 accordingly and the speed of the mv VESSEL 2 was not reduced to allow for a bow passage with a safe distance of minimum 2 cables of the mts VESSEL 1 in front of the mv VESSEL 2. Instead, the speed of the mts VESSEL 1 had to be reduced to avoid a collision between the mts VESSEL 1 and the mv VESSEL 2, and to allow for the mv VESSEL 2 to pass safely in front of the mts VESSEL 1 as seen on Figure 11 on page 47.



Figure 11 - Incident between VESSEL 1 and VESSEL 2 on 15/08/2015

Picture by Nederlands Loodswezen

6.2.2 LNG shipping: Procedures

The Notices to Mariners n° 1, published each year in the beginning of the year, cancelling and or overriding the previous issue n°1, also contains the LNG shipping procedures.

From the LNG Shipping procedures published each year with NtM n°1 it is learned that :

6.2.2.1 Regulations

The control measures are identical whether the LNG carrier is (i) empty and not gas free or not, (ii) partially or fully loaded; and (iii) approaching or leaving the port.

So at the time of transiting the Belgian waters up to the time of the collision, the mts AL ORAIQ was subject to the LNG Shipping procedures.

6.2.2.2 VTS-SG Guidance, Position Information and VHF communication

Same Notices to Mariners n°1 prescribe the following with respect to vessel traffic system guidance and communication.

As from the first VHF contact with 'Wandelaar Approach', the LNG carrier becomes subject to the guidance of the VTS-SG.

Traffic zone 'Wandelaar Approach'

From in the west to the line formed by watertower Westende –
Middelkerkebank buoy – 51°19,60'N:002°31,50' E – Oostdyck buoy

CALL SIGN: Wandelaar Approach – VHF channel: 60

Once the LNG carrier has passed the buoy Oostdyck, VTS-SG can, at request of the master / Pilot, supply continuous position information to the LNG carrier. Once passed the buoy 'S5', position information is continuously supplied to the LNG carrier.

The assistance by the VTS-SG is supplied on the traffic channels of the traffic zone concerned.

Traffic zone 'Wandelaar'

from the line formed by watertower Westende – Middelkerkebank buoy -
51°19,60'N:002°31,50' E – Oostdyck buoy
to the line formed by buoys – A1bis - S2 – VG6

CALL SIGN: Traffic Center Wandelaar – VHF channel: 65

Traffic zone 'Zeebrugge'

from the line formed by buoys A1bis - S2 - VG6 including the Pas van het
Zand to the Zeebrugge breakwaters

CALL SIGN: Traffic Center Zeebrugge – VHF channel: 69

The continuous position information in the traffic zones 'Wandelaar Approach', 'Wandelaar', 'Zeebrugge' and in the port of Zeebrugge is supplied via the radar channel.

CALL SIGN: Radar Zeebrugge - VHF channel: 4

The fact that the LNG carrier is making use of the radar channel does not relieve her of her duty to continuously monitor the traffic channels 60, 65 and 69 of the relevant traffic areas. Once they have passed the 'Z' buoy, inbound LNG carriers must be reachable for Port Control Zeebrugge on VHF channel 71.

At the time of the collision between the mts AL ORAIQ and the mv FLINTERSTAR the mts AL ORAIQ was subject to the LNG Shipping procedures and was monitored by Traffic Centre “Zeebrugge” and prescribed in the LNG Shipping procedures, published each year as part of the Notices to Mariners n° 1.

6.2.2.3 Large LNG Carriers

Same LNG Shipping procedures differentiate LNG carriers by size with the length as criterion as follows.

LNG carriers of which the length exceeds 200 metres, are classified as Large LNG carriers. The mts AL ORAIQ therefore is classified, according to the LNG shipping procedures issued with notices to mariners n°1 of 2015, as large LNG carrier. The large LNG carriers are further subdivided into three groups, the regular, Q-Flex and Q-Max LNG carriers. The criteria were at the time of the collision:

- Regular LNG carriers LOA: >200 metres - <315 metres
- Q-flex: LOA: ≥315 metres - <345 metres
- Q-max: LOA: ≥345 metres

From aforementioned division into three groups per LMNG Shipping procedures published with the notices to mariners n°1 of 2015, we derive that the mts AL ORAIQ was a Q-FLEX LARGE LNG CARRIER.

6.2.2.4 Lights and Shapes for LNG Carriers

We derived earlier from the LNG Shipping procedures, published with the notices to mariners n°1 of 2015, that LNG carriers are to be considered an Oversized Commercial Vessel. The Police and Shipping regulations of 1981 prescribe in article 13§ 2 "Wanneer de loods het heeft aangewezen, voert elk varend bovenmaats zeeschip in de havens van de Belgische kust, op de reden van en in de toegangseulen tot die havens behalve de lichten die voor varende werktuiglijk voortbewogen vaartuigen zijn voorgeschreven, drie rondom zichtbare rode lichten loodrecht ten opzichte van elkaar geplaatst en een dagmerk bestaande uit een cilinder, daar waar deze het best kunnen worden gezien.", which freely translates into: whenever the Pilot has designated as such, an oversized commercial vessel shall display, in the Belgian territorial water and harbours, besides the lights for a power-

driven vessel, exhibit where they can best be seen three all-round red lights in a vertical line, and a cylinder.

From declarations of the crew of the mts AL ORAIQ, and Pilots it is learned that the mts AL ORAIQ was exhibiting three all-round red lights in a vertical line. Since the collision occurred between dusk and dawn, the question whether or not a cylinder was displayed was not raised.

6.2.2.5 Nautical Regulations Upon Arrival

The LNG shipping procedures, published each year with the Notices to Mariners n°1, clearly state that the Pilot assigned to the LNG carrier must submit a sailing plan, at least one hour prior to ETA of the LNG carrier at the AS buoy. The vessel traffic service will broadcast the sailing plan (including the various passage points and passage times) simultaneously on VHF traffic Channel 65 and Channel 69 at the defined times. These times are per LNG Shipping procedures:

- 1 hour prior to the arrival of the LNG carrier at the 'A-S' buoy
- at the arrival of the LNG carrier at the 'A-S' buoy

The Pilot shall board the LNG carrier to which he has been assigned, 1 mile east of the line formed by the buoys AS and AN, well clear of any Pilot boarding/disembarking operations by other vessels, which will be requested by traffic centre Wandelaar to keep a safe distance from the LNG carrier of at least half a mile during this operation.

6.2.2.6 Mandatory inbound route for LNG carriers

The LNG shipping procedures, published with the Notices to Mariners n°1 of 2015, clearly state that Inbound LNG carriers shall follow the route: precautionary area Wandelaar - Vaargeul 1 - S3/S4 - Ribzand - Pas van het Zand described as route 1 on Figure 12. Depending on traffic agreements made earlier and on fairway obstructions, LNG carriers

can deviate from this and follow the route Akkaert-SW - A1 - Scheur West - Ribzand and Pas van het Zand describes a route 2 on Figure 12.

At the time of the collision between the mts AL ORAIQ and the mv FLINTERSTAR on 6 October 2015, the mts AL ORAIQ was sailing inbound following the alternative route, described as route 2 on Figure 12.

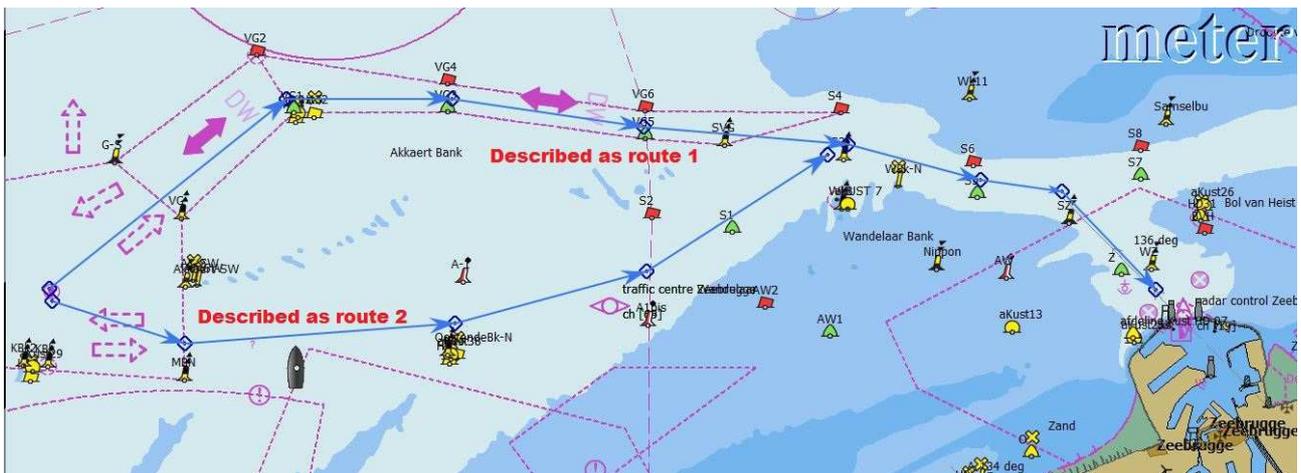


Figure 12 - Mandatory (route 1) and alternative (route 2) inbound routes for LNG Carriers

6.2.2.7 Role of Maritime Police in LNG Shipping

From the LNG Shipping procedures published with Notices to Mariners n°1 from 2015 it is learned that the maritime police will patrol regularly in the vicinity of the LNG carrier and in the fairway in order to ensure that all shipping complies with the traffic control regulation and to verify the coordination of all in- and outbound traffic inside the port. Aforementioned part of the LNG Shipping procedures clearly mentions “PATROL REGULARLY” which shall not be confused with “ESCORT”

At the date and time of the collision between the mts AL ORAIQ and the mv FLINTERSTAR, the maritime police was not patrolling the area.

6.2.2.8 Status of LNG carriers depending upon destination

From the rules and regulations in place in front of the Belgian coast it is learned that:

- Any LNG carrier irrespective of its size bound for and from Zeebrugge from and to the Wandelaar Pilot station is bound by the Nautical Regulations: shipping procedures and is considered an oversize commercial vessel and needs to exhibit the lights and shapes accordingly. Such LNG carriers are also bound by specific shipping regulations with respect to safe distances, overriding the Police and Shipping regulations.
- Any LNG carrier transiting fairways off the Belgian coast not bound for and from Zeebrugge is not bound by Nautical Regulations: shipping procedures and needs to display lights and shapes depending on its size and is only considered an oversize commercial vessel when the draught of the LNG carrier is 10m and over and/or the length of the vessel is 200m and over. Such vessels remain bound by the Police and shipping regulations at all times.

7. Pilot services off the Belgian Coast

7.1 Pilot service providers

In the Western Scheldt estuaries, in open sea, towards the Belgian ports near the Scheldt and at the canal from Ghent to Terneuzen and vice versa, the Pilotage service is ensured in cooperation between Flanders and the Netherlands. Commercial vessels that sail these waters have compulsory Pilotage, with the exception of those mentioned in the Resolution of exemption of compulsory Pilotage Scheldt regulations (cf. part 1/11B). Only licenced Flemish and Dutch Pilots are authorized to provide this service.

Pilotage services off the coast of Belgium are offered by the Dienst Afzonderlijk Beheer Loodswezen, a regionalized Belgian government agency and the NEDERLANDS LOODSWEZEN BV, a Dutch private company.

Both entities provide Pilot services from the Pilot Station Wandelaar to Flushing and back, the waters where the collision between the mts' AL ORAIQ" and the mv FLINTERSTAR occurred. The distribution between the two entities providing Pilotage services is as follows: 72,5 % by Flemish Pilots from Dienst Afzonderlijk Beheer Loodswezen and 27,5 % by Pilots from Nederlands Loodswezen BV as laid out in "Herziene Scheldereglement" dated 1 October 2002.

No other agencies and or companies are allowed to provide Pilot services in the waters as described in the "Herziene Scheldereglement" dated 1 October 2002.

The compulsory Pilotage at the coastal ports of Oostende, Zeebrugge and Nieuwpoort is the exclusive territory of Flemish Pilots. Using the Pilotage service is compulsory in the shipping waters between the Pilot stations and those coastal ports, within those coastal ports and between those coastal ports and the roads next to them, except for vessels that are exempt from compulsory Pilotage as mentioned in the executive resolution "intensified compulsory Pilotage" of the Flemish Pilotage decree (cf. part 1/11C).

7.1.1 Dienst Afzonderlijk Beheer Loodswezen

The Dienst Afzonderlijk Beheer Loodswezen, a regionalised government agency, is governed by Agentschap voor Maritieme Dienstverlening en Kust (MDK). At the head of MDK we find an administrator-General. The agency MDK reports to the Ministry of Mobility and public works named "MOW" and the competent Minister of Mobility and public works.

Off the coast of Zeebrugge, Dienst Afzonderlijk Beheer Loodswezen deploys 2 groups of Pilots. The so called Sea Pilots and the so called Coastal Pilots.

The Dienst Afzonderlijk Beheer Loodswezen has set the criteria for becoming a Pilot as follows:

The candidate must have:

- A Master's degree in Nautical Sciences
- Holding a valid STCW of MASTER - seagoing ship of 3000 gross tonnage or more with a minimum of 36 months bridge watch experience as per STCW - Chapter II - Regulation II/2.

Since the Pilots from the Dienst Afzonderlijk Beheer Loodswezen are civil servants from a Flemish Regional Government agency, the Master's Degree in Nautical Sciences needs to be obtained in the Dutch language, one of the three official languages in Belgium, following the criteria for employing Flemish civil servants.

Candidates having obtained a Master's degree in a language different from Dutch, must pass a Dutch official language exam.

Most Pilots from the Dienst Afzonderlijk Beheer Loodswezen are native Dutch speakers.

7.1.1.1 Sea Pilots

The Sea Pilots provide services to and from Flushing roads to either Wandelaar or Steenbank Pilot stations. The Sea Pilots do not provide Pilot services for entering or leaving ports.

7.1.1.2 Coastal Pilots

The compulsory Pilotage at the coastal ports of Oostende, Zeebrugge and Nieuwpoort is the exclusive territory of Flemish Pilots, so called Coastal Pilots. Coastal Pilots provide Pilot services to and from the Belgian coastal ports, Nieuwpoort, Ostend and Zeebrugge, to and from Wandelaar Pilot station and occasionally to and from Flushing roads.

Using the Pilotage service is compulsory in the shipping waters between the Pilot stations and those coastal ports, within those coastal ports and between those coastal ports and the roads next to them, except for vessels that are exempt from compulsory Pilotage as mentioned in the executive resolution “intensified compulsory Pilotage” of the Flemish Pilotage decree (cf. part 1/11C).

7.1.2 Nederlands Loodswezen

Nederlands Loodswezen became an independent organization in 1988 when it was privatized from a governmental service. Nederlands Loodswezen operates through two divisions: Nederlandse Loodsencorporatie (Dutch Maritime Pilot's Association) and Nederlands Loodswezen BV (Dutch Pilotage Service). Some 460 registered Pilots take care of the Pilotage of sea-going vessels all around the Dutch waters.

All Dutch registered Pilots are members of the Nederlandse Loodsencorporatie and are listed in the Pilot registry. The Nederlandse Loodsencorporatie focuses on the schooling of future Pilots, provides training and education so that the knowledge of Pilots is always up-to-date and sees to it that their Pilotage services are rendered in a professional manner. The Nederlandse Loodsencorporatie issues decrees and advises the Minister of Infrastructure and the Environment on matters pertaining to the Pilotage Act to ensure that ports can be accessed smoothly and safely.

Nederlands Loodswezen recruits Pilots amongst seafarer's holding a valid STCW of MASTER - seagoing ship of 3000 gross tonnage or more with a minimum of 36 months bridge watch experience as per STCW - Chapter II - Regulation II/2.

Since Nederlands Loodswezen is a private company, there is no official requirement with respect to the native language of the Pilot. For practical reasons, a very good working language of the Dutch language is however required.

7.1.2.1 Dutch Pilots in Scheldt Region

The Dutch Pilots providing services in the Scheldt Region, from the off-shore Pilot stations Wandelaar and Steenbank to and from Flushing roads, the Dutch ports along these waters, the Dutch ports on the river Scheldt and the Ports of Antwerp and Ghent are polyvalent, meaning all Pilots are licenced at sea, in addition, some Pilots are also licenced on the River Scheldt and the others on the Canal Ghent Terneuzen.

7.1.3 Composition of the groups of Pilots in the Scheldt Region

As mentioned earlier, three groups of Pilots are active in the Scheldt Region:

- Dutch Pilots from Nederlands Loodswezen
- Sea Pilots from Dienst Afzonderlijk Beheer Loodswezen
- Coastal Pilots from Dienst Afzonderlijk Beheer Loodswezen

Almost all Pilots from the Dienst Afzonderlijk Beheer Loodswezen graduated as Master in Nautical Sciences from the Dutch section of the Nautical College in Antwerp. Their sea time was accumulated mainly on commercial vessels. Very few Pilots from the Dienst Afzonderlijk Beheer Loodswezen are non-native Dutch speakers, because of the demanding Dutch exam if the required degree was not obtained in Dutch language.

Nederlands Loodswezen handles different criteria when recruiting Pilots and focusses mainly on the STCW requirements. The group of Dutch Pilots in the Scheldt Region consists mainly of former Dutch seafarers, but also of native French speaking Belgian former sea farers and former Navy officers some not native Dutch speaking, holding a variety of degrees.

7.1.4 Remuneration of the three groups of Pilots in the Scheldt Region

The three groups of Pilots active in the Scheldt Region are not all remunerated in the same manner. Nederlands Loodswezen has a somewhat uniform remuneration system for all Pilots in the Scheldt Region whereby seniority and additional competences may create differences in remuneration.

The two groups of Pilots from the Dienst Afzonderlijk Beheer Loodswezen active in the Scheldt Region have a substantially different remuneration system whereby the number of voyages inbound and/or outbound per individual Pilot creates a larger difference in remuneration since the former has large impact on the variable part of the remuneration.

Coastal Pilots from the Dienst Afzonderlijk Beheer Loodswezen benefit most of the two groups of Pilots from the Dienst Afzonderlijk Beheer Loodswezen from the individual number of voyages since for that group of Pilots the variable part of the remuneration is based mainly on the number of individual in and or outbound voyages.

7.2 Legislation covering the functioning of Pilots off the Belgian Coast

7.2.1 Legislation concerning Dienst Afzonderlijk Beheer Loodswezen

The Pilotage by Dienst Afzonderlijk Beheer Loodswezen in aforementioned waters is regulated in the “Decreet van 19 APRIL 1995 betreffende de organisatie en de werking van de loodsdienst van het Vlaams Gewest en betreffende de brevetten van havenloods en bootman” or freely translated: “Decree dated 19 April 1995 concerning the organisation and the working of the Pilotage service of the Flemish Community concerning the certificates of docking Pilot and boatman”.

The Pilotage decree states amongst others that: “De loodsen kunnen ter uitvoering van hun opdracht, maar wel onder de uitsluitende verantwoordelijkheid van de gezagvoerder, alle door de gezagvoerder nuttig of nodig geachte en eventueel zelfs stilzwijgend gedoogde intellectuele en materiële handelingen verrichten, met inbegrip van handelingen die betrekking hebben op aspecten van de eigenlijke navigatie.”, or freely translated: In execution of their mission, under the sole responsibility of the operator¹³, Pilots can perform any implicitly tolerated intellectual and material act, including acts reflecting on the actual navigation. Meaning that the Pilot can perform any act without specifically asking for the master’s approval or even without informing the master which act the Pilot is to perform.

7.2.2 Legislation concerning Nederlands Loodswezen

The Dutch Pilotage services offered in the waters where the collision occurred are regulated by “Wet van 7 juli 1988, houdende regels betreffende loodsen “ or freely translated “Law of 7 July 1988 concerning regulation for Pilotage”. The referenced law states amongst others that: “De loods adviseert aan boord de kapitein of de verkeersdeelnemer over de door deze te voeren navigatie. De loods mag met instemming van de kapitein optreden als

¹³ Operator means watchkeeper on board the Piloted vessel

verkeersdeelnemer.” Or freely translated: “The Pilot advises the Master on board, or advises the participant in the marine traffic, about the navigation. By agreement of the Master, the Pilot may become a participant in the marine traffic.

Note that the last part of the aforementioned paragraph of the law on Pilotage, did not mention that the agreement was implicit.

8. Vessel Traffic Services in the Scheldt Region

8.1 Vessel traffic services in Belgian Territorial Waters

The vessel traffic services in Belgian territorial waters are regulated by the decree of 16 June 2006 from the Flemish community concerning the vessel traffic services and is part of the VTS-SG or Vessel Traffic Services – Schelde Gebied (Scheldt Region). It is mandatory for vessels sailing in the waters covered by the aforementioned Vessel Traffic Services to participate in the traffic management by the Vessel Traffic Services or VTS

It states amongst others that the personnel tasked with the guiding of the marine traffic in the waters subject to the vessel traffic services act in an advisory role to the Master only.

According to same aforementioned decree the Vessel Traffic Services in Belgian territorial waters are an information service, navigational assistance service and a traffic organization service.

The shipping traffic participating in the VTS-SG is self-regulating meaning that agreements made between vessels are made between the vessels directly without the assistance or interference from a coastal VTS station. The coastal VTS station will however monitor whether the agreement is followed correctly and whether the execution of the agreement imposes no danger to other participants in the marine traffic monitored by the VTS.

According to - VTS Sectors in VTS Scheldt Region - Appendix 2 on page 113 VTS-Operators should hail vessels in either Dutch or English¹⁴ and should hail vessels participating in the VTS by the Ship's name only.

¹⁴ Appendix 8 – Page 120 - Official Language for Scheldt Region

8.1.1 Information Service

The information service is provided by broadcasting information at fixed times and intervals or when deemed necessary by the VTS or at the request of a vessel, and may include but is not limited to reports on the position, identity and intentions of other traffic; waterway conditions; weather; hazards; or any other factors that may influence the vessel's transit.

8.1.2 Navigational Assistance Service

This service is to assist on-board navigational decision-making and to monitor its effects. The navigational assistance service is especially important in difficult navigational or meteorological circumstances or in case of defects or deficiencies. This service is normally rendered at the request of a vessel or by the VTS when deemed necessary.

8.1.3 Traffic Organization Service

Traffic Organization Service is a service to prevent the development of dangerous maritime traffic situations and to provide for the safe and efficient movement of vessel traffic within the VTS area. The traffic organization service concerns the operational management of traffic and the forward planning of vessel movements to prevent congestion and dangerous situations, and is particularly relevant in times of high traffic density or when the movement of special transports may affect the flow of other traffic. The service may also include establishing and operating a system of traffic clearances or VTS sailing plans or both in relation to priority of movements, allocation of space, mandatory reporting of movements in the VTS area, routes to be followed, speed limits to be observed or other appropriate measures which are considered necessary by the VTS authority.

The Vessel Traffic Service off the Belgian Coast exercises the management of the marine traffic by information exchange, via radio broadcast, with the masters of the vessels participating in the VTS.

8.1.4 Traffic Centre Zeebrugge

The collision between the mts AL ORAIQ and the mv FLINTERSTAR occurred in the area monitored by Traffic Centre Zeebrugge, part of the VTS-SG. According to - VTS Sectors in VTS Scheldt Region Appendix 2 page 113, Traffic Centre Zeebrugge will transmit a Scheldescheepvaartbericht in Dutch language, or Scheldt Shipping Information Report, every hour plus 10 minutes on the working channel of Traffic Centre Zeebrugge, i.e: Channel 69. This bulletin should contain information about LNG tankers inbound or outbound and should contain information about the passage plan of same LNG Tankers.

8.2 Usage of Message Markers by VTS

To facilitate ship to shore, shore to ship and ship to ship communication and when the usage of IMO standard communication Phrases is not clarifying certain situations, the VTS can make usage of specific message markers.

The message markers that are of great importance in the communication flow between the coastal VTS station and the Masters of the vessels participating in the VTS are amongst others: Information, warning, advice and instruction. Per IMO MSC circular 794 these markers are defined as follows:

8.2.1 Information message marker

This indicates that the following message is restricted to observed facts, situations, etc..

Comment: This marker is preferably used for navigational and traffic information, etc..

Consequences of an INFORMATION will be up to the recipient.

8.2.2 Warning message marker

This indicates that the following message implies the intention of the sender to inform others about danger.

Comment: This means that any recipient of a WARNING should pay immediate attention to the danger mentioned. Consequences of a WARNING will be up to the recipient.

8.2.3 Advice message marker

This indicates that the following message implies the intention of the sender to influence others by a Recommendation.

Comment: The decision whether to follow the ADVICE still stays with the recipient. One does not necessarily have to carry out the ADVICE, but should consider it very carefully.

8.2.4 Instruction message marker

This indicates that the following message implies the intention of the sender to influence others by a Regulation. Comment: This means that the sender, e.g. a VTS - Station or a naval vessel, must have the full authority to send such a message. The recipient has to follow this legally binding message unless s/he has contradictory safety reasons which then have to be reported to the sender.

8.2.5 VTS communication in practice

8.2.5.1 Working language

The main language for communicating between the VTS coastal stations and the vessels participating in the VTS in the Scheldt Region is Dutch, as it is for vessels participating in the VTS mutually. Vessels commanded by a Pilotage Exception Certificate holder are also supposed to communicate in Dutch with other vessels participating in the VTS and with VTS coastal stations since the knowledge of the Dutch language had been tested during the examination leading up to the obtaining of the Pilotage Exception Certificate. It is unclear in what language the vessels that are exempted from Pilotage, should communicate with the VTS coastal stations and other vessels participating in the VTS, since the compulsory language is either Dutch or English.

8.2.5.2 Use of Message Markers

From analyses of recordings of communications over the VHF radio between VTS coastal stations and vessels participating in the VTS and from recordings of VHF communications between vessels participating in the VTS, it has become clear that the use of message markers is not common among VTS-Operators from coastal VTS stations and is not common with Pilots.

VTS radio communications from coastal stations to vessels participating in the VTS are, per relevant decree, intended for the Master of the said vessels. From interviews with Pilots and coastal station VTS-Operators, the usage of some markers or even the implicit use of message markers is often ill received by Flemish Pilots, both Coast and Sea Pilots.

9. Analyses

9.1 Aim

The aim of the analysis is to determine the circumstances of the collision and the contributing factors as a basis for making recommendations to prevent similar accidents occurring in the future.

9.2 The Collision

The collision between mts AL ORIAQ and mv FLINTERSTAR stemmed from the vessels' bridge teams and Pilots not having full situational awareness as they approached the S3 buoy in the Scheur fairway.

The watch keeping officer and Sea Pilot on board the mv FLINTERSTAR did not fully assess the traffic situation when sailing outbound in the Scheur/Wielingen fairway, and were unaware of the fact that an LNG carrier, falling under the LNG Shipping Procedures, was incoming into the Scheur fairway in the opposite sailing direction of the mv FLINTERSTAR, and both, the Sea Pilot and officer of the watch on board the mv FLINTERSTAR were unaware that the closest point of approach between both vessel, the mts AL ORIAQ and mv FLINTERSTAR would occur in the vicinity of the S3 buoy, during or just after the mts AL ORIAQ had changed its heading from 058° to 110° according to the mts AL ORIAQ's sailing plan.

The bridge team and Pilots on board the mts AL ORIAQ assumed the vessel would be able to perform the planned course alteration to starboard of about from 058° to 110°, according to the mts AL ORIAQ's sailing plan, at the S3 buoy in the Scheur fairway, keeping well clear of the mv THORCO CHALLENGER. Throughout the voyage from the Wandelaar Pilot station to the position of the collision, the watch on board mts AL ORIAQ had relied upon the specific status of LNG carriers, as described in the Nautical Regulations – LNG Shipping Procedures.

The relaxed atmosphere on the bridge of the mv FLINTERSTAR prevented the watch keeping officer on board the mv FLINTERSTAR to anticipate the arising of a close quarter situation with three vessels in the vicinity of the S3 buoy. The watch keeping officer on board the mv FLINTERSTAR was unaware of the approaching of an LNG carrier, and furthermore, was unaware of the existence of the Nautical Regulations – LNG Shipping Procedures.

9.2.1 Vessel perspectives

9.2.1.1 mv FLINTERSTAR

When the mv FLINTERSTAR passed the W4 buoy, coming from Flushing roads bound for the Wandelaar Pilot station, the Pilot on board the mv FLINTERSTAR informed Traffic Centre Zeebrugge that the mv FLINTERSTAR was entering the monitoring block of the VTS – Traffic Centre Zeebrugge. Confirmation was given by Traffic Centre Zeebrugge however, no information was given on inbound LNG traffic.

The mv FLINTERSTAR continued sailing toward the place of the collision while maintaining a position on the starboard side of the fairway. Only less than a minute before the collision visible contact with the mts AL ORAIQ was established, by the Sea Pilot and officer of the watch on board the mv FLINTERSTAR, and the lights for an oversized commercial vessel had been differentiated. Although it was slightly raining that morning, visibility was such that the navigation lights and the three red lights exhibited by the mts AL ORAIQ were visible from the bridge of the mv FLINTERSTAR already for some time.

The officer on duty and the Pilot only assessed the imminent close quarter situation near the S3 buoy, since the relative aspect of navigation lights and lights for an oversized commercial vessel did not change.

9.2.1.1.1 VHF communications watch

All radio communications with other vessels or shore stations that were managed and or monitored by the Sea Pilot on board the mv FLINTERSTAR were in Dutch.¹⁵ The Sea Pilot did not provide a translation or summary of the radio transmissions in English for the watch keeping officer on board the mv FLINTERSTAR. Consequentially the watch keeping officer on board the mv FLINTERSTAR was not made aware from the VHF radio communications that the mv FLINTERSTAR would be meeting inbound traffic in the vicinity of the S3 buoy.

9.2.1.1.2 Lookout and monitoring

The officer of the watch and the Sea Pilot on board the mv FLINTERSTAR had assessed the navigational situation as calm with no reasons for concern. Consequentially, the lookout was insufficiently maintained and was restricted to radar observations. The settings of the radars were such that, at the time the mv FLINTERSTAR entered the monitoring block of the Traffic Centre Zeebrugge, neither the mv THORCO CHALLENGER nor the mts AL ORAIQ were visible on the radar screens of the mv FLINTERSTAR. The Sea Pilot and the officer of the watch on board the mv FLINTERSTAR were engaged in a casual conversation drawing the attention away from visible observations of the traffic situation. Only moments before impact, the presence of an oversized commercial vessel, in close vicinity, was observed, and it was only assessed at that time that the navigational situation near the S3 buoy was reason for concern and action.

¹⁵ Appendix 7 – Page 118 - Solas 2012 amend - Chapter 5 - Reg 14: Ship's Manning

9.2.1.1.3 Action to avoid the collision

When approaching the S3 buoy and it became apparent to the bridge team on board the mv FLINTERSTAR that a collision was apparent and later imminent, the Pilot advised the officer of the watch to maneuver as quickly as possible to starboard by changing the rudder angle to hard to starboard.

9.2.1.2 mts AL ORAIQ

As the mts AL ORAIQ approached the S3 buoy, the ship's Master and officer of the watch were distracted as they reviewed the mooring arrangements in the Port of Zeebrugge and did not engage the Pilots with regard to overtaking the mv THORCO CHALLENGER or the wheel over point for the upcoming turn to starboard. In addition, the mts AL ORAIQ's bridge team was not assessing the ship's position or the proximity to the S3 buoy.

The Pilots also did not engage either Master or officer of the watch prior to deciding to overtake the mv THORCO CHALLENGER or to verify their planned wheel over point. The Pilots did not determine whether it was possible for the mts AL ORAIQ to safely overtake the mv THORCO CHALLENGER before reaching S3 buoy. Further, it is not clear whether the mts AL ORAIQ's bridge team was aware the Pilots intended to overtake the mv THORCO CHALLENGER. At the same time the Pilots were attempting to resolve the difference they had observed between the speed shown on their PPU and the ship's radar while also rebooting the PPU.

The mts AL ORAIQ's bridge team did not advise the Pilots regarding the distance to the wheel over position as the ship approached the S3 buoy. When the Pilot ordered the rudder over in order to make the turn to starboard, there is no indication he or members of the ship's bridge team were aware that the S3 buoy was abaft the beam of the mts AL ORAIQ or that the mv FLINTERSTAR was off the ship's starboard bow.

9.2.1.2.1 VHF communications watch

All radio communications with other vessels or shore stations that were managed by the Pilots were in Dutch ¹⁵. The Pilots did not provide a translation or summary of the radio transmissions in English for the mts AL ORAIQ's bridge team, nor did the Master or officer of the watch ask for a translation. As a result, the mts AL ORAIQ's bridge team were not aware the ship would be meeting two outbound ships after turning at the S3 buoy.

9.2.1.2.2 Lookout and monitoring

The rating who had been serving as the lookout on board the mts AL ORAIQ had been allowed to lay below after the Pilots boarded. In addition, the rating who would have served as the lookout for the 0400 – 0800 watch was not called. Other than the Helmsman, the members of the ship's bridge team were distracted with the discussion of the mooring arrangements as the ship approached the S3 buoy and did not attempt to visually determine if the mts AL ORAIQ would be meeting any other vessels immediately after turning. As previously mentioned, the Pilots were using both radars. There is no indication that either of the Pilots attempted to use the radars to verify the information about outbound vessels that was provided by the Pilot on the mv THORCO CHALLENGER.

9.2.1.2.3 Action to avoid the collision

The bridge team and Coastal Pilots on board the mts AL ORAIQ became aware of the mv FLINTERSTAR when it was already too late to take any action to avoid collision. The Coastal Pilot nevertheless advised the officer of the watch to make a sharp turn to starboard.

It was however unclear whether this advice was in view of making the planned change in heading following the passage plan and fairway buoyage considering the speed of the mts AL ORAIQ at that very moment or whether this advice was to avoid the collision between the mts AL ORAIQ and the mv FLINTERSTAR.

9.2.2 The role of the VTS

9.2.2.1 Monitoring

As mentioned earlier in this report under 7.1 the VTS can play an important role in the safe navigation off the Belgian coast, however, since the usage of message markers, a valuable tool in the safekeeping of marine traffic, had been ill received in the past by Pilots off the Belgian coast, the VTS-Operators on duty at the time of the collision were merely observing the situation, and were not proactively participating using all means put at their disposal. Furthermore, the usage of Dutch language as common language for VHF radio communications between the VTS coastal stations and the vessels participating in the VTS, and for vessels participating in the VTS mutually, makes it de facto exclusive to Pilots and VTS-Operators which are, per decree, advisers to the Masters of said vessels. The occasional Dutch speaking watch keeper on board a vessel participating in the VTS can also benefit from the usage of the Dutch language for VHF radio communications, but the majority of ship's Masters of vessels participating in the VTS remain unaware of the information given by the VTS coastal station, and the exchange of information between the Pilots on board vessels participating in the VTS and the VTS coastal station, leaving the watch keeping officers and or Masters on board said vessel out of the information loop.

Prior to the collision, VTS-Operators at the VTS coastal station were heard hailing vessels that were participating in the VTS over the VHF radio, by the first name of the Pilot on board the vessel that was being hailed. Similarly, Pilots were heard hailing the VTS coastal station over the VHF radio by the first name of the VTS-Operator. VTS-Operators should not have partaken in this modus operandi.

Traffic Centre Zeebrugge, transmits an information bulletin in Dutch every hour plus 10 minutes. In case LNG tankers are inbound or outbound to and from Zeebrugge, the information about this traffic is to be included in the information bulletin. An information bulletin was broadcast at 0312 on 6 October 2015. This was just after the mv FLINTERSTAR entered the VTS block of Traffic Centre Zeebrugge. However, this

information bulletin did not contain any information about the mts AL ORAIQ approaching Zeebrugge roads.

Furthermore, per NtM n°1 from January 2015, VTS-SG was to ensure that all shipping in its traffic zones was informed about the arrival of an LNG carrier, and her passing times at the various waypoints. This did not happen in the case of the mv FLINTERSTAR. Mv FLINTERSTAR was not informed directly by VTS over the VHF radio, nor was it implicitly informed by means of the information bulletin.

9.2.2.2 Response

From the moment that the mts AL ORAIQ hailed to mv THORCO CHALLENGER to inform the latter that the mts AL ORAIQ would be overtaking the mv THORCO CHALLENGER on its starboard side, it was clear for the trained radar at observer at the VTS coastal station that the intended overtaking manoeuvre from the mts AL ORAIQ could not be completed before either of the vessels would reach the S3 buoy as seen in Figure 13.



Figure 13 - Beginning of overtaking manoeuvre

of mts AL ORAIQ in blue of the mv THORCO CHALLENGER in red and mv FLINTERSTAR in green

The true vectors of both vessels only differ very little in length. Mts AL ORAIQ 's speed over ground is only slightly higher than the speed over ground of the mv THORCO CHALLENGER. The VTS-Operators of the VTS coastal station Traffic Centre Zeebrugge have at their disposal several message markers which could have been used to inform both vessels that their intentions could lead to an unsafe situation. The VTS-Operators at the VTS coastal station, Traffic Centre Zeebrugge, could also have informed both vessels that they would encounter the mv FLINTERSTAR in the vicinity of the buoy S3, if both vessel, the mts AL ORAIQ and the mv THORCO CHALLENGER all three proceeded at the current speed.

9.2.3 The role of the Pilots

9.2.3.1 On Board mts AL ORAIQ

The Coastal Pilots on board the mts AL ORAIQ did not attempt to work with the ship's bridge team. They restricted the ship's Master's and officer of the watch's access to critical navigational information as the ship transited the channel en route the Port of Zeebrugge by positioning themselves at both of the ship's radars and making all radio communications in Dutch. In addition, they made decisions, including whether to overtake other vessels, without consulting with the mts AL ORAIQ's Master or the officer of the watch.

The Coastal Pilots' actions, although perhaps consistent with Belgian law, were not consistent with the international understanding that a Pilot is an advisor to the ship's Master. As recognized by the IMO, "efficient Pilotage depends, among other things, upon the effectiveness of the communications and information exchanges between the Pilot, the master and the bridge personnel and upon the mutual understanding each has for the functions and duties of the other."¹⁶

9.2.3.2 On board mv FLINTERSTAR

The Sea Pilot on board the mv FLINTERSTAR got engaged in a casual conversation with the officer of the watch, drawing his attention away from monitoring the traffic situation. The Sea Pilot was advising the officer of the watch from what appeared to be routine.

¹⁶ Appendix 6 – Page 110 - IMO RESOLUTION A.960(23) Adopted 5 December 2003

10. Conclusions

10.1 Cause of the collision

The collision between mts AL ORAIQ and mv FLINTERSTAR, on 6 October 2015, occurred because the bridge team on board the mts AL ORAIQ wrongly assessed the traffic situation and vessel's speed and distance from the S3 buoy prior to hailing the mv THORCO CHALLENGER on 6 October 2015 at 0338 hours local time, informing the mv THORCO CHALLENGER that the mts AL ORAIQ would pass the mv THORCO CHALLENGER at the starboard side, and subsequently initiated the aforementioned maneuver.

10.1.1 Contributing factors

10.1.1.1 Watch keeping on board the mts AL ORAIQ

The bridge watch keeping team on board the mts AL ORAIQ did not perform as required. The officer in charge of the navigational watch, left a lot of the decision taking to the Coastal Pilots. There was no feedback on the Pilots' decisions, nor was there any feedback on the VHF Radio communications the Pilots had with other vessels and or Traffic Centre Zeebrugge. The VHF radio communications there were overheard or in which the Coastal Pilots were engaged were predominantly in the Dutch language. The officer on duty did not request the Coastal Pilots to translate some or all of the content of the VHF radio communications that were in Dutch.

The bridge watch team on board the mts AL ORAIQ had very little situational awareness. They did not question the overtaking of the mv THORCO CHALLENGER on starboard side nor did they assess the distance to the S3 buoy, the vessel's speed and the predicted traffic situation in the vicinity of the S3 buoy if the current speed was maintained.

10.1.1.2 Watch keeping on board the mv FLINTERSTAR

The bridge watch keeping team on board the mv FLINTERSTAR was insufficiently focused on watch keeping duties. Several VHF radio communications between Traffic Centre Zeebrugge and other participants within the area monitored by Traffic Centre Zeebrugge, concerning or involving the presence of an inbound LNG carrier were missed by the Pilot and the bridge watch keeping team on board the mv FLINTERSTAR.

10.1.1.3 The participation of the VTS

Traffic Centre Zeebrugge, as part of the VTS – Scheldt, assumed the role of observer in the marine traffic off the Port of Zeebrugge at the time leading up to the collision between the mts AL ORAIQ and the mv FLINTERSTAR.

Although several message markers at their disposal to pro-actively participate over VHF radio in the decision taking by the bridge watch teams of vessels participating in the marine traffic in the assigned VTS Block, the VTS-Operator at Traffic Centre Zeebrugge decided not to do so.

In the past, the advices or instructions given by Traffic Centre Zeebrugge to vessels participating in the marine traffic in the assigned block, have often been ill received by Pilots off the Belgian Coast, and have led to several high-ascending discussions, to the extent that VTS-Operators at Traffic Centre Zeebrugge have refrained from offering advice and or giving instructions to vessels in their monitored block.

Further, all VHF radio communication initiated by the VTS-Operators at Traffic Centre Zeebrugge was in Dutch, as well as all VHF radio communication initiated in Dutch by participants in the marine traffic of the Belgian Coast was replied to in Dutch language.

10.1.1.4 Nautical regulations: LNG Shipping Procedures

The Nautical regulations: LNG Shipping procedures¹⁷ issued with the notices to mariners N°1, by Flanders Hydrography, award LNG carriers an exceptional status as it were. By granting LNG carriers right of way under almost any circumstance, said regulations have tendency to lead the bridge watch teams of LNG carriers en route to and from the Port of Zeebrugge, in the waters governed by said regulations, advised by Coastal Pilots, into using this assumed exceptional status at their own discretion, not seldom leading to close quarter situations in the restricted fairways.

10.1.1.5 The role of the Pilots

10.1.1.5.1 The Sea Pilot on board the mv FLINTERSTAR

The Sea Pilot on board the mv FLINTERSTAR was advising the officer of the watch, forming his advice based on routine. When the mts AL ORAIQ was approaching the S3 buoy in the wake of the mv THORCO CHALLENGER, moments before the collision between the mv FLINTERSTAR and the mts AL ORAIQ, and a close quarter situation, later collision, became imminent, the Sea Pilot on board the mv FLINTERSTAR was still unaware of the fact that the mts AL OARIQ was a large LNG carrier, bound by and making usage of the Nautical regulations: Shipping procedures, demanding to give a minimum berth of 0.2 nautical miles at all times.

All VHF radio communication initiated by Sea Pilot on board the mv FLINTERSTAR, was in Dutch, a language that the officer of the watch on board the mv FLINTERSTAR did not master.

¹⁷ Appendix 1 – Page 77 - NAUTICAL REGULATIONS – LNG Shipping procedures

10.1.1.5.2 The Coastal Pilots on board the mts AL ORAIQ

The Coastal Pilots on board the mts AL ORAIQ advised the bridge watch team, after having boarded the vessel at the Wandelaar Pilot station, not to follow the in the Nautical regulations: Shipping procedures prescribed sailing route¹⁸, misleading other participants in the marine traffic in same area, whether inbound or outbound.

All VHF radio communication between the Coastal Pilots on board the mts AL ORAIQ and other participants in the marine traffic, as well as between the Coastal Pilots on board the mts AL ORAIQ and the VTS-Operators at Traffic Centre Zeebrugge was in Dutch, a language not mastered by anyone of the bridge watch team on board the mts AL ORAIQ. The Coastal Pilots did not spontaneously translated into English any of the valuable marine traffic information in Dutch language received via VHF radiotelephone.

10.1.1.6 The multitude of rules and regulations

It is clear that a multitude of rules and regulations, and regulators, govern the marine traffic in the Scheldt Region¹⁹.

Exceptions in said rules and regulations are granted to specific traffics with specific types of vessels if bound for one port on the Belgian coast but may not be granted to same vessels if bound for another Belgian port.

The multitude of rules and regulations have mislead the bridge watch teams both on board the mts AL ORAIQ and mv FLINTERSTAR.

¹⁸ Figure 11 – Page 48 - Mandatory (route 1) and alternative (route 2) inbound routes for LNG Carriers

¹⁹ Section 6 – Page 35 - Governance of the maritime traffic off the Belgian Coast

11. Actions Taken

11.1 Actions Taken By Agenstschap Maritieme Dienstverlening en Kust

Agentschap Maritieme Dienstverlening en Kust, and its operational divisions, Dienst Autonom Beheer Loodswezen and Scheepvaartbegeleiding have included the reported incident in the current refreshment training, as well as the coordination of the internal communication between VTS-Operators and the Pilots

11.2 Actions Taken By Flinter Management BV

In order for the crews, of the ships managed by Flinter Management BV, to learn from the accident, Flinter Management BV has undertaken or established the following:

- The voyage planning of the Flinter ships will be improved and extended. Additional waypoints, wheel over points and parallel indexes will be included in the voyage planning.
- The departure checklist will be improved/extended. The entrance door to the freefall lifeboat will be unlocked immediately after unmooring.
- Using the Voyage Data Recorder Data, an animation was produced and will be used to provide more insight into the collision.
- During training days for the seafarers of Flinter, the animation will be used as case study with respect to International Regulations for Preventing Collisions at Sea and Bridge Resource Management.
- During training days for the seafarers of Flinter, the aftermath of the collision between the mts AL ORAIQ and the mv FLINTERSTAR will be used as case study for Insurance matters.
- A system of E-learning, with respect to Bridge Resource Management will be put in place.

11.3 Actions Taken By "K" Line LNG Shipping (UK) Ltd

Based on their review of this collision, "K" Line LNG Shipping (UK) Ltd. has taken a number of actions based on their review of the collision of FLINTERSTAR and AL ORAIQ to prevent similar incidents in the future. These actions include the following:

- Issuing a fleet wide circular reinforcing the Company's Bridge Resource Management procedures under pilotage
- Conducting a review of the collision of the AL ORAIQ and FLINTERSTAR and the lessons learned during senior officer conferences. These included a presentation by the Master-in-command at the time of the collision to his peers.
- Revising the Bridge Resource Management and navigation procedures in the Company's Safety Management System to:
 - o Require that when under pilotage the Conn remain with the Master or a ship's Deck Watch Officer;
 - o Emphasize the need for Master and Officers of the Watch to both support and monitor the Pilot when under pilotage; and,
 - o Implement the use of tokens, such as a vest or arm band, to clearly designate the ship's officer with the Conn and the Lookout.
- Enhancing navigation audits conducted by the Company and ship's Masters based on the lessons learned from this collision, including the necessity of the Master and other members of the ship's Bridge Team to monitor the actions of a Pilot when the ship is under pilotage. The Company has also implemented a system of remote navigation audits based on a review of VDR information and voyage specific documents.
- Enhancing the Company's simulator based training program to include the collision of AL ORAIQ and FLINTERSTAR as well as other scenarios.

The Company reviewed and revised its recruitment, appraisal and promotion criteria and procedures.

12. Recommendations

On basis of its investigations, the Bodies involved in the joint investigation of the collision between the mts AL ORAIQ and the mv FLINTERSTAR have issued the following recommendations:

Dienst Autonoom Beheer Loodswezen en Scheepvaartbegeleiding (B) and the Regionale Loodsencorporatie Scheldemonden (NI) are recommended to

- 1) commit to safe navigation since safe navigation in piloted waters is a shared task of the bridge team and the pilot, and by improving the way navigational information is shared between the bridge team and the pilot;
 - 2) respect each other; communicate throughout the voyage; work together and stay alert.
 - 3) Implement mandatory training for ships' crews and pilots and enhance the integration of these items in bridge team- and pilot- procedures. As recommended in IMO RESOLUTION A.960(23) - Adopted 5 December 2003
- The authorities of the Flemish Region (B) are recommended to alter the decree of 19 APRIL 1995, "Decreet betreffende de organisatie en de werking van de loodsdienst van het Vlaamse Gewest en betreffende de brevetten van havenloods, bootman en diepzeeloods" concerning the organisation and working of pilotage services off the Belgian coast, by omitting the passage in article 8 of said decree, that stipulates that pilots can implicitly undertake all intellectual and material actions including all actions on aspects of factual navigation of the vessel.
 - Agentschap Maritieme Dienstverlening en Kust (B), and its operational divisions, Dienst Autonoom Beheer Loodswezen and Scheepvaartbegeleiding, the Regionale Loodsencorporatie Scheldemonden (NI): and Rijkswaterstaat Zee- en Delta (NI) are recommended to:

- 1) adopt English as the sole language for all ship to shore and ship to ship communications in the Scheldt Region and to amend the relevant publications accordingly.
 - 2) Implement mandatory training for VTS-operators and pilots focussed on routine procedures for sharing safety information; effective communicating; respect for each other and learning from accidents and incidents.
- Agentschap Maritieme Dienstverlening en Kust (B), is recommended to withdraw the Nautical Regulations: LNG Shipping Procedures effective for LNG carriers to and from the Port of Zeebrugge to no longer grant an exceptional status for LNG carriers in this area considering the evolution in size of non LNG carriers plying of the Belgian Coast and considering the traffic of LNG carriers to and from the Port of Antwerp not bound by aforementioned regulations.
 - The Belgian Federal Authorities (B) are recommended to register the Deepwater route to and from the Wandelaar Pilot Station with the International Maritime Organisation as mandatory route for oversized commercial vessels and are recommended to amend the Politie- en scheepvaartreglement voor de territoriale zee, kusthavens en stranden (1981) accordingly.
 - The Flemish Regional Authorities (B) and Dutch Ministry of infrastructure and Environment (NL) are recommended to amend the Common Nautical Treaty (GNB) to give the Common Nautical Authority (GNA) governance of all fairways of all fairways to and from the Wandelaar Pilot Station to and from Flushing Roads, including the fairway to and from the Port of Zeebrugge considering the harmonisation of the rules and regulations in the area, and the continuously increasing intensity of the traffic, off the Belgian Coast.
 - The Gemeenschappelijke Nautische Autoriteit are recommended to have the Automatic Identification System data of in and outbound vessels checked so that, in case emergency actions need to be undertaken, a correct assessment of the means

of rescue to be deployed can be made considering the number of persons and or the presence of dangerous cargo on board.

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GENERAL NAUTICAL REGULATIONS

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Chapter I – General provisions

1. General

The arrival, the stay at, and the departure from Zeebrugge of an LNG carrier are operations that must proceed strictly in accordance with a predetermined plan.

At Zeebrugge, a co-ordination centre has been established, hereinafter referred to as VTS-SG (Vessel Traffic Services River Scheldt Area), and which is manned 24 hours a day, monitoring these activities in conjunction with Port Control Zeebrugge.

General provisions are identical to large LNG carriers and to small LNG carriers. For a comparison between nautical prior conditions, see annex III.

2. Regulations

The control measures are identical whether the LNG carrier is (i) empty and not gasfree or not, (ii) partially or fully loaded; and (iii) approaching or leaving the port.

For LNG carriers fully ventilated or under inert gas conditions, the harbour master informs the other partners whether the 'LNG procedures' apply or not (for contact details of the parties, see annex I). A gasfree certificate must be sent to VTS-SG and the harbour master's service MBZ in advance.

VTS-SG and MBZ determine and check the time of arrival, in consultation with the ship's command and the LNG terminal.

All incidents, technical failures on board of the LNG carrier, occurring during the sea voyage as well as during the stay in the harbour, must be reported immediately to the VTS-SG and Port Control. In turn, VTS-SG informs the MRCC and the GNA.

3. Position reporting/E.T.A.

Five (5) days in advance to the arrival at Zeebrugge, the position of the LNG carrier must be reported every 24 hours to the 'Maatschappij van de Brugse Zeehaven MBZ/NV'.

Compulsory reporting by the LNG carrier to VTS-SG of the time of arrival at **48, 24, 6 hours and 1 hour** prior to the arrival at the pilot-boarding position. VTS-SG informs Zeebrugge Pilotage accordingly.

24 hours prior to the arrival at the pilot-boarding position, the LNG carrier will inform VTS-SG and MBZ that no defects have been observed or are anticipated to the ship, her means of propulsion and her equipment.



Depending on the nature of any defect, the admission of the ship to the port can be authorized or withheld. Any changes to the condition, must be reported immediately to VTS-SG.

4. Recommended anchorage areas

- Any anchorage area assigned by VTS-SG in accordance with pilot's advice
- North of the 'A-N' buoy (Westhinder anchorage)

5. VTS-SG guidance / position information / VHF communication

As from the first VHF contact with 'Wandelaar Approach', the LNG carrier becomes subject to the guidance of the VTS-SG.

Traffic zone 'Wandelaar Approach'

From in the west to the line formed by watertower Westende –
Middelkerkebank buoy – 51°19,60'N:002°31,50' E – Oostdyck buoy

CALL SIGN: Wandelaar Approach – VHF channel: 60

Once the LNG carrier has passed the buoy 'Oostdyck', VTS-SG can, at request of the master / pilot, supply continuous position information to the LNG carrier.

Once passed the buoy 'S5', position information is continuously supplied to the LNG carrier.

The assistance by the VTS-SG is supplied on the traffic channels of the traffic zone concerned.

Traffic zone 'Wandelaar'

from the line formed by watertower Westende – Middelkerkebank buoy -
51°19,60'N:002°31,50' E – Oostdyck buoy
to the line formed by buoys – A1bis - S2 – VG6

CALL SIGN: Traffic Center Wandelaar – VHF channel: 65

Traffic zone 'Zeebrugge'

from the line formed by buoys A1bis - S2 - VG6 including the Pas van het Zand to the Zeebrugge breakwaters

CALL SIGN: Traffic Center Zeebrugge – VHF channel: 69

The continuous position information in the traffic zones 'Wandelaar Approach', 'Wandelaar', 'Zeebrugge' and in the port of Zeebrugge is supplied via the radar channel.

CALL SIGN: Radar Zeebrugge - VHF channel: 4

The fact that the LNG carrier is making use of the radar channel does not relieve her of her duty to continuously monitor the traffic channels 60, 65 and 69 of the relevant traffic areas.

Once they have passed the 'Z' buoy, inbound LNG carriers must be reachable for Port Control Zeebrugge on VHF channel 71.



Chapter II – Large LNG carriers

6. Definition

By large LNG carriers is meant LNG carriers with a length exceeding 200 metres. Here, one distinguishes between three large groups: regular LNG carriers, Q-flex series, Q-max series.

Regular LNG carriers:

LOA: >200 metres - <315 metres

Q-flex:

LOA: ≥315 metres - <345 metres

Q-max:

LOA: ≥345 metres

7. Nautical regulations upon arrival

7.1. Pilot boarding

The pilot designated to the LNG carrier submits a sailing plan, at least one hour prior to ETA of the LNG carrier at the 'A-S' buoy.

VTS-SG will broadcast the sailing plan (including the various passage points and passage times) simultaneously on traffic channels 65 and 69 at the following times (in case of dense VHF traffic on channel 65 and channel 69, VHF channel 04 can be used as an alternative):

- 1 hour prior to the arrival of the LNG carrier at the 'A-S' buoy
- at the arrival of the LNG carrier at the 'A-S' buoy

The pilot boards the LNG carrier 1 mile east of the line formed by the buoys 'A-S' and 'A-N', well clear of any pilot boarding/disembarking operations by other vessels, which will be requested by traffic centre Wandelaar to keep a safe distance from the LNG carrier of at least half a mile during this operation.

7.2. Route

Inbound LNG carriers shall follow the route: precautionary area Wandelaar - Vaargeul 1 - S3/S4 - Ribzand - Pas van het Zand. Depending on traffic agreements made earlier and on fairway obstructions, LNG carriers can deviate from this and follow the route Akkaert-SW - A1 - Scheur West - Ribzand and Pas van het Zand.



The LNG carrier is classified as
'OVERSIZED VESSEL'

All shipping present in the traffic zone will be warned by VTS-SG of the presence of an inbound LNG carrier en route from the 'A-S' buoy to the port of Zeebrugge.

7.3. Permission to enter the port

- An LNG carrier entering the port of Zeebrugge for the first time, will do so by daylight during the entire route.
- The first Q-max type presenting itself for entering the port, will do so with rising water as well.
- Prior to entering the port, the master will ask Port Control Zeebrugge for permission and will inform VTS-SG.
- Permission to enter the port will be granted by Port Control Zeebrugge subject to compliance with the following conditions:

7.3.1. By MBZ

- 7.3.1.1. Necessary provisions must have been made for the reception of the LNG carrier (Fluxys LNG Zeebrugge).
- 7.3.1.2. No ammunition carrying vessels may be present in the outer port.
- 7.3.1.3. No gas tankers other than LNG tankers may simultaneously be present in the outer port, save when a “*checklist 'simultaneous call of an LNG carrier and a gas tanker other than LNG for rinsing'*” has been delivered by a gas expert to that gas tanker.
- 7.3.1.4. At least 4 tugs must be able to proceed in time to assist the LNG carrier before she passes the 'SZ' buoy (Scheur-Zand). A 5th tug must assist as from passing the breakwaters.
 - **For regular LNG carriers:** a minimum bollard pulling power with a total force of 180 tonnes is required for the 5 tugboats.
 - **For the Q-flex series:** a minimum bollard pulling power with a total force of 210 tonnes is required for the 5 tugboats.



- **For the Q-max series:** a minimum bollard pulling power with a total force of 305 tonnes is required for the 5 tugboats.
- Four tugs must be ready to render effective assistance before the LNG carrier passes the 'SZ' buoy.
- The LNG carrier must be equipped to fasten four tugboats to the deck. It is forbidden to make use of the 'sunken bits' on the side of the ship outside the breakwaters.
- The towing lines used will always be supplied by the tugboats.
- One or more tugboats must be equipped with fire-fighting equipment Class standard Fifi-1 appropriate for combating an LNG fire (see annex IV).

7.3.1.5. In the event of simultaneous arrival of ships, strict measures regarding order and time of entry will apply (Port Control Zeebrugge).

7.3.2. By VTS-SG

7.3.2.1. The LNG carrier reports possible defects in conformity with the tanker checklist to VTS-SG.

7.3.2.2. The under-keel clearance of the LNG carrier must be at least 20% of her draught when at sea and at least 15% when in the harbour.

7.3.2.3. The wind force must be less than 14 metres per second according to the meteorological data from the western breakwater Zeebrugge (regular LNG carriers and Q-flex series).
The wind force must be less than 12 metres per second according to the meteorological data from the western breakwater Zeebrugge (Q-max series).

7.3.2.4. Visibility must be at least a half nautical mile.

7.3.2.5. The tidal current at the breakwaters must be less than 1.5 knots.

When the requested permission to enter is not granted, the LNG carrier will be directed to a safe anchorage by VTS-SG.

Port Control Zeebrugge, VTS-SG and the pilotage service decide in consensus about the fulfilment of the above-mentioned conditions n° 7.3.2.1 up to 7.3.2.5.

In case the LNG carrier received permission to proceed to the port of Zeebrugge and conditions become above the limits (wind, visibility), shortage of tugs, not availability of berth, the LNG carrier must be informed the latest before passage of “VG5/VG6 – S2” buoys.

7.4. Reports

The vessel will report:

7.4.1. When?

7.4.1.1. Immediately after the pilot has boarded

7.4.1.2. Upon passing the buoys:

7.4.1.3. Upon passing the Zeebrugge breakwaters

{ A1/VG3-VG4/S3
SZ
Z

7.4.2. To whom?

7.4.2.1. Vlissingen Traffic Centre VHF channel 14

7.4.2.2. Traffic Centre Wandelaar VHF channel 65
Traffic Centre Zeebrugge VHF channel 69

7.4.2.3. Port Control Zeebrugge VHF channel 71

stating the estimated time of arrival at the next (above-mentioned) passage points.

7.5. Shipping regulations

7.5.1. By VTS-SG

VTS-SG controls and co-ordinates all shipping in the vicinity of the LNG carrier, issuing as standing order a minimum safe distance of at least 2 cables when passing an LNG carrier (overtaking, crossing and sailing in opposite directions).

When issuing the estimated time of arrival at passage points, also the minimum passing distance is reported to shipping traffic (5 cables when boarding/disembarking the pilot and 2 cables when sailing).

En route from S3/S4 to the breakwaters, vessels are only allowed to overtake and / or cross the bow of an LNG carrier if explicit agreements have been made in advance with the LNG carrier as well as with VTS-SG.



7.5.2. By MBZ

As from the passing of the 'Z' buoy', Port Control Zeebrugge co-ordinates all in- and outbound traffic and all shipping traffic in the harbour, maintaining a passing distance of 2 cables from the LNG carrier, until she has rounded the 'LNG' buoy.

7.6. Police patrol

The maritime police will patrol regularly in the vicinity of the LNG carrier and in the fairway in order to ensure that all shipping complies with the traffic control regulation and to verify the coordination of all in- and outbound traffic inside the port. The maritime police also checks if shipping complies with the instructions with regard to traffic control by VTS-SG or by Port Control Zeebrugge inside the port. At the time of the patrol, she will contact the pilot on board of the LNG carrier, and with VTS-SG (channel 04), and with Port Control Zeebrugge (channel 71).

Should any problem arise when no police patrol is present, e.g. non-compliance with the said traffic control regulations, VTS-SG will immediately contact the maritime police (phone 050/55 60 40 or by VHF), who will assess the situation in order to solve the problem.

Furthermore, VTS-SG will ensure that all shipping in its traffic zones is informed about the arrival of the LNG carrier, and her passing times at the various waypoints.

8. Stay in the port of Zeebrugge - MBZ

The LNG carrier will berth port side at berth 615 or starboard side at berth 616.

The Q-max is only allowed to moor at berth 615.

Throughout the entire stay of the ship in the port, the following precautions will be adopted among others:

- 8.1. The LNG carrier must have the required towing lines (fire wires) hanging overboard at all times.
- 8.2. The LNG carrier may have an under-keel clearance of less than 15% of her draught during her stay in the port.
- 8.3. A dedicated tugboat type Fifi-1 must be continuously in the vicinity of the LNG carrier and be available upon call for intervention.¹

¹ In exceptional circumstances the dedicated tugboat can be used for assistance, in the outer port, for other vessels. In this case, the tug boat is only allowed to perform a push job and in case of emergency be immediately available to deal with the incident.

- 8.4. No ammunition carrying vessels may be present in the outer port.
- 8.5. No gas tankers other than LNG tankers may simultaneously be present in the outer port, save when a “checklist ‘simultaneous call of an LNG carrier and a gas tanker other than LNG for rinsing’” has been delivered by a gas expert to that gas tanker.

9. Nautical regulations upon departure

9.1. Permission to leave the port

One hour prior to departure, the pilot submits a sailing plan which will be transmitted to VTS-SG.

VTS-SG will broadcast the sailing plan (including the various passage times and passage points) simultaneously on traffic channels 65 and 69 at the following times:

- 1 hour prior to departure
- at the time of departure

The master will request Port Control Zeebrugge for permission to sail. This permission will only be granted when the following conditions are complied with:

9.1.1. By MBZ

- 9.1.1.1. No ammunition carrying vessels may be present in the outer port.
- 9.1.1.2. No gas tanker other than LNG, for which no checklist ‘simultaneous call of an LNG carrier and a gas tanker (other than LNG) for rinsing’ has been delivered by a gas expert, is present in the outer port.
- 9.1.1.3. Tugboats:
- **For regular LNG carriers:** A minimum bollard pulling power with a total force of 150 tonnes is required - 3 tugboats are required.
 - **For the Q-flex series:** A minimum bollard pulling power with a total force of 165 tonnes is required - 4 tugboats are required.
 - **For the Q-max series:** A minimum bollard pulling power with a total force of 260 tonnes is required - 4 tugboats are required.

Tugboats accompany the LNG carrier until she has passed the new breakwaters.

9.1.1.4. Strict measures regarding order and time of departure will apply, when other vessels report simultaneously.

9.1.1.5. The wind force must be less than 14 metres per second (according to the observations of the weather station at the western breakwater Zeebrugge) for regular LNG carriers and Q-flex series.

The wind force must be less than 12 metres per second (according to the observation of the weather station at the western breakwater Zeebrugge) for Q-max series.

9.1.1.6. Visibility must be at least a half nautical mile.

9.1.2. By VTS-SG

9.1.2.1. The LNG carrier reports possible defects as recorded on the tanker checklist to VTS-SG.

9.1.2.2. The under-keel clearance of the LNG carrier must be at least 15% of her draught when in the harbour and at least 20% when at sea.

9.1.2.3. The tidal current at the breakwaters must be running at less than 2 knots for regular LNG carriers and for the Q-flex series.

The tidal current at the breakwaters must be running at less than 1.5 knots for the Q-max series.

Port Control Zeebrugge, VTS-SG and the pilotage service decide in consensus about the fulfilment of the above-mentioned conditions n° 9.1.1.5 up to and including 9.1.2.3.

9.2. Reports

After having received permission to sail, the vessel will, prior to letting go, report the time of unmooring and the time of passing the breakwaters to:

- VTS-SG on channel 19 (Radar Control Zeebrugge)
- Vlissingen Traffic Centre on channel 14
- Port Control Zeebrugge on channel 71

9.3. Route and pilot disembarking

- The LNG carrier will sail via Pas van het Zand, Ribzand, Vaargeul 1, and pilot station Wandelaar.

Depending on traffic agreements made earlier and on fairway obstructions, LNG carriers can deviate from this and follow the route Scheur West, A1, Akkaert-SW.

- When the pilot disembarks from the LNG carrier, well clear of all other pilot boarding/disembarking operations, all other vessels will be warned in good time by the Wandelaar pilot cutter and VTS-SG, and be requested to keep a safe distance (at least 5 cables) from the LNG carrier.

9.4. Shipping regulations

9.4.1. By MBZ

As soon as the LNG carrier is ready to leave the LNG dock, and has requested and obtained permission to do so, Port Control Zeebrugge will ensure the traffic control and co-ordination of all shipping inside the port and all in- and outbound carriers, ensuring a minimum safety distance of 2 cables from the moment the LNG carrier passes the LNG buoy until she is clear of the Zeebrugge breakwaters.

9.4.2. By VTS-SG

VTS-SG controls and co-ordinates all shipping in the vicinity of the LNG carrier, while a minimum safe distance of 2 cables is maintained when passing the LNG carrier (overtaking and crossing).

Furthermore, VTS-SG will ensure that all shipping remains informed about the departure of the LNG carrier and her passing times.

9.5. Police patrol

The maritime police will patrol regularly in the vicinity of the LNG carrier and in the fairway in order to ensure that all shipping complies with the traffic control regulations and to verify the co-ordination of all in- and outbound traffic inside the port. The maritime police also checks whether shipping complies with the instructions with regard to traffic control issued by VTS-SG or by Port Control Zeebrugge inside the port.

At the time of the patrol, she will contact the pilot on board of the LNG carrier and with VTS-SG (channel 04) and with Port Control Zeebrugge (channel 71).

Should any problem arise when no police patrol is present, e.g. non-compliance with the said traffic control regulations, VTS-SG will immediately contact the maritime police (phone 050/55 60 40 or by VHF), who will assess the situation in order to solve the problem.

Chapter III – Small LNG carriers

10. Definition

By small LNG carriers is meant LNG carriers with a length up to 200 metres.

11. Nautical regulations upon arrival

11.1. Pilot boarding

The pilot designated to the LNG carrier submits a sailing plan, at least one hour prior to ETA of the LNG carrier at the 'KB' buoy.

VTS-SG will broadcast the sailing plan (including the various passage points and passage times) simultaneously on traffic channels 65 and 69 at the following times (in case of dense VHF traffic on channel 65 and channel 69, VHF channel 04 can be used as an alternative):

- ❑ 1 hour prior to the arrival of the LNG carrier at the 'KB' buoy
- ❑ at the arrival of the LNG carrier at the 'KB' buoy

The pilot boards the LNG carrier at the pilot-boarding station Wandelaar, well clear of any pilot boarding/disembarking operations by other vessels, which will be requested by traffic centre Zeebrugge to keep a safe distance from the LNG carrier of at least a half mile during this operation.

11.2. Route

Inbound LNG carriers shall follow the route: precautionary area Wandelaar - Vaargeul 1 - S3/S4 - Ribzand - Pas van het Zand. Depending on traffic agreements made earlier and on fairway obstructions, LNG carriers can deviate from this and follow the route Akkaert-SW - A1 - Scheur West - Ribzand and Pas van het Zand.

The small LNG carrier is classified as
'OVERSIZED VESSEL'

All shipping present in the traffic zone will be warned by VTS-SG of the presence of an inbound LNG carrier en route from the 'KB' buoy to the port of Zeebrugge.

11.3. Permission to enter the port

- An LNG carrier entering the port of Zeebrugge for the first time, will do so by daylight during the entire route.
- Before entering the port, the master will ask Port Control Zeebrugge for permission and will inform VTS-SG.
- Permission to enter the port will be granted by Port Control Zeebrugge subject to compliance with the following conditions:

11.3.1. By MBZ

11.3.1.1. Necessary provisions must have been made for the reception of the LNG carrier (Fluxys LNG Zeebrugge).

11.3.1.2. No ammunition carrying vessels may be present in the outer port.

11.3.1.3. No gas tankers other than LNG tankers may simultaneously be present in the outer port, save when a "checklist 'simultaneous call of an LNG carrier and a gas tanker other than LNG for rinsing'" has been delivered by a gas expert to that gas tanker.

11.3.1.4. At all times, tugs can be ordered to assist by the captain of the LNG carrier.

- The towing lines used will always be supplied by the tugboats.

11.3.1.5. In the event of simultaneous arrival of ships, strict measures regarding order and time of entry will apply (Port Control Zeebrugge).

11.3.2. By VTS-SG

11.3.2.1. The LNG carrier reports possible defects in conformity with the tanker checklist to VTS-SG.

11.3.2.2. The under-keel clearance of the LNG carrier must be at least 20% of her draught when at sea and at least 15% when in the harbour.

11.3.2.3. The wind force must be less than 14 metres per second according to the meteorological data from the western breakwater Zeebrugge.

11.3.2.4. Visibility must be at least a half nautical mile.

11.3.2.5. The tidal current at the breakwaters must be less than 2 knots.

When the requested permission to enter is not granted, the LNG carrier will be directed to a safe anchorage by VTS-SG.

Port Control Zeebrugge, VTS-SG and the pilotage service decide in consensus about the fulfilment of the above-mentioned conditions n° 11.3.2.1 up to 11.3.2.5.

11.4. Reports

The vessel will report:

11.4.1. When?

11.4.1.1. Immediately after the pilot has boarded

11.4.1.2. Upon passing the buoys:

{ A1/VG3-VG4/S3
SZ
Z

11.4.1.3. Upon passing the Zeebrugge breakwaters

11.4.2. To whom?

11.4.2.1. Vlissingen Traffic Centre VHF channel 14

11.4.2.2. Traffic Centre Wandelaar VHF channel 65
Traffic Centre Zeebrugge VHF channel 69

11.4.2.3. Port Control Zeebrugge VHF channel 71

stating the estimated time of arrival at the next (above-mentioned) passage points.



11.5. Shipping regulations

11.5.1. By VTS-SG

VTS-SG controls and co-ordinates all shipping in the vicinity of the LNG carrier, issuing as standing order a minimum safe distance of at least 2 cables when passing the LNG carrier (overtaking, crossing and sailing in opposite directions).

When issuing the estimated time of arrival at passage points, also the minimum passing distance is reported to shipping traffic (5 cables when boarding/disembarking the pilot and 2 cables when sailing).

En route from S3/S4 to the breakwaters, vessels are only allowed to overtake and / or cross the bow of an LNG carrier if explicit agreements have been made in advance with the LNG carrier as well as with VTS-SG.

11.5.2. By MBZ

As from the passing of the 'Z' buoy, Port Control Zeebrugge co-ordinates all in- and outbound traffic and all shipping traffic in the harbour, maintaining a passing distance of 2 cables from the LNG carrier, until she has rounded the 'LNG' buoy.

11.6. Police patrol

The maritime police will patrol regularly in the vicinity of the LNG carrier and in the fairway in order to ensure that all shipping complies with the traffic control regulation and to verify the coordination of all in- and outbound traffic inside the port. The maritime police also checks if shipping complies with the instructions with regard to traffic control by VTS-SG or by Port Control Zeebrugge inside the port. At the time of the patrol, she will contact the pilot on board of the LNG carrier, and with VTS-SG (channel 04), and with Port Control Zeebrugge (channel 71).

Should any problem arise when no police patrol is present, e.g. non-compliance with the said traffic control regulations, VTS-SG will immediately contact the maritime police (phone 050/55 60 40 or by VHF), who will assess the situation in order to solve the problem.

Furthermore, VTS-SG will ensure that all shipping in its traffic zones is informed about the arrival of the LNG carrier, and her passing times at the various waypoints.



12. Stay in the port of Zeebrugge - MBZ

The LNG carrier will berth port side at berth 615 or starboard side at berth 616.

Throughout the entire stay of the ship in the port, the following precautions will be adopted among others:

- 12.1. The LNG carrier must have the required towing lines (firewires) hanging overboard at all times.
- 12.2. The LNG carrier may have an under-keel clearance of less than 15% of her draught during her stay in the port.
- 12.3. A dedicated tugboat type Fifi-1 (see annex IV) must be continuously in the vicinity of the LNG carrier and be available upon call for intervention.

For LNG carriers fulfilling the following 3 conditions:

- length LNG carrier < 150 m
- maximum volume of largest cargo tank < 5.000 m³
- maximum LNG transfer rate < 1.500 m³/hr,

the presence of a non-dedicated tugboat type Fifi-1 in the outer port is sufficient.

- 12.4. No ammunition carrying carriers may be present in the outer port.
- 12.5. No gas tankers other than LNG tankers may simultaneously be present in the outer port, save when a “*checklist 'simultaneous call of an LNG carrier and a gas tanker other than LNG for rinsing'*” has been delivered by a gas expert to that gas tanker.

13. Nautical regulations upon departure

13.1. Permission to leave the port

One hour prior to departure, the pilot submits a sailing plan which will be transmitted to VTS-SG.

VTS-SG will broadcast the sailing plan (including the various passage times) simultaneously on traffic channels 65 and 69 at the following times (in case of dense VHF traffic on channel 65 and channel 69, VHF channel 04 can be used as an alternative):

→ 1 prior to departure
→ at the time of departure

The master will request Port Control Zeebrugge for permission to sail. This permission will only be granted when the following conditions are complied with:

13.1.1. By MBZ

- 13.1.1.1. No ammunition carrying vessels may be present in the outer port.
- 13.1.1.2. No gas tanker other than LNG, for which no checklist 'simultaneous call of an LNG carrier and a gas tanker other than LNG for rinsing' has been delivered by a gas expert, is present in the outer port.
- 13.1.1.3. Strict measures regarding order and time of departure will apply, when other vessels report simultaneously.
- 13.1.1.4. The wind force must be less than 14 metres per second (according to the observations of the weather station at the western breakwater Zeebrugge)
- 13.1.1.5. Visibility must be at least a half nautical mile.

13.1.2. By VTS-SG

- 13.1.2.1. The LNG carrier reports possible defects as recorded on the tanker checklist to VTS-SG.
- 13.1.2.2. The under-keel clearance of the LNG carrier must be at least 15% of her draught when in the harbour and at least 20% when at sea.
- 13.1.2.3. The tidal current at the breakwaters must be running at less than 2 knots.

Port Control Zeebrugge, VTS-GS and the pilotage service decide in consensus about the fulfilment of the above-mentioned conditions n° 13.1.1.5. up to and including 13.1.2.3.



13.2. Reports

After having received permission to sail, the vessel will, prior to letting go, report the time of unmooring and the time of passing the breakwaters to:

- VTS-SG on channel 19 (Radar Control Zeebrugge)
- Vlissingen Traffic Centre on channel 14
- Port Control Zeebrugge on channel 71

13.3. Route and pilot disembarking

- The LNG carrier will sail via Pas van het Zand, Ribzand, Vaargeul 1, and pilot station Wandelaar.
Depending on traffic agreements made earlier and on fairway obstructions, LNG carriers can deviate from this and follow the route Scheur West, A1, Akkaert-SW.
- When the pilot disembarks from the LNG carrier, well clear of all other pilot boarding/disembarking operations, all other vessels will be warned in good time by the Wandelaar pilot cutter and VTS-SG, and be requested to keep a safe distance (at least 5 cables) from the LNG carrier.

13.4. Shipping regulations

13.4.1. By MBZ

As soon as the LNG carrier is ready to leave the LNG dock, and has requested and obtained permission to do so, Port Control Zeebrugge will ensure the traffic control and co-ordination of all shipping inside the port and all in- and outbound vessels, ensuring a minimum safety distance of 2 cables from the moment the LNG carrier passes the LNG buoy until she is clear of the Zeebrugge breakwaters.

13.4.2. By VTS-SG

VTS-SG controls and co-ordinates all shipping in the vicinity of the LNG carrier, issuing as standing order a minimum safe distance of at least 2 cables when passing an LNG carrier (overtaking, crossing and sailing in opposite directions).

Furthermore, VTS-SG will ensure that all shipping remains informed about the departure of the LNG carrier and her passing times.

13.5. Police patrol

The maritime police will patrol regularly in the vicinity of the LNG carrier and in the fairway in order to ensure that all shipping complies with the traffic control regulations and to verify the co-ordination of all in- and outbound traffic inside the port. The maritime police also checks whether shipping complies with the instructions with regard to traffic control issued by VTS-SG or by Port Control Zeebrugge inside the port.

At the time of the patrol, she will contact the pilot on board of the LNG carrier and with VTS-SG (channel 04) and with Port Control Zeebrugge (channel 71).

Should any problem arise when no police patrol is present, e.g. non-compliance with the said traffic control regulations, VTS-SG will immediately contact the maritime police (phone 050/55 60 40 or by VHF), who will assess the situation in order to solve the problem.

Chapter IV Traffic management in the LNG dock with 2 simultaneous vessels

14.1. General

- Q-max is only allowed to berth at berth 615.
- 1st LNG carrier has to be fully moored (all fast) according to the approved mooring arrangement plan before a second LNG carrier is allowed to enter or leave the LNG dock.
- Upon arrival or departure of a second LNG carrier, leading lights in the LNG dock, should work properly.
- Upon arrival or departure of a large LNG carrier in the LNG dock and the presence of another LNG carrier, the presence of a tugboat type Fifi 1 will be according to chapters II and III, but in no case more than one tugboat type Fifi 1 is required.



Annex II – General observations

The LNG regulations apply to the present configuration of the LNG terminal. In the event of an expansion of the LNG terminal, the harbour regulations shall be reviewed.

The LNG regulations for the Q-max series will be subjected to an assessment not later than 5 arrivals of LNG carriers.

Annex III – Comparison of nautical prior conditions

	Small LNG carriers	Regular LNG carriers	Q-flex	Q-max
Dimensions	≤ 200 metres	LOA >200 - <315 m	LOA ≥315 – <345 m	LOA ≥ 345 m
Pilot boarding – Pilot station	Buoy 'KB'	1/2' east of buoy 'A-S'	1/2' east of buoy 'A-S'	1/2' east of buoy 'A-S'
Minimum safe distance to pilot station	5 cables	5 cables	5 cables	5 cables
Minimum safe distance at sea	2 cables	2 cables	2 cables	2 cables
Carrier classification	oversized by daylight	oversized by daylight	oversized by daylight	oversized by daylight + rising water
First arrival	nil	4+1 – 180 BP – buoy 'SZ'	4+1 – 210 BP – buoy 'SZ'	4+1 – 305 BP – buoy 'SZ'
Tugs inbound	nil	3 – 150 BP – up to break-water	4 – 165 BP – up to break-water	4 – 260 BP – up to break-water
Tugs outbound	nil	< 14 m/s western break-water	< 14 m/s western break-water	< 12 m/s western break-water
Maximum wind I/O	20% at sea; 15% in port 1/2 mile			
Keel-clearance I/O	< 2 knots	< 1,5 knots	< 1,5 knots	< 1,5 knots
Visibility I/O	< 2 knots	< 2 knots	< 2 knots	< 1,5 knots
Max. tidal current inbound	< 2 knots	< 2 knots	< 2 knots	< 1,5 knots
Max. tidal current outbound	< 2 knots	< 2 knots	< 2 knots	< 1,5 knots

Annex IV Firefighting ship 1 water spray

Required characteristics (Fifi 1)

- minimum number of water monitors: 2
- minimum discharge rate per monitor (m³/h): 1200
- minimum number of firefighting pumps: 1
- minimum total pump capacity (m³/h): 2400
- length of throw of each monitor (m): 120
- height of throw of each monitor (m): 45
- number of hydrants: 4 at each side
- number of firemen's outfits: 4

Waterspray

- the capacity of the self-protection water-spraying system is not to be less than 10 l/min for each square meter of protected area
- in the case of surfaces which are internally insulated, such as A-60 class divisions, a lower capacity may be accepted, provided it is less than 5 l/min for each square meter of protected area





The Bilateral Nautical Management is a ratified cooperation between the Flemish and Dutch government and is responsible for the safe and efficient shipping in the Scheldt area.



VHF sectors in VTS Scheldt Area

Clear communication on every channel

VERSION 4.0

<p>COMPULSORY REPORTING AND LISTENING WATCH</p> <p>for ALL COMMERCIAL SHIPPING on the TRAFFIC CHANNELS</p>	<p>COMPULSORY LISTENING WATCH</p> <p>for RECREATIONAL CRAFT EQUIPPED WITH VHF on the TRAFFIC CHANNELS</p>			
<p>REPORTING FOR COMMERCIAL SHIPPING IN THE VTS SCHELDT AREA</p> <table border="1"> <tr> <td data-bbox="635 898 906 1167"> <p>Inbound from sea:</p> <p>Depending on direction of approach, report 1/2 hour before arrival in the VTS area on the traffic channel belonging to the first sector you enter.</p> <p>Message: name of the vessel position draught destination ETA pilot station</p> </td> <td data-bbox="635 517 906 898"> <p>Departing from a port, berth, jetty or anchorage in the VTS area:</p> <p>Report on the traffic channel appropriate for the area (unless otherwise indicated in this brochure) before entering the fairway.</p> <p>Message: name of the vessel position draught planned route destination for barges carrying one or more blue cones: the number of cones</p> </td> <td data-bbox="635 259 906 517"> <p>Passage boundary sector:</p> <p>Always report to the next sector, always on the traffic channel. A departure report to the previous sector is not required.</p> <p>Message: name of the vessel position planned route (where different routes are possible)</p> </td> </tr> </table>		<p>Inbound from sea:</p> <p>Depending on direction of approach, report 1/2 hour before arrival in the VTS area on the traffic channel belonging to the first sector you enter.</p> <p>Message: name of the vessel position draught destination ETA pilot station</p>	<p>Departing from a port, berth, jetty or anchorage in the VTS area:</p> <p>Report on the traffic channel appropriate for the area (unless otherwise indicated in this brochure) before entering the fairway.</p> <p>Message: name of the vessel position draught planned route destination for barges carrying one or more blue cones: the number of cones</p>	<p>Passage boundary sector:</p> <p>Always report to the next sector, always on the traffic channel. A departure report to the previous sector is not required.</p> <p>Message: name of the vessel position planned route (where different routes are possible)</p>
<p>Inbound from sea:</p> <p>Depending on direction of approach, report 1/2 hour before arrival in the VTS area on the traffic channel belonging to the first sector you enter.</p> <p>Message: name of the vessel position draught destination ETA pilot station</p>	<p>Departing from a port, berth, jetty or anchorage in the VTS area:</p> <p>Report on the traffic channel appropriate for the area (unless otherwise indicated in this brochure) before entering the fairway.</p> <p>Message: name of the vessel position draught planned route destination for barges carrying one or more blue cones: the number of cones</p>	<p>Passage boundary sector:</p> <p>Always report to the next sector, always on the traffic channel. A departure report to the previous sector is not required.</p> <p>Message: name of the vessel position planned route (where different routes are possible)</p>		
<p>ATTENTION</p> <p>The compulsory language is Dutch or English.</p>				
<p>Make clear traffic arrangements directly with the other traffic participants.</p> <p>Always call another ship by the name of the vessel or by position and/or direction.</p>				

Wandelaar approach VHF 60	traffic centre Wandelaar pilot Wandelaar VHF 65	traffic centre Zeebrugge VHF 69 h+10'	traffic centre Steenbank pilot Steenbank VHF 64	traffic centre Vlissingen VHF 14 h+50'	traffic centre Terneuzen VHF 03	traffic centre Haasweert VHF 65	TRAFFIC CHANNELS (compulsory listening watch) Traffic arrangements ship-ship. Traffic information - general. Shore based pilotage. Compulsory reporting.
radar Zeebrugge VHF 04 h+15'	radar Steenbank VHF 64	radar Zeebrugge VHF 04 h+15'	radar Steenbank VHF 64	radar Vlissingen VHF 21 h+55'	radar Terneuzen VHF 03 h+55'	radar Haasweert VHF 65	RADAR CHANNELS Navigational assistance (Radar information). Port information when there is no specific port information channel available.

ALWAYS USE THE CORRECT VHF CHANNEL FOR YOUR MESSAGE

radar Vlissingen VHF 21 without port entrance	traffic centre Vlissingen VHF 14 bony 42 bony 45 M017	traffic centre Terneuzen VHF 03 bony 22 bony jety 42A bony 45 M017	traffic centre Haasweert VHF 65	radar Vlissingen VHF 21 without port entrance	traffic centre Vlissingen VHF 14 bony 42 bony 45 M017	traffic centre Terneuzen VHF 03 bony 22 bony jety 42A bony 45 M017	traffic centre Haasweert VHF 65	EXTRA COMPULSORY REPORTING FOR ALL COMMERCIAL SHIPPING Before leaving the harbour, before heaving up anchor or before departure from a quay. Before entering the fairway.
radar Vlissingen VHF 21 without port entrance	traffic centre Vlissingen VHF 14 bony 42 bony 45 M017	traffic centre Terneuzen VHF 03 bony 22 bony jety 42A bony 45 M017	traffic centre Haasweert VHF 65	radar Vlissingen VHF 21 without port entrance	traffic centre Vlissingen VHF 14 bony 42 bony 45 M017	traffic centre Terneuzen VHF 03 bony 22 bony jety 42A bony 45 M017	traffic centre Haasweert VHF 65	EXTRA COMPULSORY REPORTING FOR ALL COMMERCIAL SHIPPING Before entering the fairway or before crossing the fairway. When passing Vlissingen Roads. Look traffic.

radar control Zeebrugge VHF 19	harbour master service Terneuzen VHF 11 h+0'	harbour master service Terneuzen VHF 11	harbour master service Terneuzen VHF 11	radar control Zeebrugge VHF 19	harbour master service Terneuzen VHF 11 h+0'	harbour master service Terneuzen VHF 11	EXTRA COMPULSORY REPORTING FOR ALL COMMERCIAL SHIPPING When entering or leaving the port of Zeebrugge. After mooring or before departure.
radar control Zeebrugge VHF 19	harbour master service Terneuzen VHF 11 h+0'	harbour master service Terneuzen VHF 11	harbour master service Terneuzen VHF 11	radar control Zeebrugge VHF 19	harbour master service Terneuzen VHF 11 h+0'	harbour master service Terneuzen VHF 11	TRAFFIC CHANNEL (compulsory listening watch) Traffic arrangements ship-ship. Traffic information - general. Compulsory reporting. On leaving port/berth and on passage bridges.

LEGEND

- Dutch Schelde Shipping Information Report with general traffic information. h+10' Every hour + minutes.
- English Schelde shipping information with general traffic information. Every hour + minutes. Follows directly after the Dutch message on a different channel is indicated.

Differentiate between:

- VHF channel 12
 - TRAFFIC CHANNEL
 - VHF channel 85
 - PORT OPERATIONS CHANNEL
 - VHF channel 81
- channel for non-nautical information between barges
- TERMINAL CHANNEL BARGES

EXTRA REPORTING FOR SEAGOING VESSELS

before leaving
or at terminal

on VHF channel 85

Message:

Name of the vessel

Position

Draught

Destination

Relevant manoeuvres

Inbound to Antwerpen:

at Buoy 35

at Buoy 65

Zuid Saeflinge

on VHF channel 12

Message:

Name of the vessel

Position



Above buoy 100, there is:

- compulsory listening watch on the ship-ship channel VHF 10
- no active monitoring by the VTS Centre
- no radar coverage at the VTS Centre
- for seagoing vessels: compulsory reporting to other traffic ingoing at buoy 116, outgoing at buoy 111 on channel VHF 10

ship-ship TRAFFIC CHANNEL (compulsory listening watch)

VHF 10
Traffic arrangements ship-ship
Traffic information - general
Compulsory reporting

TRAFFIC CHANNEL (compulsory listening watch)

Traffic arrangements ship-ship
Traffic information - general
Compulsory reporting
Before entering the fairway or before crossing the fairway.

traffic centre Zandvliet

VHF 12
h+30'

TRAFFIC CHANNEL (compulsory listening watch)

Traffic arrangements ship-ship
Traffic information - general
Compulsory reporting
Before entering the fairway or before crossing the fairway.

VHF 19

radar Waarde

radar Saeflinge

radar Zandvliet

radar Kruisschans

VHF 21

VHF 04

VHF 66

VHF 19

VHF 21

VHF 04

VHF 66

PORT OPERATIONS CHANNEL

Information exchange on the initiative of the VTS centre or the vessel / Lock information
Moored at jetties, berths and locks

VHF 85

TERMINAL CHANNEL BARGES

Non-nautical information between barges concerning loading/discharging sequences, berthing positions, etc...
This channel is not monitored by the VTS centre.

terminal channel barges

VHF 81

The “Politie- en scheepvaartreglement voor de territoriale zee, kusthavens en stranden” or *freely translated* as “Police and shipping regulations for the territorial sea, the coastal ports and beaches define amongst others that:

Section 2, ART 3.3: “Bovenmaats zeeschip: zeeschip dat wegens zijn lengte of zijn diepgang ten opzichte van de toestand van de vaargeul, door de Dienst van het Loodswezen als dusdanig wordt aangemerkt overeenkomstig de normen door die dienst bepaald en officieel meegedeeld aan zeevarenden (bericht aan zeevarenden nr 1 - afgekort B.a.Z. nr 1);

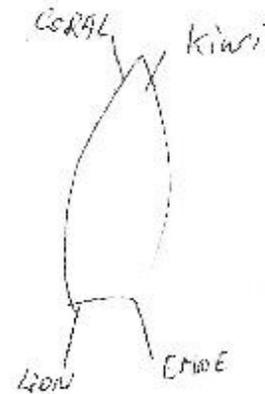
Free translation: “Oversized sea going vessel: a sea going vessel, which because of its length or its draught in comparison to the situation of the fairway, is marked as such by the Pilot services in accordance with the standards set by the Pilot Services and officially communicated to mariners (notices to mariners n°1 or in short B.a.z. nr 1)

Artikel 13 § 2. Wanneer de loods het heeft aangewezen, voert elk varend bovenmaats zeeschip in de havens van de Belgische kust, op de reden van en in de toegangseulen tot die havens behalve de lichten die voor varende werktuiglijk voortbewogen vaartuigen zijn voorgeschreven, drie rondom zichtbare rode lichten loodrecht ten opzichte van elkaar geplaatst en een dagmerk bestaande uit een cilinder, daar waar deze het best kunnen worden gezien.

Free translation: “Upon instruction of the Pilot, any commercial oversized vessel under way, at the harbour roads, the ports along the Belgian Coast and in the harbour fairways, shall exhibit besides the lights prescribed for power driven vessels under way, where they can best be seen three all-round red lights in a vertical line, or a cylinder.

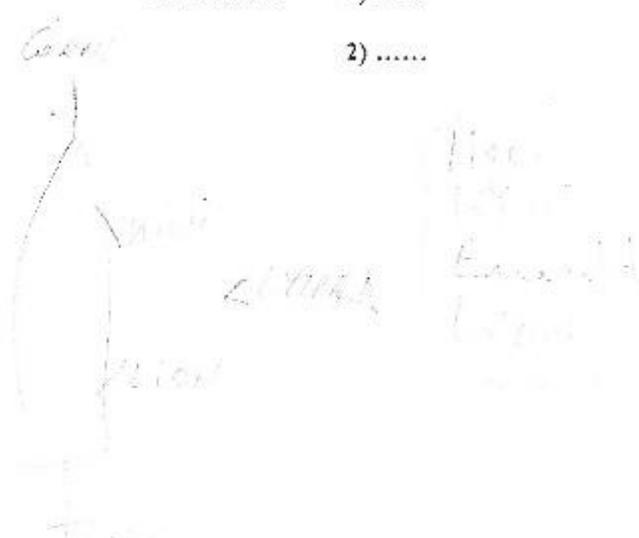
VAARSCHEMA IN

LNG TANKER *Al Oraiq*
 DATUM: *06.10.15*



Bemand bij 'A Z' (alfa zulu)	<i>0251</i>u
Passage boei 'A 1' (alfa one)	<i>0340</i>u
Passage boei 'S 3' (sierra three)	<i>0405</i>u
Passage boei 'S Z' (sierra zulu)	<i>0415</i>u
Passage boei 'Z' (zulu)	<i>0430</i>u
Passage kop NW-dam	<i>0440</i>u
Terminal	<i>0545</i>u

LOODSEN: 1)
 2)



Title RESOLUTIONS / Assembly / 23rd Session / Res.A.960(23)
Note Revokes Res.A.485(12)

RESOLUTION A.960(23)

Adopted 5 December 2003

RECOMMENDATIONS ON TRAINING AND CERTIFICATION AND ON OPERATIONAL PROCEDURES FOR MARITIME PILOTS OTHER THAN DEEP-SEA PILOTS

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 and the prevention and control of marine pollution from ships,

RECOGNIZING that maritime Pilots play an important role in promoting maritime safety and protecting the marine environment,

BELIEVING that maintaining a proper working relationship between the Pilot, the master and, as appropriate, the officer in charge of a navigational watch is important in ensuring the safety of shipping,

NOTING that, since each Pilotage area needs highly specialized experience and local knowledge on the part of the Pilot, IMO does not intend to become involved with either the certification or the licensing of Pilots or with the systems of Pilotage practised in various States,

RECOGNIZING ALSO the high standards of Pilotage services already established in many States and the need for these standards to be maintained,

CONSIDERING that in those States that are developing Pilotage services, the establishment of practical minimum training standards, certification requirements and operational procedures to provide effective co-ordination between Pilots and ship personnel, taking due account of ship bridge procedures and ship equipment, would contribute to maritime safety,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its seventy-fifth session,

1. ADOPTS:

- (a) the Recommendation on Training and Certification of Maritime Pilots other than Deep- Sea Pilots set out in Annex 1 to the present resolution;
- (b) the Recommendation on Operational Procedures for Maritime Pilots other than Deep-Sea Pilots set out in Annex 2 to the present resolution;

2. URGES Governments to give effect to these Recommendations as soon as possible;
3. REQUESTS the Maritime Safety Committee to keep the Recommendations under review and to amend them as necessary in the light of experience gained from their implementation;
4. REVOKES resolution A.485(XII).

ANNEX 1

RECOMMENDATION ON TRAINING AND CERTIFICATION OF MARITIME PILOTS OTHER THAN DEEP-SEA PILOTS

1 Scope

1.1 It is recognised that Pilotage requires specialised knowledge and experience of a specific area and that States with many diverse waterways and ports have found it appropriate to administer Pilotage on a regional or local basis.

1.2 The maritime Pilots referred to in this Recommendation do not include deep-Sea Pilots or shipmasters or crew who are certificated or licensed to carry out Pilotage duties in particular areas.

1.3 Governments should encourage the establishment or maintenance of competent Pilotage authorities to administer safe and efficient Pilotage systems.

2 Competent Pilotage authority

2.1 Competent Pilotage authority means either the national or regional Governments or local groups or organizations that by law or tradition, administer or provide a Pilotage system. Governments should inform competent Pilotage authorities of the provisions of this document and encourage their implementation.

2.2 The assessment of the experience, qualifications and suitability of an applicant for certification or licensing, as a Pilot, is the responsibility of each competent Pilotage authority.

2.3 The competent Pilotage authority in co-operation with the national and local Pilots' associations should:

.1 establish the entry requirements and develop the standards for obtaining a certificate or licence in order to perform Pilotage services within the area under its jurisdiction;

.2 enforce the maintenance of developed standards;

.3 specify whatever prerequisites, experience or examinations are necessary to ensure that applicants for certification or licensing as Pilots are properly trained and qualified; and

.4 arrange that reports on investigations of incidents involving Pilotage are taken into account in maritime Pilots' training programmes.

3 Pilotage certificate or licence

Every Pilot should hold an appropriate Pilotage certificate or licence issued by the competent Pilotage authority. In addition to stating the Pilotage area for which it is issued, the certificate or licence should also state any requirements or local limitations that the competent Pilotage authority may specify such as maximum size, draught or tonnage of vessels that the holder is qualified to Pilot.

4 Medical fitness

4.1 Each Pilot should satisfy the competent Pilotage authority that his or her medical fitness, particularly regarding eyesight, hearing and physical fitness meets the standards required for certification of masters and officers in charge of a navigational watch under the international Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended, or such other standards as the competent Pilotage authority considers appropriate.

4.2 If a Pilot has experienced a serious injury or illness, there should be a re-evaluation of his or her medical fitness prior to return to duty.

5 Training and certification or licensing standards

5.1 The competent Pilotage authority is responsible for training and certification or licensing standards. The standards should be sufficient to enable Pilots to carry out their duties safely and efficiently.

5.2 Standards for initial training should be designed to develop in the trainee Pilot the skills and knowledge determined by the competent Pilotage authority to be necessary for obtaining a Pilot certificate or license. The training should include practical experience gained under the close supervision of experienced Pilots. This practical experience gained on vessels under actual Piloting conditions may be supplemented by simulation, both computer and manned model, classroom instruction, or other training methods.

5.3 Every Pilot should be trained in bridge resource management with an emphasis on the exchange of information that is essential to a safe transit. This training should include a requirement for the Pilot to assess particular situations and to conduct an exchange of information with the master and/or officer in charge of navigational watch. Maintaining an effective working relationship between the Pilot and the bridge team in both routine and emergency conditions should be covered in training. Emergency conditions should include loss of steering, loss of propulsion, and failures of radar, vital systems and automation, in a narrow channel or fairway.

5.4 Initial and continuing training in the master-Pilot information exchange should also cover:

- .1 regulatory requirements governing the exchange;
- .2 recognition of language, cultural, psychological and physiological impediments to effective communication and interaction and techniques for overcoming these impediments; and
- .3 best practices in the specific Pilotage area.

5.5 Competent Pilotage authorities should be encouraged to provide updating and refresher training conducted for certified or licensed Pilots to ensure the continuation of their proficiency and updating of their knowledge, and could include the following;

- .1 courses to improve proficiency in the English language where necessary;
- .2 sessions to enhance the ability to communicate with local authorities and other vessels in the area;
- .3 meetings with local authorities and other responsible agencies to envisage emergency situations and contingency plans;
- .4 refresher or renewal courses in bridge resource management for Pilots to facilitate communication and information exchange between the Pilot and the master and to increase efficiency on the bridge.
- .5 simulation exercises, which may include radar training and emergency shiphandling procedures;
- .6 courses in shiphandling training centres using manned models;
- .7 seminars on new bridge equipment with special regard to navigation aids;
- .8 sessions to discuss relevant issues connected with the Pilotage service including laws, rules and regulations particular to the Pilotage area;
- .9 personal safety training;
- .10 techniques for personal survival at sea; and
- .11 emergency first aid, including cardio-pulmonary resuscitation (CPR) and hypothermia remediation.

6 Continued proficiency

6.1 In order to ensure the continued proficiency of Pilots and updating of their knowledge, the competent Pilotage authority should satisfy itself, at regular intervals not exceeding five years, that all Pilots under its jurisdiction:

- .1 continue to possess recent navigational knowledge of the local area to which the certificate of licence applies;
- .2 continue to meet the medical fitness standards of paragraph 4 above; and
- .3 possess knowledge of the current international, national and local laws, regulations and other requirements and provisions relevant to the Pilotage area and the Pilots' duties.

6.2 Possession of knowledge required by subparagraphs 6.1.1 and 6.1.3 may be proved by an appropriate method such as personal service records, completion of continuing professional development courses or by an examination.

6.3 Where a Pilot in cases of absence from duty, for whatever reason, is lacking recent experience in the Pilotage area, the competent Pilotage authority should satisfy itself that the Pilot regains familiarity with the area on his or her return to duty.

7 Syllabus for Pilotage certification or licensing

7.1 In the syllabus, area means the waters for which the applicant is to be certified or

licensed. Each applicant for a Pilot certificate or license should demonstrate that he or she has necessary knowledge of the following:

- .1 limits of local Pilotage areas;
- .2 International Regulations for Preventing Collisions at Sea, 1972 as amended, and also such other national and local navigational safety and pollution prevention rules as may apply in the area;
- .3 system of buoyage in the area;
- .4 characteristics of the lights and their angles of visibility and the fog signals, racons and radio beacons and other electronic aids in use in the area;
- .5 names, positions and characteristics of the light vessels, buoys, beacons, structures and other marks in the area;
- .6 names and characteristics of the channels, shoals, headlands and points in the area;
- .7 bridge and similar obstruction limitations including air draughts;
- .8 depths of water throughout the area, including tidal effects and similar factors;
- .9 general set, rate, rise and duration of the tides and use of the tide tables and real-time and current data systems, if available, for the area;
- .10 proper courses and distances in the area;
- .11 anchorages in the area;
- .12 shiphandling for Piloting, anchoring, berthing and unberthing, manoeuvring with and without tugs, and emergency situations;
- .13 communications and availability of navigational information;
- .14 systems of radio navigational warning broadcasts in the area and the type of information likely to be included;
- .15 traffic separation schemes, vessel traffic services and similar vessel management systems in the area;
- .16 bridge equipment and navigational aids;
- .17 use of radar and other electronic devices; their limitations and capabilities as navigation and collision avoidance aids;
- .18 manoeuvring behaviour of the types of ships expected to be Piloted and the limitations imposed by particular propulsion and steering systems;
- .19 factors affecting ship performance such as wind, current, tide, channel configuration, water depth, bottom, bank and ship interaction including squat;
- .20 use and limitation of various types of tugs;
- .21 the English language to a standard adequate to enable the Pilot to express communications clearly;
- .22 IMO Standard Marine Communication Phrases;
- .23 IMO Code for the investigation of marine casualties and

- incidents; .24 Master-Pilot Relationship, Pilot Card, operational procedures;
- .25 pollution prevention;
- .26 emergency and contingency plans for the area;
- .27 safe embarking and disembarking procedures; and
- .28 any other relevant knowledge considered necessary.

ANNEX 2

RECOMMENDATION ON OPERATIONAL PROCEDURES FOR MARITIME PILOTS OTHER THAN DEEP-SEA PILOTS

1 General

Efficient Pilotage depends, among other things, upon the effectiveness of the communications and information exchanges between the Pilot, the master and the bridge personnel and upon the mutual understanding each has for the functions and duties of the other. Establishment of effective co-ordination between the Pilot, the master and the bridge personnel, taking due account of the ship's systems and equipment available to the Pilot, will aid a safe and expeditious passage.

2 Duties of master, bridge officers and Pilot

2.1 Despite the duties and obligations of a Pilot, the Pilot's presence on board does not relieve the master or officer in charge of the navigational watch from their duties and obligations for the safety of the ship. It is important that, upon the Pilot boarding the ship and before the Pilotage commences, the Pilot, the master and the bridge personnel are aware of their respective roles in the safe passage of the ship.

2.2 The master, bridge officers and Pilot share a responsibility for good communications and understanding of each other's role for the safe conduct of the vessel in Pilotage waters.

2.3 Masters and bridge officers have a duty to support the Pilot and to ensure that his/her actions are monitored at all times.

3 Pilot boarding point

3.1 The appropriate competent Pilotage authority* should establish and promulgate the location of safe Pilot embarkation and disembarkation points.

3.2 The Pilot boarding point should be at a sufficient distance from the commencement of the act of Pilotage to allow safe boarding conditions.

3.3 The Pilot boarding point should also be situated at a place allowing for sufficient time and sea room to meet the requirements of the master-Pilot information exchange (see paragraphs 5.1 to 5.6).

4 Procedures for requesting Pilot

4.1 The appropriate competent Pilotage authority should establish, promulgate and maintain procedures for requesting a Pilot for an inbound or outbound ship, or for shifting a ship.

4.2 As human resources and technical means have to be planned well in advance, the operation of an efficient Pilotage service requires information on the Estimated Time of Arrival (ETA) or Departure (ETD) to be furnished by the ship as early as possible with frequent updates where possible.

* "Competent Pilotage authority" has the same meaning as in annex 1.

4.3 Communication by VHF or other dedicated means should be established as soon as possible to enable the master to confirm the ship's ETA and the Pilot Station to furnish relevant information regarding Pilot boarding.

4.4 The initial ETA message to the Pilot Station should include all the information required by local regulations, including:

- .1 ships name, call sign, ships agent;
- .2 ship's characteristics: length, beam, draught, air draught if relevant, speed, thruster (s);
- .3 date and time expected at the Pilot boarding point;
- .4 destination, berth (if required, side alongside); and
- .5 other relevant requirements and information.

5 Master -Pilot information exchange

5.1 The master and the Pilot should exchange information regarding navigational procedures, local conditions and rules and the ship's characteristics. This information exchange should be a continuous process that generally continues for the duration of the Pilotage.

5.2 Each Pilotage assignment should begin with an information exchange between the Pilot and the master. The amount and subject matter of the information to be exchanged should be determined by the specific navigation demands of the Pilotage operation. Additional information can be exchanged as the operation proceeds.

5.3 Each competent Pilotage authority should develop a standard exchange of information practice, taking into account regulatory requirements and best practices in the Pilotage area. Pilots should consider using an information card, form, checklist or other memory aid to ensure that essential exchange items are covered. If an information card or standard form is used by Pilots locally regarding the anticipated passage, the layout of such a card or form should be easy to understand. The card or form should supplement and assist, not substitute for, the verbal information exchange.

5.4 This exchange of information should include at least:

- .1 presentation of a completed standard Pilot Card. In addition, information should be provided on rate of turn at different speeds, turning circles, stopping distances and, if available, other appropriate data;

.2 general agreement on plans and procedures, including contingency plans, for the anticipated passage;

.3 discussion of any special conditions such as weather, depth of water, tidal currents and marine traffic that may be expected during the passage;

.4 discussion of any unusual ship-handling characteristics, machinery difficulties, navigational equipment problems or crew limitations that could affect the operation, handling or safe manoeuvring of the ship;

.5 information on berthing arrangements; use, characteristics and number of tugs; mooring boats and other external facilities;

.6 information on mooring arrangements; and

.7 confirmation of the language to be used on the bridge and with external parties.

5.5 It should be clearly understood that any passage plan is a basic indication of preferred intention and both the Pilot and the master should be prepared to depart from it when circumstances so dictate.

5.6 Pilots and competent Pilotage authorities should be aware of the voyage planning responsibilities of masters under applicable IMO instruments*.

6 Communications language

6.1 Pilots should be familiar with the IMO Standard Marine Communication Phrases and use them in appropriate situations during radiocommunications as well as during verbal exchanges on the bridge. This will enable the master and officer in charge of the navigational watch to better understand the communications and their intent.

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.

7 Reporting of incidents and accidents

When performing Pilotage duties, the Pilot should report or cause to be reported to the appropriate authority, anything observed that may affect safety of navigation or pollution prevention. In particular, the Pilot should report, as soon as practicable, any accident that may have occurred to the Piloted ship and any irregularities with navigational lights, shapes and signals.

* Refer to SOLAS regulation V/34 and resolution A.893(21) on Guidelines for voyage planning and STCW Code, Section A-VIII/2, Part 2

8 Refusal of Pilotage services

The Pilot should have the right to refuse Pilotage when the ship to be Piloted poses a danger to the safety of navigation or to the environment. Any such refusal, together

with the reason, should be immediately reported to the appropriate authority for action as appropriate.

9 Fitness for duty

Pilots should be adequately rested and mentally alert in order to provide undivided attention to Pilotage duties for the duration of the passage.

Title	SOLAS 2012 Amend / Chapter V / Reg. 14
Effective Date	1/01/2014
For Ships Constructed	On or after 1/01/2014
Retroactive	Retroactive Requirement for Existing Ships.

Regulation 14

Ships' manning

1 Contracting Governments undertake, each for its national ships, to maintain, or, if it is necessary, to adopt, measures for the purpose of ensuring that, from the point of view of safety of life at sea, all ships shall be sufficiently and efficiently manned.*

* Refer to the Principles of Safe Manning adopted by the Organization by resolution A.1047 (27).

2 For every ship to which chapter I applies, the Administration shall: (Replaced by Res.MSC.325(90))

.1 establish appropriate minimum safe manning following a transparent procedure, taking into account the relevant guidance adopted by the Organization*; and

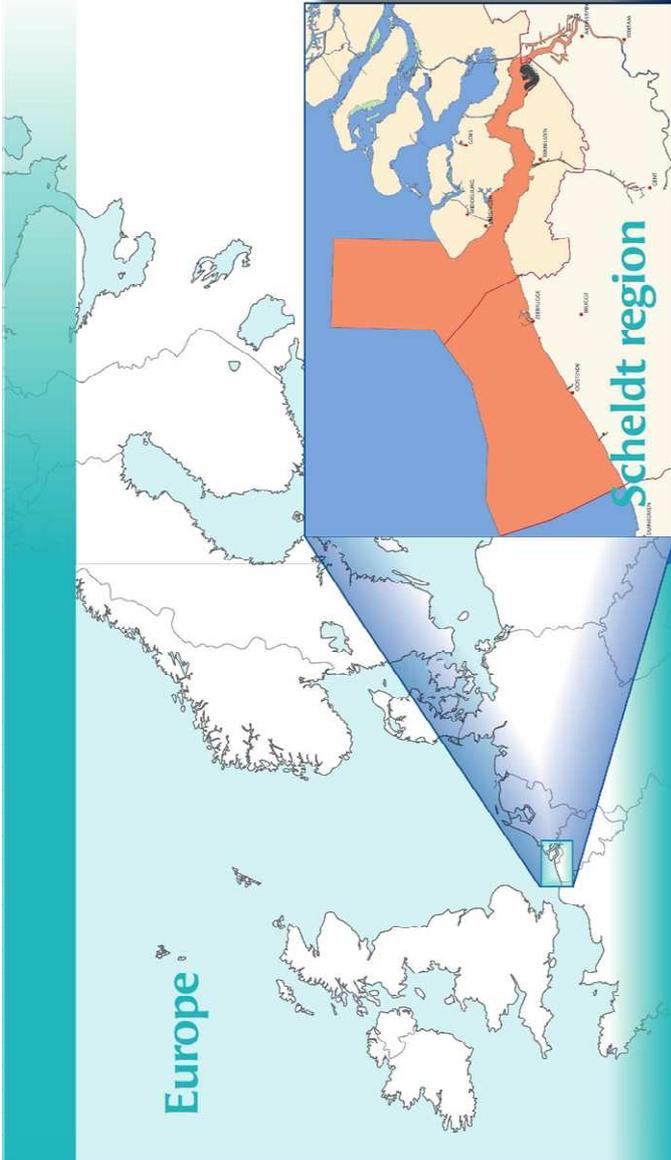
* Refer to the Principles of minimum safe manning, adopted by the Organization by resolution A.1047(27).

.2 issue an appropriate minimum safe manning document or equivalent as evidence of the minimum safe manning considered necessary to comply with the provisions of paragraph 1.

3 On all ships, to ensure effective crew performance in safety matters, a working language shall be established and recorded in the ship's log-book. The company, as defined in regulation IX/1, or the master, as appropriate, shall determine the appropriate working language. Each seafarer shall be required to understand and, where appropriate, give orders and instructions and to report back in that language. If the working language is not an official language of the State whose flag the ship is entitled to fly, all plans and lists required to be posted shall include a translation into the working language.

4 On ships to which chapter I 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 communication speak a common language other than English.

* The IMO Standard Marine Communications Phrases (resolution A.918(22))as amended, may be used in this respect.



Europe

Scheldt region



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Created by
 Eva Descamps (Maritieme Dienstverlening en Kust)
 Ben Sinke (Rijkswaterstaat)
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 For further information, visit www.vts-scheldt.net

In the area managed by the Common Nautical Authority, it is compulsory to use either Dutch or English in marine communication. Failure to do so is subject to punishment. In the period July–December 2011, crews of ships that fail to comply with this obligation will be sternly reminded of the official-language obligation. As of 1 January 2012, failure to fulfil this obligation will result in prosecution.





Official language for the Scheldt region

Dutch or English compulsory on the Western Scheldt

The dangers on the Western Scheldt are posed by the tidal variations, the dangerous currents and the numerous, partially uncovered sand flats. Furthermore, the river is used by a wide variety of inland and seagoing vessels. Seagoing vessels make up the majority of regular users of the waterway. However, for many inland captains, the river is unknown territory.

Furthermore, they are not always used to sharing the water with large seagoing vessels. Dangerous situations often occur because the crews of different ships do not understand each other properly. This also hampers communication with waterway traffic controllers. As a result, the Committee for Nautical Safety in Scheldemond [Commissie Nautische Veiligheid Scheldemonden] conducted research into the cause of ship accidents. This research showed that poor communication played a role in a large number of accidents.

The Western Scheldt is one of the busiest waterways in the world. It is also one of the most dangerous rivers in the world. For this reason, clear communication between all parties involved is of essential importance to safety on the river. It therefore helps to have a common language.

Ever since the introduction of the Scheldt Radar Chain in 1991, Dutch and English have been the official languages used for marine communication in the Scheldt region. As of July 2011, a collective announcement was made by the Common Nautical Authority [Gemeenschappelijke Nautische Autoriteit] to explicitly establish Dutch and English as the official languages for communication between vessels in the area or communication with waterway traffic controllers. This means that it is mandatory to use Dutch or English in such communications.

"Pilots are compulsory for seagoing vessels, but this is not the case for inland vessels. However, they can hire mud pilots for their ship. Mud pilots are active or retired pilots who know the waters well and can use their knowledge and experience to help inland ships to navigate the Western Scheldt. This is a good solution if the crew is not fluent in either of the official languages." **Hans Witte, head of waterway traffic control**

"Nautical terms such as port and starboard should be familiar to all ship's captains in English, and this should also be so for the English names of the colours of the buoys along the waterway. All too often, this creates problems. Ease of communication is vitally important to preventing accidents, especially with captains who are not familiar with the Western Scheldt." **Peter Caspers, waterway traffic controller, Hansweert**

"If you enter waterways that are being used by seagoing vessels, then you can get into difficulty if you do not speak English. Sailing in the Western Scheldt without making the necessary preparations puts both your family and your livelihood in jeopardy." **Johnny van IJk, inland captain, Terneuzen**

"Small inland ships must cross the waterway to get to Terneuzen. Once, the waterway traffic controller instructed an inland ship to wait for two passing seagoing vessels to pass, but this instruction was not heeded by the inland ship. Thinking on his feet, the waterway traffic controller was thankfully able to warn the inland ship just in time. However, it nearly went horribly wrong." **Adrie Kosten, mobile waterway traffic controller and manager, Directorate-General for Public Works and Water Management [Rijkswaterstaat]**