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“The sole objective of the investigation of an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012 shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It shall not be the purpose of an such investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame.”

**NOTE**

This report is not written with litigation in mind and, pursuant to Regulation 14(14) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012, shall be inadmissible in any judicial proceedings whose purpose, or one of whose purposes is to attribute or apportion liability or blame.

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## Collision between MV *Orakai* and FV *Margriet*

### North Hinder Junction, North Sea

**21 December 2014**

## SUMMARY

At 0533<sup>1</sup> on 21 December 2014, the Gibraltar registered chemical tanker *Orakai* and the UK registered beam trawler *Margriet* collided in the North Sea, 45 nautical miles (nm) west of Ijmuiden. *Margriet* was seriously damaged and was escorted into Ijmuiden. Approximately 8 tons of diesel oil escaped from a damaged fuel tank. *Orakai* sustained minor damage and resumed its passage without assistance. There were no injuries.

The MAIB investigation identified that *Margriet*'s wheelhouse watchkeeper was not keeping an effective lookout. He had not seen the tanker, which was only 1 nautical mile away when he altered course towards it. The investigation also identified that *Orakai*'s officer of the watch had gone to the cargo control room 22 minutes before the collision and the bridge lookout was unable to alert him to the trawler's proximity. It is unlikely that the collision would have occurred had *Orakai*'s officer of the watch remained on the bridge.

Since the accident, South End Tanker Management B.V., *Orakai*'s ship manager, has taken action to highlight the circumstances of this accident to its crews and to improve the effectiveness of its safety management system.

Recommendations have been made to South End Tanker Management B.V., the manager of *Orakai* and to Kafish B.V., the owner of *Margriet*, which are aimed at raising the standard of navigational watchkeeping practices on board their vessels.

<sup>1</sup> All times are UTC (universal time co-ordinated)

Photograph courtesy of Willem Oldenburg/www.shipspotting.com



*Margriet*

Photograph courtesy of South End Tanker Management



*Orakai*

## FACTUAL INFORMATION

### Narrative

At 0500 on 21 December 2014, *Orakai* was on passage from Sillimae, Estonia to the Royal Portbury docks, Bristol, UK carrying 6128 tons of liquid ammonia nitrate. The vessel was transiting the North Hinder Junction (**Figure 1**) on an autopilot-controlled heading of 220° towards the North Hinder South traffic separation scheme (TSS) at a speed of 10.5 knots<sup>2</sup> (kts). The officer of the watch (OOW) was the chief officer. He was accompanied on the bridge by an ordinary seaman (OS) lookout. The vessel was heading into gale force winds and was occasionally slamming into the waves. The visibility was approximately 8nm. *Orakai*'s primary means of navigation was an Electronic Chart Display and Information System (ECDIS).

Six miles ahead of *Orakai* was the UK registered beam trawler *Margriet* (**Figure 2**). The trawler was towing its fishing gear on a similar heading to the chemical tanker at a speed of approximately 5kts. By 0504, the chief officer and the OS had positively identified the fishing vessel using the automatic identification system (AIS). They had also established that the fishing vessel's closest point of approach (CPA) was in excess of 1nm on the tanker's port side.

*Margriet* was displaying the lights of a vessel engaged in trawling in accordance with the requirements of Rule 26(b) of the collision regulations<sup>3</sup>. The trawler's mate had just taken the navigational watch from the skipper who remained at the aft end of the wheelhouse to complete the electronic fishing logbook. On the skipper's instruction, the mate was following tracks displayed on the vessel's electronic chart plotter.

At 0511, *Orakai*'s chief officer informed the lookout that he was going to the cargo control room (CCR) to find a plastic cable tie in order to effect a temporary repair to the dimmer switch for the chart table light. The chief officer instructed the OS to telephone the CCR if he had any concerns. He then left the bridge.

At about the same time, *Margriet*'s mate adjusted the heading set on the trawler's autopilot to 333°. *Margriet*'s course alteration was seen by *Orakai*'s OS, and at 0514 he selected the fishing vessel's radar target on the automatic radar and plotting aid (ARPA). He also switched the target's vector from true motion to indicating relative motion. By now, *Margriet* was at a range of 4.3nm and its CPA was 0.9nm on the tanker's starboard side (**Figure 3**).

At 0520, *Margriet*'s mate adjusted the heading set on the autopilot to north. Three minutes later, the ARPA collision alarm on *Orakai*'s bridge sounded. The distance between the vessels was 2.4nm and the CPA of the fishing vessel had reduced to 0.5nm in 9.5 minutes (**Figure 4**). In response to the collision alarm, the OS adjusted the tanker's heading 5° to port.

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<sup>2</sup> All speeds in this report are speed over the ground (SOG), unless otherwise stated.

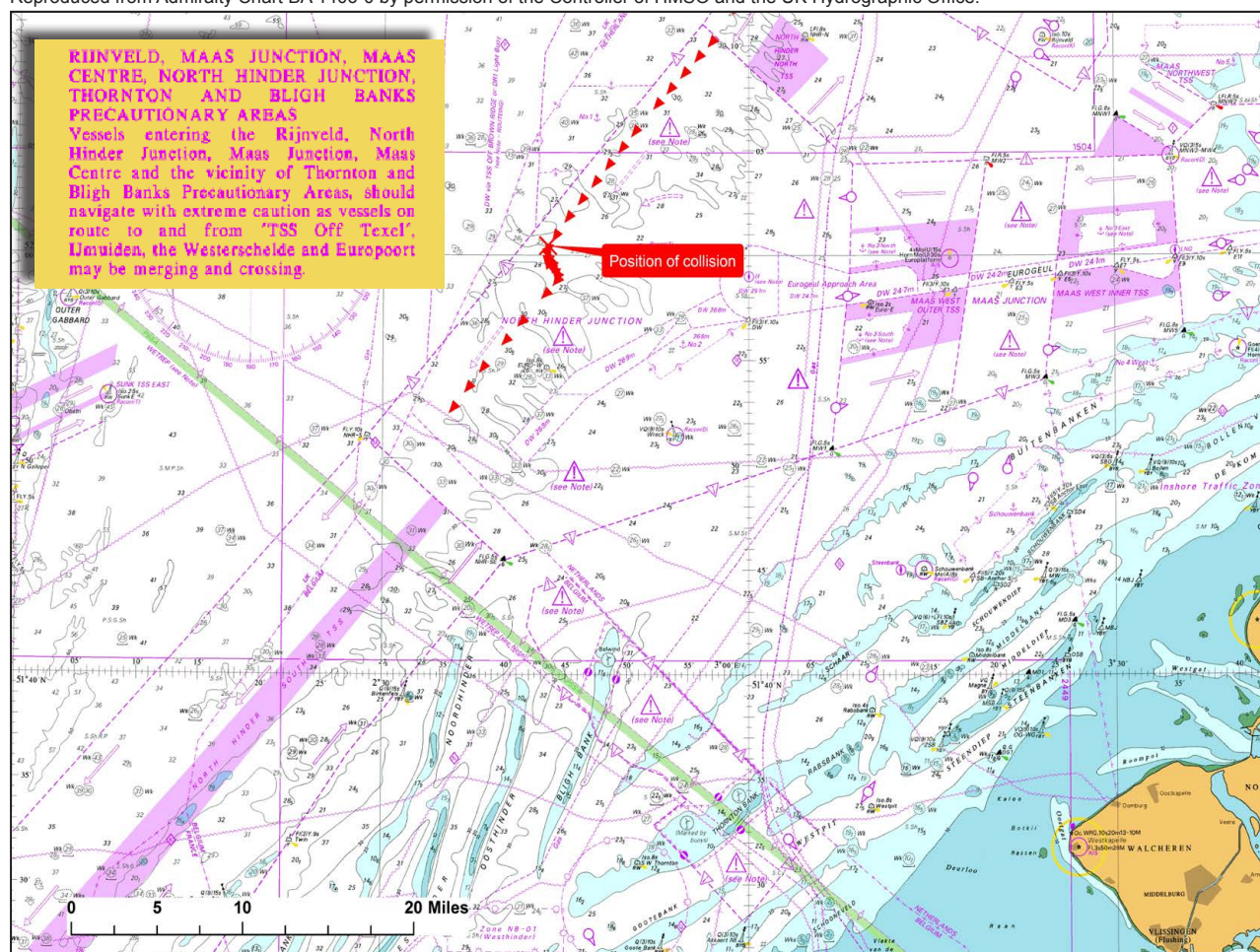
<sup>3</sup> Rule 26(b) of the International Regulations for Preventing Collisions at Sea 1972, as amended (COLREGS) requires:

A vessel when engaged in trawling, by which is meant the dragging through the water of a dredge net or other apparatus used as a fishing appliance, shall exhibit:

(i) two all-round lights in a vertical line, the upper being green and the lower white, or a shape consisting of two cones with their apexes together in a vertical line one above the other;

(ii) a masthead light abaft of and higher than the all-round green light; a vessel of less than 50 metres in length shall not be obliged to exhibit such a light but may do so;

(iii) when making way through the water, in addition to the lights prescribed in this paragraph, sidelights and a sternlight.



**Figure 1:** Extract of Chart BA 1406-0 showing *Orakai*'s track and position of accident (with precautionary note)

At 0528, the distance between the vessels was 1nm and the time to their CPA (TCPA) of 0.5nm was 4 minutes. Increasingly concerned, the OS called the CCR using the ship's internal telephone system, but there was no reply. It is reported that the chief officer was unable to find a cable tie in the CCR and so was searching other compartments.

Seconds later, *Margriet* reached the end of the track displayed on the electronic chart plotter. The mate adjusted the fishing vessel's heading further to starboard. His intention was to gradually turn the trawler's heading in order to follow the track on the plotter towards the south-east. The trawler was now heading 025° and the CPA with *Orakai* was of 0.37nm in 3.5 minutes' time (**Figure 5**).

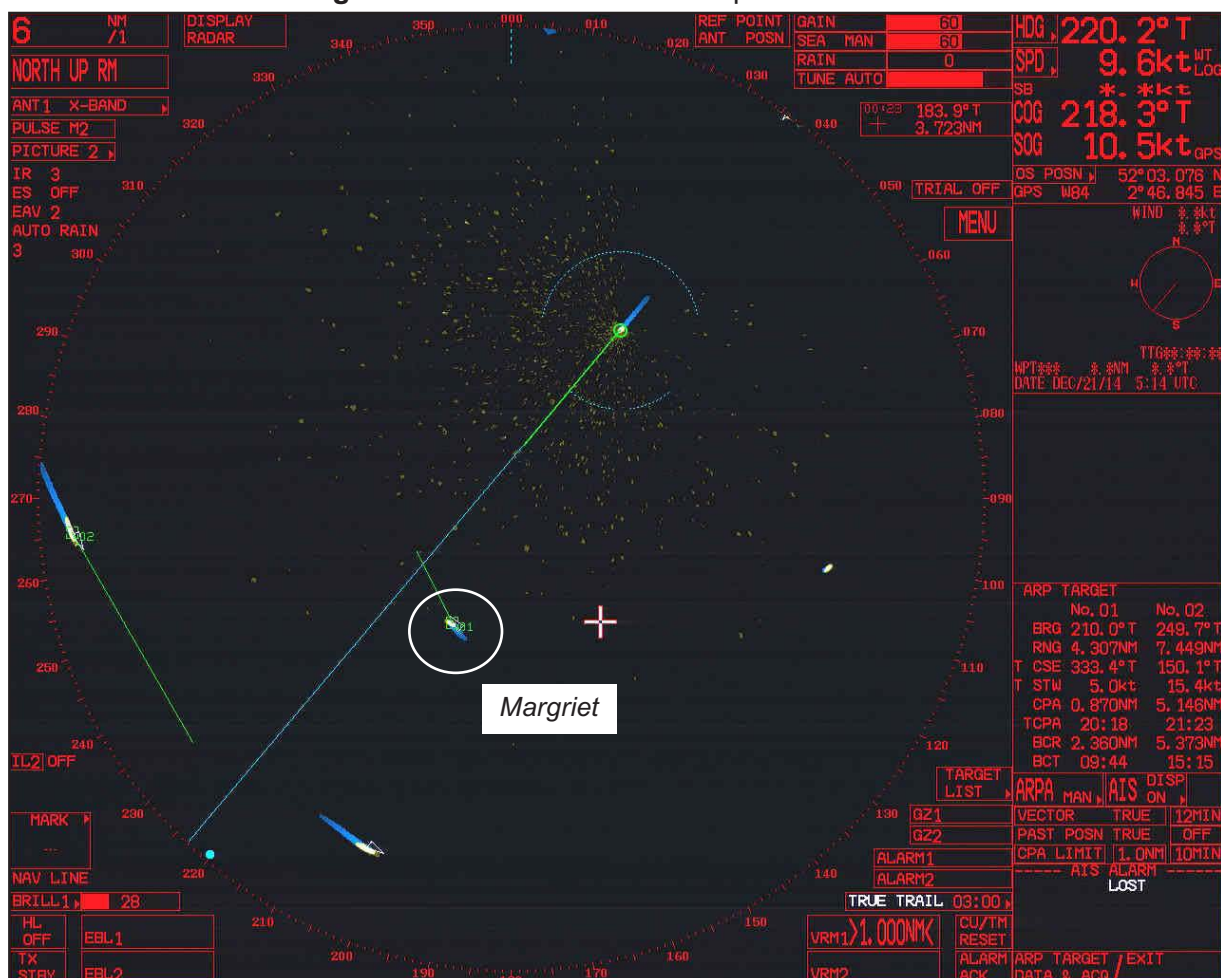
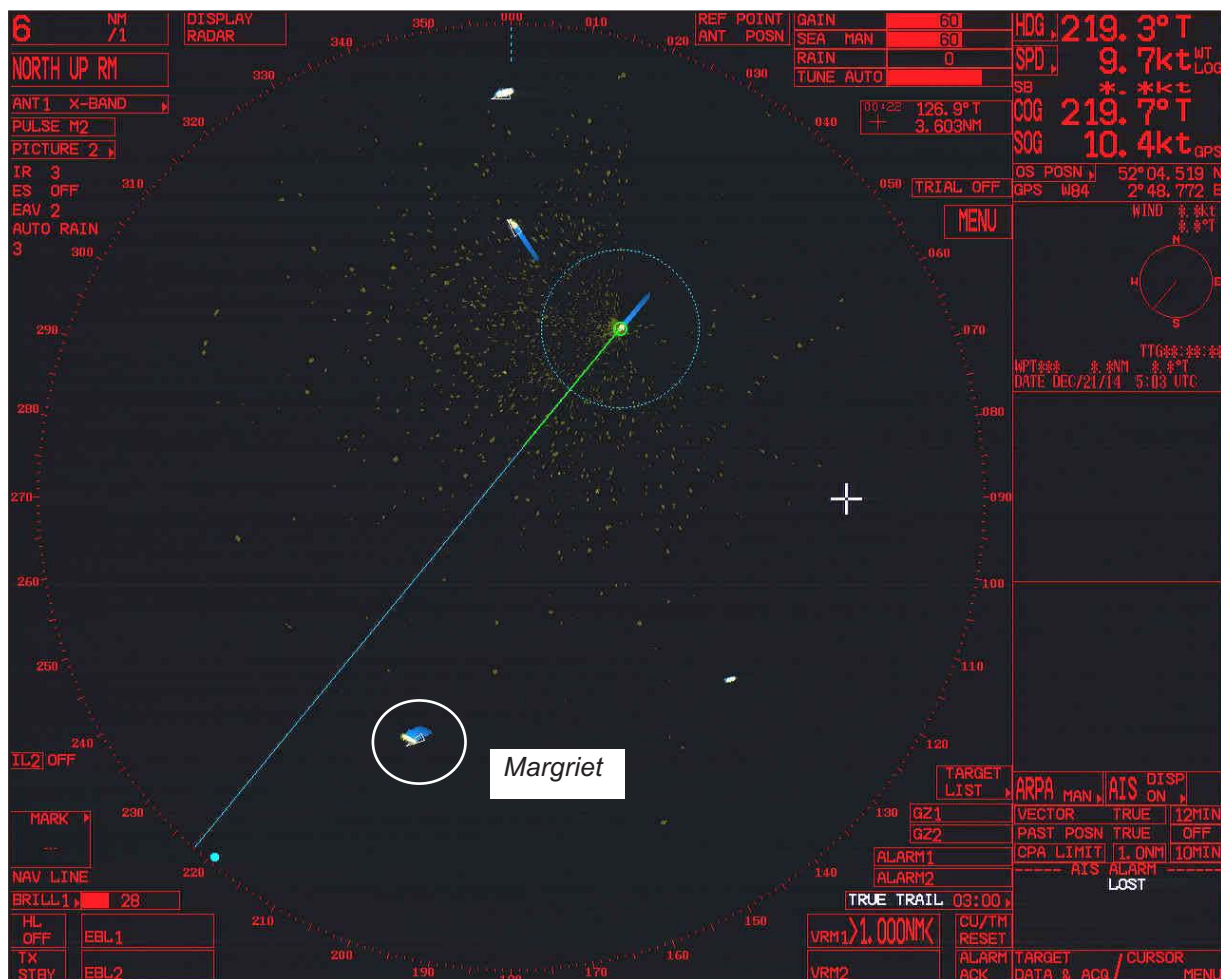
At 0529, *Orakai*'s OS again called the CCR but without response. The OS then left the bridge and ran down the ship's internal spiral stairway to the CCR, which was two decks below. However, the OS could not find the chief officer, so he returned to the bridge.

Meanwhile, *Margriet* continued to turn to starboard. The OS arrived back on the bridge at about 0530. At 0532, he saw that collision was imminent and put *Orakai*'s engine telegraph to stop. Less than 1 minute later, *Margriet*'s mate broadcast on very high frequency (VHF) radio, channel 16: "Get out of my way". *Orakai* and *Margriet* collided at 0533.06. *Orakai*'s bulbous bow struck *Margriet* just aft of the trawler's amidships at an angle of approximately 90° and at a speed of 10.8kts.

## Post-collision events

Twenty five seconds after the collision, *Orakai*'s chief officer arrived back on the bridge. The OS informed him that the vessel had collided with the trawler. The chief officer stated that he had been away from the bridge for only 10 minutes and told the OS to call the master. The general alarm was not sounded.





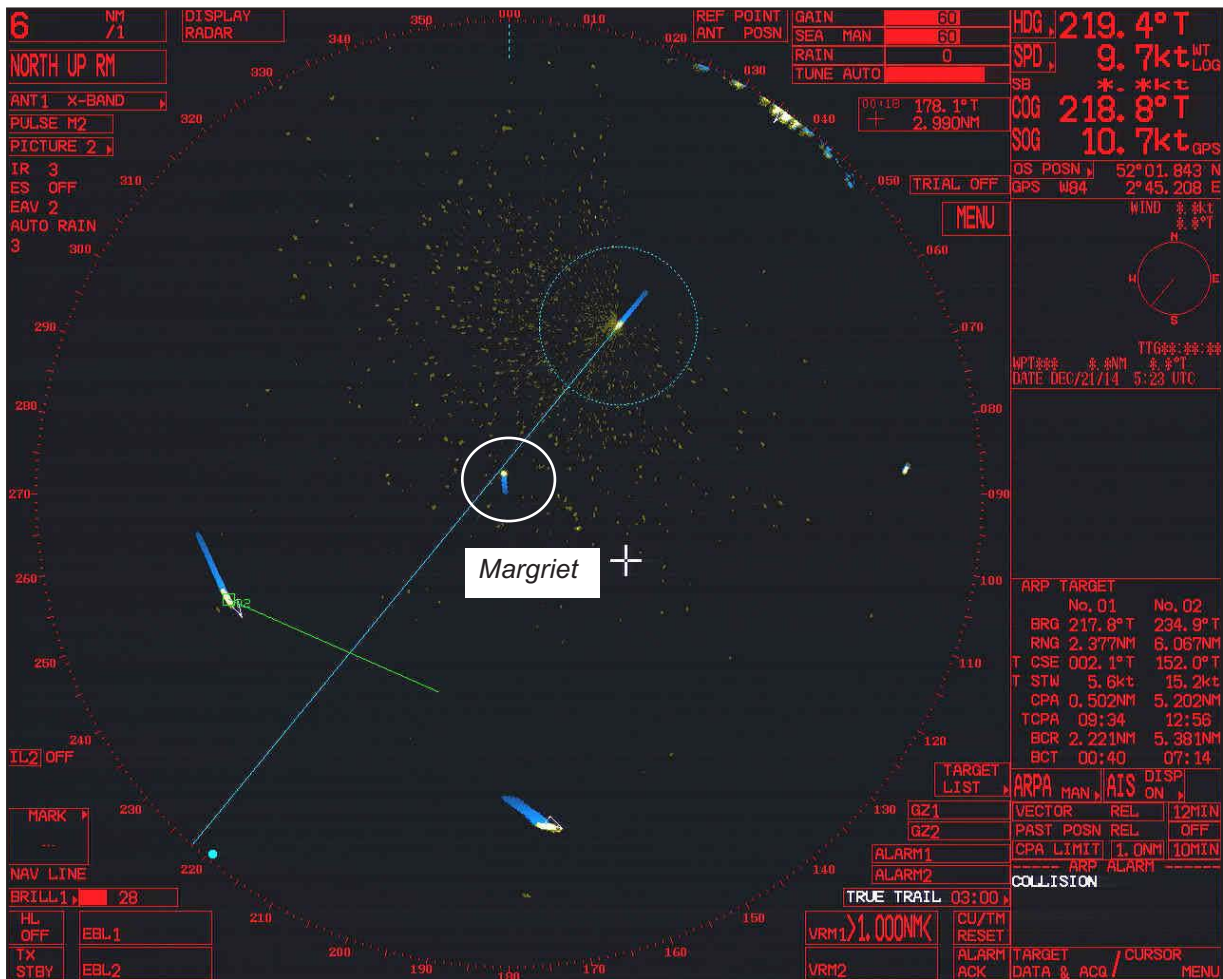


Figure 4: Oraka's X-band radar picture at 0523

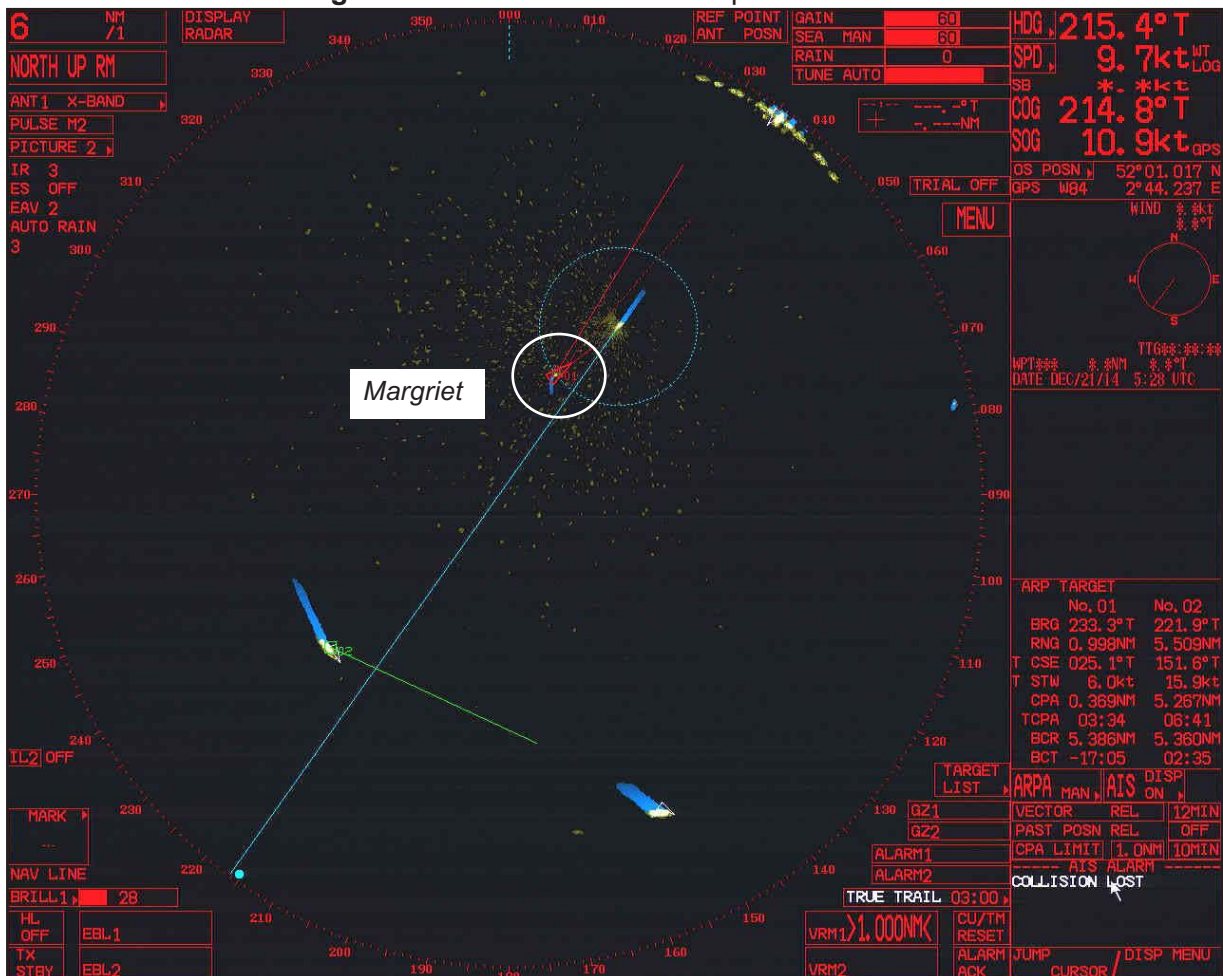


Figure 5: Oraka's X-band radar picture at 0528



The master arrived on the bridge and quickly established that *Orakai*'s bulbous bow was wedged under *Margriet*'s port side trawl wire. As the master used the tanker's engine and helm to free the wire, the two vessels occasionally came together in the heavy swell. During these manoeuvres VHF radio communication was established between the two vessels. *Orakai* was eventually clear of the trawl wire at about 0550. The tanker's crew checked their vessel for damage but none was identified below the waterline.

On board *Margriet*, the skipper quickly identified that the port wing fuel tank was damaged. Before the collision, the electronic vessel management system in the wheelhouse had indicated that 8 tons of fuel was in the tank. Immediately following the collision, the tank was full. There was no water ingress elsewhere.

*Orakai* notified The Netherlands coastguard of the collision, which tasked a helicopter to the scene as a precaution. *Margriet* was subsequently escorted to Ijmuiden, Netherlands by *Pelican*, a guard vessel that had been standing by the wreck of *Baltic Ace*<sup>4</sup>. The trawler arrived in Ijmuiden at 1415 the same day. *Orakai* continued on its passage to Portbury and arrived at 2300 on 23 December.

## Damage

*Margriet* was severely damaged. Above the waterline, the wheelhouse structure was badly distorted and buckled (**Figure 6**). The aft gantry was also buckled and the backstay on the port side towing derrick was parted. Below the waterline, the 10mm hull plating in way of the port side wing fuel tank was significantly indented (4500mm x 3600mm) (**Figure 7**). Within the indentation, a vertical gash (1500mm x 600mm) had breached the fuel tank.

*Orakai* sustained minor distortion to the hull plating on the starboard side of the bulbous bow. The deck guardrails on the starboard side forward and amidships on the vessel's port side were bent. The hull plating above the waterline on the tanker's transom was punctured in way of a workshop.

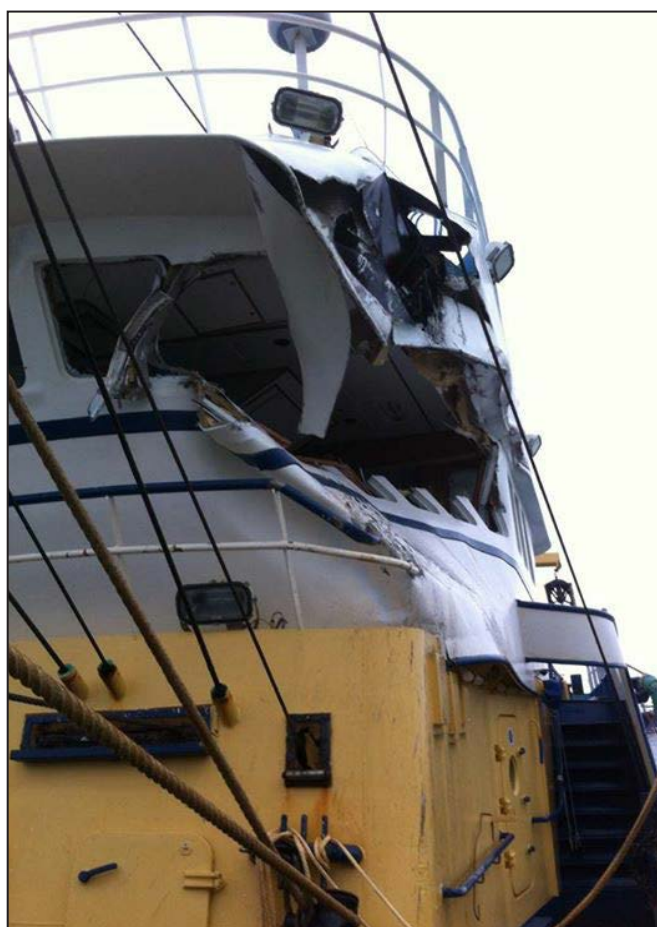
## Management and crew

### Orakai

*Orakai* was managed by South End Tanker Management B.V, based in Dordrecht, The Netherlands. The company had eight chemical tankers in its fleet.

The tanker had 13 crew. The senior officers were eastern European and the junior officers and ratings were either eastern Europeans or Filipinos. The working language on board was English.

The chief officer was a 48 year old Lithuanian national. He had been at sea for almost 20 years, 15 of which he had worked on board tankers. The chief officer held an STCW II/2<sup>5</sup> unlimited master's



**Figure 6:** Damage to *Margriet*'s wheelhouse

<sup>4</sup> *Baltic Ace* was a Bahamian-flagged car carrier that sank in the North Sea on 5 December 2012 after a collision with the Cyprus-registered container ship *Corvus J*

<sup>5</sup> International Convention on the Standards of Training, Certification and Watchkeeping, as amended



**Figure 7:** Damage to *Margriet* in way of the port side wing fuel tank

certificate of competency (CoC) that was issued in Russia in 2011. He had served as chief officer for at least 5 years and this was his second contract with South End Tanker Management B.V. His first contract with the ship manager had been on board *Orakai*'s sister vessel, *Oralee*.

The chief officer joined *Orakai* on 28 October 2014 and was aspiring to be promoted to master during his time on board. He kept the 4 to 8 watches at sea and had occasionally left the bridge for short periods while in charge of the navigational watch.

During the 2 days before the collision, the chief officer had experienced difficulty resting. He had found it difficult to sleep on 19 December due to the vessel's motion in heavy seas. On 20 December, his periods off watch had been interrupted when he was required to: attend to a mechanical problem with a winch; modify the cargo stowage plan; and, to prepare paperwork for an inspection scheduled for the next port.

The OS was a 24 year old Polish national. He joined *Orakai* on 14 November 2014 and had undertaken the duty of bridge lookout on eight previous watches during the vessel's 4-day passage from Sillimae. The OS had ambitions to be a deck officer and was working towards the sea time and qualifications required.

### Margriet

*Margriet* was UK registered and was one of two beam trawlers owned and managed by Kafish B.V. The company's other beam trawler, *Rosemarie*, was registered in The Netherlands. *Margriet* was purchased by Kafish B.V. in April 2013 and had been adapted for electric pulse trawling<sup>6</sup>. The trawler had sailed from Ijmuiden on 14 December 2014 for a 7-day fishing trip. It had remained in the vicinity of the North Hinder Junction since sailing and had experienced adverse weather and sea conditions for several days prior to the collision.

<sup>6</sup> Electric Pulse Trawling - A method of trawling in which an electrical pulse is sent around the mouth of the trawl net to shock and stun demersal fish, which are then caught in the net.

The trawler had six crew. All were Dutch nationals who had completed training courses in sea survival, first-aid and fire-fighting, which were conducted in The Netherlands. They had also completed a Seafish<sup>7</sup> safety awareness course. The working language on board was Dutch.

The skipper was 42 years old and held a CoC issued by The Netherlands administration that allowed him to skipper fishing vessels of any size in any area. The mate was 32 years old and he also held a CoC issued by The Netherlands that allowed him to skipper fishing vessels less than 24m in length and less than 750kw engine power within a limited area. The CoC also allowed the chief officer to undertake the duties of mate on any fishing vessel, worldwide. The skipper and the mate had worked on board *Margriet* since the trawler had been purchased by Kafish B.V., but neither held UK Certificates of Equivalent Competency (CEC), which were required to allow them to work on board a UK registered fishing vessel. The mate had worked for Kafish B.V. for 13 years.

When *Margriet* was trawling, the duration of each tow was approximately 2.25 hours. All of the crew, except the skipper, were involved in processing the catch. Between hauls, they were usually able to rest for about 1.25 hours but all took turns in the wheelhouse as watchkeeper.

## Radars and AIS

*Orakai*'s bridge was fitted with 'X' and 'S' band radar displays sited on either side of a central control console. The 'S' band radar display was set on the 12-mile range scale and the 'X' band radar display on the 6-mile range scale. Both radars were able to display AIS and ARPA information. The chief officer and the OS primarily used the 'X' band radar display, which was off-centred to the north-east, to enable a detection range of about 9nm ahead of the vessel (**Figures 2 to 5**).

*Margriet*'s wheelhouse was fitted with a Furuno X-band radar display capable of displaying AIS and ARPA targets. The radar display was set to the 6nm range scale and was 'north up' and in relative motion. The mate did not monitor *Orakai* by radar, AIS or ARPA.

## Previous accidents

MAIB records indicate there have been 173 collisions between fishing vessels and merchant vessels between 1991 and 2014. These collisions resulted in the deaths of 23 fishermen from UK registered fishing vessels.

# ANALYSIS

## The collision

The collision between *Margriet* and *Orakai* occurred following the beam trawler's alteration of course to starboard, from the north, shortly after 0528. Until then, the vessels were passing clear of each other, albeit with a CPA of about 5 cables (**Figure 4**). It is evident from *Orakai*'s heading (**Figure 5**) and the damage to *Margriet* (**Figure 7**) that the trawler's heading had reached approximately 135°. Such a bold alteration across the tanker's bow when the vessels were within 1nm was an extremely hazardous manoeuvre.

Nonetheless, as *Margriet* was trawling, Rule 18 of the COLREGS required *Orakai*, a power-driven vessel, to keep clear. However, the tanker's chief officer had left the bridge and therefore appropriate avoiding action was not taken. The lookout's attempts to keep clear, recall the chief officer to the bridge and reduce the speed of impact were unsuccessful.

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<sup>7</sup> Seafish – the Sea Fish Industry Authority works across all sectors of the UK seafood industry to promote good quality and sustainable seafood, and to improve the safety and standards of training for fishermen.



It is extremely fortunate that *Orakai*'s bulbous bow struck *Margriet* in way of the vessel's port wing tank rather than in way of the adjacent engine or fish rooms (**Figure 7**). The UK does not require its fishing vessels to meet damage stability criteria. Therefore, had either the engine or fish rooms been penetrated, it is possible that, given the size of these compartments, *Margriet* would have quickly foundered.

### **Margriet - Lookout and monitoring**

It is unlikely that *Margriet*'s mate altered the trawler's course towards *Orakai* when the vessels were within 1nm solely in anticipation that the tanker would meet its obligation to keep clear. Such action at close quarters would have been reckless. Instead, it is more likely that the mate was unaware of the tanker's proximity. This is supported by the fact that he tried to warn *Orakai* by VHF radio only seconds before the impact, and he did not call the tanker by name, which was available via AIS.

The COLREGS require that all available means be used in order to keep a proper lookout and to determine if a risk of collision exists. This requirement was not met on board *Margriet* despite the visibility being good and radar being available. The trawler was also operating in a potentially busy shipping lane.

The lack of an effective lookout on board *Margriet* can possibly be attributed to fatigue. Although the mate's adjustments to the autopilot indicate that he was awake and monitoring the trawler's position against its intended track, *Margriet* had been at sea for 6 days, during which time the sea conditions had been rough and the crew's rest periods had been limited to 1¼ hours during the 2¼ hour long tows. In such circumstances, it is likely that all of the trawler's crew would have been fatigued to some degree. However, evidence from other MAIB investigations, such as the collision between MV *Philipp* and FV *Lynne Marie*<sup>8</sup> indicates that the failure to keep a proper lookout on board vessels engaged in fishing often results from skippers and wheelhouse watchkeepers being over-reliant on the status afforded to these vessels by Rule 18 of the COLREGS. It is frequently assumed that other vessels will keep clear. Consequently, insufficient priority is given to keeping a proper lookout. Such behaviour cannot be discounted in this case.

### **Orakai - Actions of the chief officer**

*Orakai*'s chief officer had seen and identified *Margriet* at about 0500 when the vessels were 6nm apart and the tanker was overtaking the trawler with a speed advantage of about 5.5kts. Therefore, the trawler would not have been at its CPA for over 1 hour. The chief officer assessed that, in the absence of any other vessels of concern in the area, he had ample time to leave the bridge to find a cable tie. The chief officer is known to have left the bridge for brief periods during previous watches. Therefore, although contrary to the requirements of STCW, it is evident that he considered such behaviour to be acceptable.

STCW states:

*The officer in charge of the navigational watch shall:*

1. *keep the watch on the bridge;*
2. *in no circumstances leave the bridge until properly relieved*

This was endorsed in the tanker's onboard instructions, which included:

*The officer of the watch should keep his watch at all times on the bridge. Under no circumstances he should leave the bridge until he is properly relieved (sic).*

The chief officer's decision to leave the bridge might have been influenced by fatigue, but nonetheless it was ill-judged. *Orakai*'s primary means of navigation was ECDIS. Therefore, the repair of the chart table

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<sup>8</sup> At 0453 UTC on 9 April 2011, the Gibraltar registered container feeder vessel *Philipp* collided with the UK registered scallop dredger FV *Lynne Marie* 6nm south of the Isle of Man (MAIB report 20/2011).

light switch was not a priority. Even if it had been, it would have been safer for the OS to leave the bridge or for the chief officer to arrange to be relieved by another qualified officer. More significantly, it was dark and the tanker was transiting the North Hinder Junction where vessels are advised to navigate with extreme caution (**Figure 1**). Although *Margriet* was the only vessel of concern, the movements of fishing vessels can be unpredictable and require careful monitoring. This was recognised by *Orakai*'s master, who stipulated in his night orders a minimum CPA of 2nm for fishing vessels compared to 1nm for other vessels.

The risk of collision with *Margriet* increased significantly as soon as the trawler altered course to the north-west at 0511, just as the chief officer left the bridge. Although the chief officer intended to be away from the bridge for only a few minutes, it is evident that he lost track of time and/or was distracted. As a result, he left the OS alone on the bridge for 22 minutes. Given the chief officer's experience, the visibility, the availability of radar, ARPA and AIS, and the low traffic density in the area, there is no reason to suggest that he would not have taken successful action to keep *Orakai* clear of *Margriet* had he remained on the bridge.

### **Orakai - Actions of the lookout**

*Orakai*'s OS lookout was placed in a very difficult position. His reluctance to recall the chief officer to the bridge when the trawler altered course to the north-west at 0511 was understandable to some degree as the chief officer had just left the bridge and intended to be absent for only a few minutes. In addition, the trawler was still over 4nm away and its CPA was just under 1nm.

However, when the ARPA alarm activated at 0523, *Margriet* had closed to a range of 2.4nm and its CPA had reduced to 0.5nm. This warranted the chief officer's immediate recall to the bridge. Instead, the OS adjusted the tanker's heading by 5°, which had little effect. By the time the OS eventually tried to contact the chief officer, *Margriet* had turned further to starboard and had closed to a range of about 1nm. By this time, the options available to avoid a collision had reduced significantly.

When the OS was unable to contact or find the chief officer, he returned to the bridge. Over the next 2 minutes he watched *Margriet* continue to close on the starboard bow. Only when collision was imminent did he put the engine telegraph to 'stop'. This action was taken 1 minute before the collision and was ineffective: *Orakai* was still making good 10.8kts when the vessels collided.

The OS was an intelligent man and he had ambitions to become an officer. Despite his inexperience, he used the radar, ARPA and AIS to accurately monitor the movement of *Margriet* during the chief officer's absence from the bridge. However, although he demonstrated a degree of competency in this respect, he was neither qualified nor authorised to take any avoiding action. The OS was the lookout; he was not in charge of the navigational watch. The situation he found himself in was outside normal bridge watchkeeping practices. Therefore, although in hindsight the OS would have been advised to alert the master to the situation at an early stage, it is unreasonable to consider his actions and omissions were causal to this accident.



## CONCLUSIONS

- *Margriet* turned across *Orakai*'s bow when the vessels were only about 1nm apart.
- *Margriet*'s wheelhouse watchkeeper was not keeping an effective lookout and probably did not see the tanker until seconds before the collision.
- *Orakai*'s chief officer left the bridge 22 minutes before the collision. His decision to leave the bridge might have been influenced by fatigue, but it was ill-judged and contrary to international requirements and the ship's SMS.
- *Margriet*'s movement was closely monitored by *Orakai*'s OS lookout who was alone on the bridge. He attempted to recall the officer of the watch to the bridge 5 minutes before the collision, but he was unable to contact him.
- The collision would have almost certainly been avoided had the chief officer not left the bridge.

## ACTION TAKEN

**South End Tanker Management B.V.** has:

- Issued a safety bulletin to all vessels in its fleet detailing the circumstances of the accident.
- Changed its procedures to require the master's standing orders to be signed by all crew who are part of a navigational watch.
- Introduced a requirement for the master's standing and night orders to be checked during internal audits.

**Kafish B.V.** has:

- Installed an additional ARPA radar on *Margriet*'s bridge.

## RECOMMENDATIONS

**Kafish B.V.** is recommended to:

**2015/140** Take action to improve the standards of watchkeeping on its vessels, taking into account the importance of, *inter alia*:

- Keeping a proper and effective lookout by all available means
- Determining the risk of collision
- Checking that intended courses are clear before altering
- The additional risks associated with fishing in or near traffic separation schemes and other areas of potential high traffic density.

**South End Tanker Management B.V.** is recommended to:

**2015/141** Reiterate to its fleet that an officer of the watch should not leave the bridge unless relieved by another qualified officer.

**Safety recommendations shall in no case create a presumption of blame or liability**

## SHIP PARTICULARS

Vessel's name	<i>Margriet</i>	<i>Orakai</i>
Flag	United Kingdom	Gibraltar
Classification society	Registro Italiano Navale	Bureau Veritas
IMO number/fishing numbers	LT 36	9402689
Type	Twin beam trawler	Chemical/product tanker
Registered owner	Kafish B.V.	Kai shipping
Manager(s)	Kafish B.V.	South End Tanker Management B.V.
Year of build	2004	2008
Construction	Steel	Steel
Length overall	40.72m	103m
Registered length	36.62m	Not applicable
Gross tonnage	441	3953
Minimum safe manning	Not applicable	9
Authorised cargo	Fish	Chemical/product

## VOYAGE PARTICULARS

Port of departure	Ijmuiden, Netherlands	Sillimae, Estonia
Port of arrival	Ijmuiden, Netherlands	Royal Portbury dock, Bristol, United Kingdom
Type of voyage	Demersal fishing	International
Cargo information	13.5 tonnes of demersal fish	6128 tons of liquid ammonia nitrate
Manning	6	9

## MARINE CASUALTY INFORMATION

Date and time	21 December 2014 at 0533 (UTC)	
Type of marine casualty or incident	Serious Marine Casualty	
Location of incident	North sea in position 52° 0.47'N 002° 43.5'E	
Place on board	Port side bridge and port side wing fuel tank	Bulbous bow and hull plating port and transom
Injuries/fatalities	None	None
Damage/environmental impact	The hull plating on the port side in way of the fuel tank was dented and split below the waterline. 8 tonnes of diesel fuel oil were lost overboard. The wheelhouse was severely damaged and the aft gantry was buckled.	Bulbous bow slightly distorted on the starboard side. Bent guardrails on the bow and on the port side. Small penetrations in the shell plating above the waterline.
Ship operation	Fishing/towing	In passage
Voyage segment	Mid water	Mid water
External & internal environment	Dark, good visibility. Wind south-west Beaufort Force 7 to 8.	
Persons on board	6	13