MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

ACCIDENT REPORT

SERIOUS MARINE CASUALTY | REPORT NO 17/2011 | SEPTEMBER 2011

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Collision between

MV *BOXFORD* and FV *ADMIRAL BLAKE*

29nm south of Start Point, English Channel
11 February 2011

SUMMARY

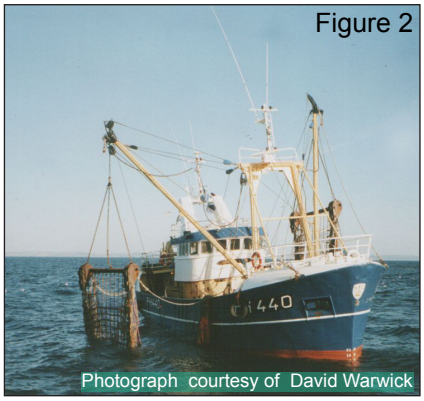
At 1839 (UTC) on 11 February 2011, the Marshall Islands registered container ship MV *Boxford* **(Figure 1)** and the UK registered fishing vessel *Admiral Blake* **(Figure 2)** collided in the English Channel, 29nm south of Start Point. Two deckhands were thrown overboard from *Admiral Blake* on impact but both were safely recovered. *Admiral Blake* was badly damaged and had to be towed to Plymouth, England.

The MAIB investigation identified that *Boxford*'s bridge team was unaware of the presence of *Admiral Blake* until shortly before the collision. Neither the visual nor the radar lookout was fully effective and the master, who was probably fatigued, inaccurately assessed the fishing vessel's proximity and movement. The resulting manoeuvres taken were hazardous and resulted in the collision.

Had *Admiral Blake* been transmitting on her Automatic Identification System (AIS), *Boxford*'s master would have been aware of the fishing vessel's presence much earlier. This would have allowed him more time to accurately assess the situation and to take appropriate action.

A recommendation has been made to *Boxford*'s ship manager which is intended to improve the standard of lookout and bridge watchkeeping across its fleet. A recommendation has also been made to the owners of *Admiral Blake* aimed at encouraging the operation of AIS on board its fishing vessels.

MV *Boxford* - showing the vessel under her previous name of *Csav Peru*



FV *Admiral Blake*

FACTUAL INFORMATION

Environmental conditions

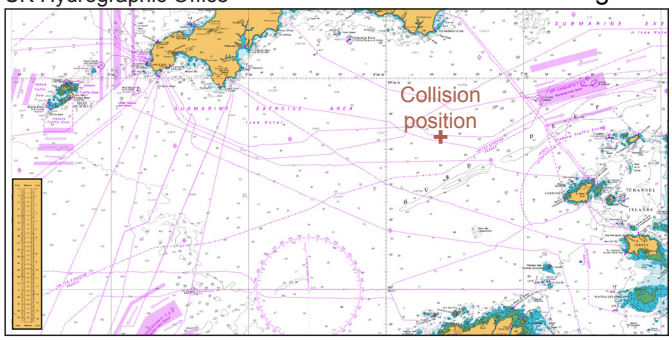
The wind was light and visibility was 5nm, although this reduced to between 1 to 2nm in showers. There was a south-westerly 4 to 5m swell and moderate seas, which caused *Boxford* to roll occasionally. The tidal stream was negligible, the seawater temperature was about 10ºC and nautical twilight was at 1821.

Narrative

Boxford

During the evening of 11 February 2011, *Boxford* was on passage in the English Channel from Antwerp, Belgium to Gioia Tauro, Italy. The vessel was on an autopilot-controlled heading of 240º towards the Ouessant traffic separation scheme **(Figure 3)** at a speed of about 19 knots. The officer of the watch was the chief officer and the deck cadet was the dedicated lookout. Sited on the starboard side of the bridge were two STN Atlas radars, each equipped with an Automatic Radar Plotting Aid (ARPA). However, only the S-band radar was in use. Although the X-band radar was operational, it was in the standby mode.

Figure 3



Extract of chart BA 2675 showing position of collision

The chief officer had manually tuned the S-band radar using the short pulse setting. He had set the radar display to the 12 mile range scale, with ship's head up and in true motion. The chief officer had offset the centre of the radar display to provide a maximum detection range of about 16nm ahead. He was manually acquiring radar targets and had not set up an auto-detection guard zone. Adjacent to the S-band radar, was the AIS receiver, which provided the names and details of the nearest vessels with transmitting AIS. The AIS was interfaced with the radar display.

Shortly before 1815, the chief officer was smoking a cigarette on the port bridge wing. He heard a noise from the main deck and suspected that the fastenings on some of the reefer containers stowed there had loosened. After the chief officer had finished his cigarette, he returned inside the bridge to find the master checking for emails on the computer sited on the aft bulkhead. The fitter had also arrived on the bridge.

The chief officer asked the master to take over the watch for a short time so that he could check the container fastenings. The master agreed and, at 1829, the chief officer left the bridge. On taking over the watch, the master checked the radar display and reduced the radar range scale to 6nm; no radar targets were visible.

While *Boxford* had been alongside in Antwerp, the master's cabin had been flooded by rainwater due to a faulty deck scupper. The master and fitter discussed how the repairs to the scupper were progressing and the fitter then left the bridge.

The master then noticed that the fire, boat and oil spill drills held earlier that day had not been recorded correctly in the deck logbook. He called the second officer to the bridge, who arrived shortly before 1833. The master began to explain to him how the logbook was to be completed. The master and second officer were standing at the chart table, which was forward facing and located on the starboard side of the bridge behind the radars.

At 1837, the lookout reported a light fine on the port bow. The master checked the radar for targets; again none were visible. Using binoculars, he saw a green light in the location reported by the lookout and identified the vessel as a fishing vessel. The master concluded that *Boxford* would overtake the fishing vessel, which he estimated was on a north westerly heading. He then adjusted the autopilot heading to 250º to increase the passing distance.

To try and establish the range of the fishing vessel, the master adjusted the radar's manual tuning and the anti-clutter sea and rain controls but he was still unable to detect the fishing vessel on the radar display.

At 1839, *Boxford*'s heading was 250º and the lookout reported that the light was "*very close*" on the starboard bow. The master immediately saw that the light was much brighter and was, indeed,

very close. He switched the steering system to manual control and ordered the helm "*hard to starboard".* The second officer, who had taken the helm, complied. At 1839:39, *Boxford* collided with the fishing vessel.

Admiral Blake

Admiral Blake was making good a speed over the ground of about 2.9 knots on an autopilot-controlled course of 046º while towing fishing gear. She was displaying a masthead light, sidelights, and a sternlight and an all-round green light above an all-round white light to indicate that she was engaged in trawling. Her aft deck floodlights were on.

At 1820, the skipper noticed a radar target 6nm on the starboard bow, which 7 minutes later he was able to associate with a vessel that he saw displaying two masthead lights and a red sidelight. He referred to the AIS, which was set to receiving data only, and identified the visual and radar target as *Boxford*. He also noted that *Admiral Blake* would pass ahead of the container vessel.

At about 1833, the mate joined the skipper in the wheelhouse. At approximately 1835 *Admiral Blake*'s course was adjusted to 034º. Very shortly afterwards both men saw the green sidelight of the container ship, and assumed that *Boxford* had altered her course to port and would pass clear astern.

Admiral Blake's crew were due to haul the nets so the two deckhands went out onto the main deck to collect fish boxes from the storage tank. One deckhand remained on deck while the second deckhand entered the tank. At approximately 1839, the skipper switched on the forward floodlights to illuminate the area in which the deckhands were working.

Almost immediately, the skipper saw *Boxford* turn to starboard towards his vessel, so he shouted a warning to his crew. The mate left the wheelhouse through its starboard door and the skipper put the engine astern. When the skipper realised that collision was unavoidable he took the engine out of gear.

The collision and rescue

Boxford's bow struck *Admiral Blake* at an angle of approximately 17º ahead of the fishing vessel's starboard beam, pushing the fishing vessel violently over to port. The initial impact threw the mate overboard and closed the hatch to the storage tank where one of the deckhands was working. The second deckhand was also thrown overboard but managed to grab hold of the vessel's deck rigging. With full starboard helm still applied, *Boxford* continued her turn to starboard and her stern also struck *Admiral Blake*, forcing the second deckhand to let go of the rigging and fall into the water.

Admiral Blake's skipper immediately broadcast a "Mayday" on very high frequency (VHF) radio channel 16, which was relayed to Brixham Coastguard by the crew of the fishing vessel, *Amber Jay*. Four fishing vessels, three merchant vessels (including *Boxford*), a coastguard helicopter, a Royal Air Force (RAF) helicopter and two Royal National Lifeboat Institution (RNLI) lifeboats participated in the search and rescue operation that followed.

Both men who went overboard were recovered from the sea. The mate was recovered by the remaining crew of *Admiral Blake* within 10 minutes of the accident, and made a swift recovery. The deckhand was recovered by *Boxford*'s rescue boat after he had been in the water for 40 minutes. He was later airlifted to hospital and was discharged 6 days later after medical treatment for shock and hypothermia.

Damage

Admiral Blake was severely damaged in the collision and began taking water in the fish hold and storage tanks through a split in her hull plating. Although her pumps were initially able to cope with the water ingress, she later took an additional pump on board from a lifeboat. Further damage included the distortion and buckling of the starboard bulwark, the demolition of the main mast, aerials and lights, and the bending or removal of several deck vents and pipes **(Figures 4** and **5)**. *Admiral Blake* was towed to her home port of Plymouth, England by one of the RNLI lifeboats.

Boxford sustained damage to the shell plating and internal structure of her bulbous bow. Paintwork had also been gouged on her port bow and port quarter. The outboard engine from *Boxford*'s rescue boat was also lost during the boat's recovery following the rescue of *Admiral Blake*'s deckhand.

Admiral Blake - damage to starboard hull

Admiral Blake - damage to main mast

Vessels' crew

Boxford's 22 crew comprised Ukrainian senior officers and Filipino junior officers and ratings; there were also two Chinese cadets on board. The working language was English. A number of crew had changed in Antwerp, including the chief officer. The third officer had been promoted to second officer, so a replacement third officer had also joined.

Boxford's master held a STCW II/2 unlimited master's certificate and had first served as a master in 2006. He had joined the vessel in early December 2010. The chief officer also held a STCW II/2 unlimited master's certificate. This was his first contract with the ship's managers and his first time on board the vessel.

Admiral Blake's crew comprised her skipper, mate and two deckhands, all of whom had worked on board the fishing vessel for at least 4 months and had completed safety awareness, fire-fighting, first-aid, and sea survival courses. The skipper held a Second Hand Full skipper's certificate and the mate held an engine room watch rating certificate.

Boxford's master's hours of work

On 10 February *Boxford* was in Antwerp working cargo. The demands on the master meant that he was unable to take any rest from 0400 until the vessel sailed at 2100. The master then remained on the bridge for the river pilotage to sea during which he was informed that heavy rainfall in Antwerp had caused water to accumulate in the vessel's forward (No1) hold. Fearing a potential insurance claim from cargo interests, the master informed the vessel's P&I Club insurers and shore-based technical manager of the situation.

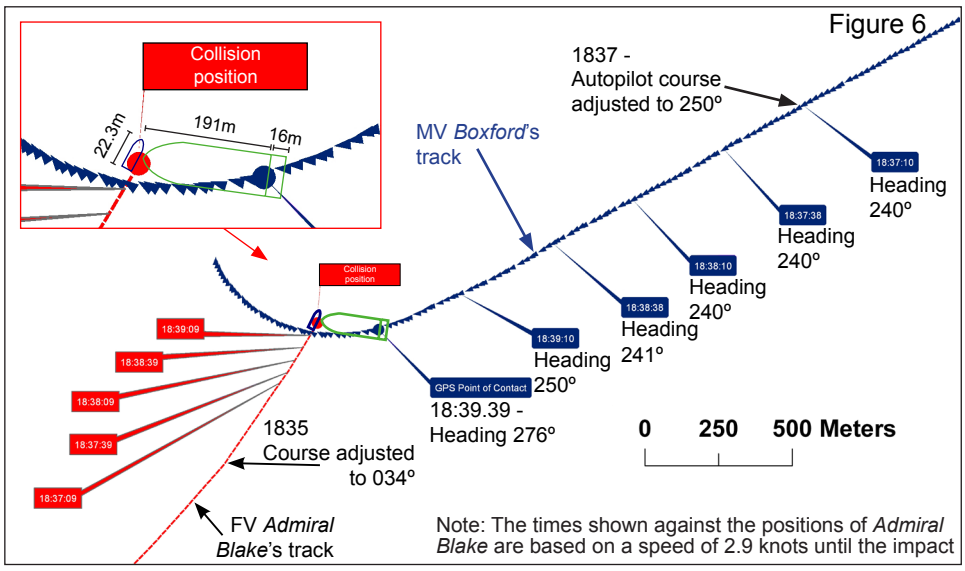
Shortly after 0100hrs on 11 February, the master felt able to leave the bridge and take some rest. However, on reaching his cabin, he discovered it had been flooded by the earlier heavy rain. The master therefore returned to the bridge where he remained until 0600 when he went below to eat breakfast and take a shower.

The master was back on the bridge by 0700, where he provided support to the new third officer during the vessel's transit of the Dover Strait. He left the bridge for some rest at around 1100 but returned later on in the afternoon to supervise routine emergency response and abandon ship drills. The drills were completed at 1630 when the master was able to go below to have a shower and eat dinner before returning to the bridge at 1815.

ANALYSIS

Reconstruction

The reconstruction of the ground tracks of *Boxford* and *Admiral Blake* based on global positioning system (GPS) information is at **Figure 6**. At



GPS reconstruction of the ground tracks of vessels

approximately 1837, *Admiral Blake* passed ahead of *Boxford* at a distance of about 1nm. If both vessels had then maintained their courses, *Admiral Blake*'s closest point of approach (CPA) to *Boxford* would have been about 3 cables on the container ship's starboard side. The collision directly resulted from *Boxford'*s alterations of course to starboard from 1837 onwards.

Situation awareness

When the cadet first alerted *Boxford*'s master to the presence of *Admiral Blake*, at 1837, the fishing vessel was about 1nm ahead. In assessing that *Boxford* was overtaking the fishing vessel, it is clear that the master misinterpreted the lights he saw. Consequently, his alteration to starboard to keep clear of *Admiral Blake* only served to reduce an already small CPA, thereby exacerbating the close-quarters situation.

However, the fishing vessel continued to pass safely across *Boxford*'s bow. It was only when the master ordered full starboard helm that *Boxford* was put on a collision course with *Admiral Blake*. This action was made in response to the cadet's report indicating that the fishing vessel was very close when *Admiral Blake* was very fine on *Boxford'*s starboard bow at a range of about 2 cables. It is almost certain that her close proximity only became obvious to the cadet and master when the fishing vessel's skipper switched on the deck floodlights.

During the 2 minutes from adjusting *Boxford*'s autopilot course to 250º until ordering full starboard helm, the master's inability to detect *Admiral Blake* by radar led to his continued inaccurate assessment that the fishing vessel was at a greater range than it actually was. His poor situational awareness was reflected by his surprise at the fishing vessel's sudden close proximity, and his instinctive alteration to starboard, which in this instance precipitated *Boxford*'s collision with the fishing vessel.

Lookout on board *Boxford*

The International Regulations for Preventing Collisions at Sea 1972 (COLREGS) required *Admiral Blake'*s masthead light to have been visible at a distance of at least 3nm. However, the deck cadet on *Boxford* did not report the fishing vessel's lights until she was at about 1nm ahead. This was probably because the fishing vessel's lights were only intermittently visible due to *Admiral Blake'*s movement in the moderate sea and 4-5m swell, the variable visibility, and the view ahead being partially obstructed by the uprights of the vessel's deck cranes **(Figures 1** and **7)**. It is also possible that the inexperienced cadet only reported the light to the master when he could see it clearly.

Figure 7

MV *Boxford*'s view ahead partially obstructed by the uprights of the deck cranes

Boxford's master was unable to detect *Admiral Blake* by radar. Although the use of only one of the two working radars prevented different range scales from being monitored simultaneously, the S-band radar should have detected *Admiral Blake* without difficulty in the prevailing conditions, provided that it was functioning correctly and that its display controls were correctly adjusted.

The radar's performance was criticised by several ship's officers following the collision. However, these criticisms were at variance with the radar's performance log that indicated the S-band radar was functioning correctly. Therefore, it is equally likely that the failure to detect *Admiral Blake* by radar was due to the radar's settings not being optimised for the prevailing sea state and the range scale selected. It is also possible that, if the radar target of *Admiral Blake* was only being displayed on the radar screen intermittently, the master and cadet were not monitoring the display sufficiently often, given their vessel's speed, to observe the target being painted on the display.

Rule 5 of the COLREGS requires:

- *Every vessel shall at all times maintain a proper lookout by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and the risk of collision.*

Rule 6(b) includes that, among other factors, vessels with operational radars should take account of:

- *the characteristics, efficiency and limitations of the radar equipment*
- *any constraints imposed by the range scale in use*
- *the effect on radar detection of the sea state, weather and other sources of interference*

when determining safe speed.

In this case, notwithstanding the potential advantages of an S-band radar over an X-band radar in poor weather, operating only one of the vessel's two radars while on passage at night, at 19 knots, in sea conditions likely to degrade the radar information displayed, strongly indicates that the vessel was not fully compliant with either of these rules. If there was any doubt in the minds of the *Boxford*'s watchkeepers about the performance of the S-band radar, then the case for operating both radars, given the prevailing conditions, should have been even stronger.

Decision-making

When *Boxford*'s master took over the watch from the chief officer at about 1829, he had not had proper rest for approximately 38 hours. A number of factors and occurrences impacted on his ability to rest, including:

- working throughout the recent port call
- the flooding of the cargo hold with the potential of an insurance claim
- an extended period of pilotage on leaving Antwerp
- the flooding in his cabin
- the need to monitor the inexperienced third officer during the transit of the Dover Strait
- the requirement to conduct emergency and abandon ship drills.

Although some of these events were completely unpredictable, the pressures on the master's time resulting from the crew changes in Antwerp were not. In particular, the consequence of replacing two out of three deck officers prior to a period of extended pilotage and the transit of the Dover Strait had not been considered by the managers when the crew change was planned.

A likely consequence of the master's inability to properly rest was that his judgment was impaired to some degree by fatigue and stress. This is supported by his conversations with the fitter, and then the second officer, which he allowed to distract him from his watchkeeping responsibilities. It is further supported by his misinterpretation of the fishing vessel's lights and his inability to find the fishing vessel on the radar display, both of which contributed to his poor situational awareness and resulted in his decision to alter course to starboard. However, notwithstanding the master's fatigue, his action following the collision, which led to the recovery of *Admiral Blake*'s deckhand by *Boxford*'s rescue boat, was positive and is commendable.

Actions on board *Admiral Blake*

Admiral Blake's skipper correctly assessed that *Boxford* was passing under his stern when he first saw the container ship. *Admiral Blake* was trawling and, as a power-driven vessel, it was *Boxford*'s responsibility under Rule 18 of the COLREGS to keep clear. Nonetheless, *Admiral Blake*'s skipper continued to monitor the container ship, and the minor adjustment of course at 1835 increased the CPA between the vessels. Although the skipper later misinterpreted the sighting of *Boxford*'s green side navigation light as an indication that the container ship had altered course to port, instead of *Admiral Blake* crossing her bow, his assumption that *Boxford* was still passing clear remained valid. As *Boxford* was only about 2 cables away when she started to turn towards *Admiral Blake* at a speed of almost 19 knots, at that point there was nothing the fishing vessel skipper could have done to prevent the collision.

Use of AIS

Since its introduction, AIS has become increasingly used by many seafarers as an aid to collision avoidance. Many vessels now have AIS information interfaced with radar or electronic chart displays, which enables bridge watchkeepers to quickly identify and locate the positions of all vessels transmitting on AIS. In this case, had *Admiral Blake* been transmitting on her AIS, her presence would have been readily apparent to *Boxford*'s master, at a distance of 3-4nm, when he first looked at the radar display on taking over the

watch. The master would then have had sufficient time to accurately assess the situation and take appropriate action.

Unfortunately, like *Admiral Blake*, many fishing vessels carry AIS and receive information from other vessels, but opt not to transmit their own position and navigational data for commercial reasons. However, *Directive 2009/17/EC* amending *Directive 2002/59/EC establishing a Community vessel traffic monitoring and information system* requires European Community fishing vessels of more than 15m length overall to operate an AIS at all times. Accordingly, the Maritime and Coastguard Agency (MCA) intends to enforce this requirement on UK registered fishing vessels by 2014. It is anticipated that this requirement will help to safeguard the safety of these fishing vessels, particularly when fishing in or near busy shipping routes.

CONCLUSIONS

- The collision occurred because of an alteration of course by *Boxford* directly towards *Admiral Blake* when the vessels were only 2 cables apart.
- The bridge team on *Boxford* first sighted *Admiral Blake* when the vessels were only about 1nm apart probably due to the prevailing visibility and sea conditions, and the partial obstruction of the view ahead by the uprights of the vessel's cranes.
- *Admiral Blake* was not detected by radar because only one of two radars fitted on *Boxford* was operating and the radar display was not optimised to the prevailing conditions or the range scale selected. It is also possible that the radar was not functioning correctly.
- The radar lookout kept on board *Boxford* was inadequate given that the vessel's speed was 19 knots.
- *Boxford*'s master did not have a good appreciation of *Admiral Blake*'s position or movements, and the alteration of course to starboard towards *Admiral Blake* further reflected his poor situational awareness.
- The decision-making and performance of *Boxford*'s master were probably affected by fatigue.
- Had *Admiral Blake* been transmitting on AIS, *Boxford*'s master would have detected her sooner, providing him with more time to accurately assess the situation and to take appropriate avoiding action.

ACTION TAKEN

Alfa Ship Managers Pte Ltd has:

- Changed the magnetrons on the 'S' and 'X' band radars on board *Boxford* and checked that both radars are operating correctly.

RECOMMENDATIONS

Alfa Ship Managers Pte Ltd is recommended to:

2011/128 Promulgate the lessons learned from this accident to its fleet and ensure that:

- ships' watchkeepers maintain an effective radar and visual lookout at all times commensurate with the prevailing conditions and circumstances.
- the location and extent of crew changes are carefully considered to minimise the likely impact on masters' workloads.

Interfish Ltd is recommended to:

2011/129 Encourage its vessels to transmit on AIS at all times, but particularly when fishing in or near shipping lanes.

SHIP PARTICULARS

Vessel's name	*Admiral Blake*	*Boxford*
Flag	United Kingdom	Marshall Islands
Classification society	Not applicable	Lloyd's Register
IMO number/ Port number	PH 440	9158501
Type	Twin beam trawler	Container ship
Registered owner	Interfish Ltd	Seacastle Inc
Manager(s)	Interfish Ltd	Alfa Ship Managers Pte Ltd
Construction	Steel	Steel
Length overall	22.3m	207.4m
Registered length	19.3m	Not applicable
Gross tonnage	136	25,624
Minimum safe manning	Not applicable	16
Authorised cargo	Fish	Containers

VOYAGE PARTICULARS

Port of departure	Plymouth, England	Antwerp, Belgium
Port of arrival	Plymouth, England	Gioia Tauro, Italy
Type of voyage	Demersal trawling	Loaded
Cargo information	Demersal fish	Containers
Manning	4	22

MARINE CASUALTY INFORMATION

Date and time	11 February 2011 at 18:39:39 (UTC)	
Type of marine casualty or incident	Serious Marine Casualty	
Location of incident	English Channel in position 49º 43.5'N 003º 36.1'W	
Place on board	2 persons overboard	None
Injuries/fatalities	Shock, hypothermia	None
Damage/environmental impact	The hull plating on the starboard side in way of the storage tanks and fishroom was severely buckled and split below the waterline. The main mast, aerials and light were demolished, and several deck vents and fittings were bent or removed.	Damage to the shell plating and internal structure of her bulbous bow. Gouging of paintwork on the port side of the hull by way of the bulbous bow, bow and quarter. The rescue boat's outboard engine was also lost.
Ship operation	Underway	Underway
Voyage segment	Trawling	On passage
External & internal environment	Light winds with isolated showers in which visibility was reduced to approximately 1 to 2nm. The sea was moderate but there was a south-westerly 4 to 5m swell, a sea temperature of 11ºC, and an air temperature of 13ºC. Nautical twilight was at 1821.	
Persons on board	4	22