



**The Bahamas
Maritime Authority**

THE COMMONWEALTH OF THE BAHAMAS

CONDOR VITESSE

IMO Number 9151008

Official Number 730516

**Report into the Collision between the high speed ferry,
CONDOR VITESSE and the fishing vessel LES
MARQUISES**

**In waters between Plateau des Minquiers and Iles
Chausey whilst en-route from St Malo, France and St
Helier, Jersey**

on

28th March 2011

The Bahamas Maritime Authority investigates incidents at sea for the sole purpose of discovering any lessons which may be learned with a view to preventing any repetition. It is not the purpose of the investigation to establish liability or to apportion blame, except in so far as emerges as part of the process of investigating that incident.

It should be noted that the Bahamas Merchant Shipping Act, Para 170 (2) requires officers of a ship involved in an accident to answer an Inspector's questions fully and truly. If the contents of a report were subsequently submitted as evidence in court proceedings relating to an accident this could offend the principle that a person cannot be required to give evidence against himself. The Bahamas Maritime Authority makes this report available to any interested parties on the strict understanding that it will not be used as evidence in any court proceedings anywhere in the world.

Pursuant to the International Maritime Organization's "Code for the Investigation of Marine Casualties and Incidents", the Bahamas Maritime Authority wishes to acknowledge the contribution to this investigation made by the French Marine Accident Investigation Office (BEAmer) and thank it for its co-operation and support.

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1 SUMMARY

- 1.1 On 28th March 2011, the CONDOR VITESSE (CV) was undertaking a scheduled voyage between St Malo in Brittany (Bretagne), France and St Helier, Jersey in the Channel Islands (Iles Anglo-Normandes).
- 1.2 The vessel had encountered poor visibility on leaving St Malo when restrictions on her navigation were self imposed in accordance with the International Regulations for Preventing Collisions at Sea (Colregs) and the company Safety Management System as interpreted by the Master.
- 1.3 Having negotiated the approaches to St Malo successfully at reduced speed the weather conditions were seen to improve, which included visibility and restrictions were lifted, allowing the vessel to increase to full cruising speed.
- 1.4 At this time, the Master and the Chief Officer re-designated their radars from the shortest ranges used in port so that the Master was on 0.75 miles, offset to give approximately 1 mile visibility ahead and the Chief Officer set up his radar to 1.5 miles, similarly offset to give greater emphasis to ahead sectors. Evidence suggests that the Chief Officer's radar display was being used on 3NM or 6NM range after the Condor Vitesse cleared port limits although this cannot be proved, as this display is not recorded on the VDR.
- 1.5 Subsequent to this increase of speed, the traffic was observed to be minimal and radar sensitivity was particularly good on account of the calm conditions. Fishing buoys and even birds were visible on the radar displays.
- 1.6 Less than an hour into the voyage, what is now known to have been the LES MARQUISES (LM) fishing vessel, from Granville, was detected by radar fine on the starboard bow. The bridge team however did not detect the contact displaying on the screen. The vessel had just passed the South East Minquiers buoy, leaving it to port and was in the waters between Plateau des Minquiers and Iles Chaussey.
- 1.7 Less than one minute after that at 06:42:41 UTC (VDR), the CV collided with LM in position 48 56.173N 001 58.125W as determined by recorded data on the VDR. The position was inside French territorial waters and the French BEA Mer , as a consequence, led the joint investigation with the Bahamas Maritime Authority who are the flag state authority for the vessel.
- 1.8 Initially the cause of the sound of the impact was not fully understood but a bilge alarm that activated immediately indicated ingress of water that itself suggested an impact with a substantial object.
- 1.9 With input from a passenger witness it was then realised that the collision had been with another vessel and a search and rescue (SAR) operation began immediately. Initially the position of the vessel in relation to French or Jersey

waters was uncertain but the Jersey MRCC responded to the Mayday relay issued by CV.

- 1.10 At this time visibility was again poor, which hampered the search operation. It also indicates a possible contributing factor in failure to detect the LM prior to the collision. It is not known precisely when visibility deteriorated to the extent that it did but there were no self-imposed restrictions on the navigation of the vessel in place at the time.
- 1.11 CV returned to the area of the collision and launched rescue boats. Two survivors were recovered from the sinking wreckage by one of the rescue boats from CV. It was then known from the survivors that a third person – the boat's skipper - was missing.
- 1.12 The survivors were taken on board CV. They were suffering from cold and minor injuries but were otherwise unharmed.
- 1.13 The missing crew member from the LM was found by another French fishing vessel. He was found unconscious and injured and after being attended to by a volunteer nurse from the CV passengers, was transferred directly to the Jersey all-weather lifeboat which returned him to medical facilities in Jersey where he was later pronounced deceased.
- 1.14 CV was released from the SAR by the Jersey MRCC after a positive identification of the missing fisherman had been ascertained. Jersey MRCC had assumed control of the operation in the first instance and with cooperation from the French MRCC at CROSS Jobourg continued in that role.
- 1.15 Damage controls had been carried out on board CV immediately after the collision and concurrent with the SAR operation.
- 1.16 CV continued at slow speed to Jersey where the passengers and vehicles were discharged and the vessel was taken out of service. The two surviving fishermen travelled with the vessel to Jersey where they were transferred to medical facilities. After receiving treatment they were repatriated to France.

2 PARTICULARS OF VESSEL

2.1 “CONDOR VITESSE” is a High Speed Ferry of wave piercing catamaran design registered at Nassau, Bahamas. The vessel has the following principal particulars:

- | | | |
|-------------------|---|--------------|
| • Official Number | - | 730516 |
| • IMO Number | - | 9151008 |
| • Length overall | - | 86.62 metres |
| • Breadth | - | 26 metres |
| • Gross Tonnage | - | 5007 tonnes |
| • Net Tonnage | - | 2002 tonnes |
| • Call Sign | - | C60X9 |



2.2 The vessel is powered by four main diesel engines that develop a total of 28320kW and which drive four water jet units arranged two in each of the catamaran hulls..

2.3 The vessel was built in 1997 by International Catamaran Pty. Ltd, Hobart, Tasmania, Australia.

- 2.4 The vessel was first registered under the Bahamas Flag in 1997 and was entered with the Det Norsk Veritas classification society. At the time of the accident she complied with the all statutory and international requirements and certification.
- 2.5 The vessel is owned by Condor Ltd of Guernsey in the Channel Islands and managed by Condor Marine Services Ltd based in Poole, United Kingdom.
- 2.6 CONDOR VITESSE was last subjected to a Bahamas Maritime Authority Annual Inspection at the Port of Weymouth, UK on 27th April 2010.

3 NARRATIVE OF EVENTS

- 3.1 All times noted in this narrative are given in the style of the standard 24 hour clock in Coordinated Universal Time (UTC) without additional annotation. VDR records, from which the majority of quoted times are derived, are in UTC but any reference to Ships time will be clearly indicated in the report. Ship's time was one hour ahead (UTC+1) which was synchronised with the UK/Channel Islands. The ship's time is maintained on this zone even when in France. Local time in St Malo was European Standard Time (UTC+2) – 1 hour in advance of the ship's time. The year to which all date references relate is 2011 and unless stated otherwise all references to events relate to the 28th March.
- 3.2 Evidence has been derived primarily from the vessel's Voyage Data Recorder (VDR) supported by testimony of witnesses. Most bridge conversation on the VDR was in French between the predominantly French bridge team.
- 3.3 The weather, both on leaving the port of St Malo and at the time of the incident was either calm, within the shelter of the port or with a light north-easterly breeze in the seaway. Visibility has been established as poor although it had been variable before the incident.

Departure from St Malo

- 3.4 At 05:41 on the morning of Monday 28th March 2011, CONDOR VITESSE (CV) was preparing to depart the port of St Malo in Brittany, France. The loading of vehicles and passengers was almost completed and bridge checks were being made. One check was a communication with the Port Control to give 15 minutes notice before the vessel was ready to sail.
- 3.5 At 05:46 a further communication was made with the Port Control requesting a visibility check. The Port Control responded quoting from a report from the incoming Brittany Ferries vessel BRETAGNE who stated that they were unable to see the Grand Jardin light. This does not give a numerical measure to the conditions but in view of the known familiarity of staff on all vessels with the area, it was meaningful to them.
- 3.6 At 05:48, the vessel gave 5 minutes notice to the port for sailing.
- 3.7 At 05:53, a communication with staff on the vehicle deck confirmed the stern door to be closed. Permission was requested from and clearance was given by the Port Control for the vessel to sail.
- 3.8 At 05:54.45, the vessel let go all moorings. The signal to let go – heard on the VDR recording – is a single blast on the whistle. This signal also served as the first fog signal in accordance with the collision regulations, indicating that the vessel was now under way.

- 3.9 The route had by this time been entered into the electronic chart system. Radar displays also included maps indicating courses and channel markers. The vessel was being manually steered by the Master who was also operating the levers to control the speed of the four waterjets. The bridge watch team consisted of the Master and Chief Officer navigating, the Chief Engineer managing the propulsion and other power and an AB on Lookout.
- 3.10 At 06:01, a conversation was heard on the VDR that confirmed the Master and Chief Officer were conferring over the radar settings. The Master's radar was set on 0.75 miles with offset giving range of about 1 mile ahead. The Chief Officer's display was set to 1.5 miles, also with offset giving an enhanced range ahead but because it was the secondary radar, – the primary being the Master's – it was not recording on the VDR and the set-up cannot therefore be confirmed. Both radars were displaying North Up, Fixed Origin and True trails. The Chief Officer's radar was slaved to the Master's X band (3 cm). The S (10 cm) radar was not operating.
- 3.11 The vessel proceeded to seaward along the St Malo approach channel for the next 10 minutes. The fog signal could be heard repeating in accordance with collision regulations throughout this episode. The VDR audio channel recorded conversation between bridge team members discussing matters concerning the manoeuvring of the vessel, the navigation and the conditions.
- 3.12 Speed was gradually increased to around 15 knots until at 06:10 translated conversation was heard commenting on the fact that it was very difficult to see the Grand Jardin light. No specific range of visibility was available from this fact however as the Grand Jardin would have been some distance from the vessel at the time – more than the 0.75 mile range of the master's radar.

Sea Passage

- 3.13 At 06:10, the conversation on the bridge became focused on the continuing use of the fog whistle. At 06:16:50, the Master was heard to say that it would be noisy in the cabin. He added that it would still be possible for boats to hear the vessel. The fog signal was then discontinued and speed increased further.
- 3.14 The audio recording of the bridge space became busy after this point. Conversations were multiple between different people and content was not centred on navigation but on other matters of the vessel's management. There was also some social content. One aspect of the conversation referred to the weather and the emergence of the sun. Discussion of horizontal visibility took place in conversation at 06:17:08 between the master and the lookout with the former remarking that they were not seeing the fishing "bobbers" at all and the latter agreeing.
- 3.15 During this period, an English voice was heard discussing results of drug tests. The voice was that of a senior master responsible for training coordination. Hereinafter referred to as the Training Coordinator, he was travelling as a passenger, returning to UK with a number of recruits from St Malo. The initial results of a pre-employment drug test being conducted in the crew quarters of the vessel were the subject of discussion between him and others on the bridge.

- 3.16 At 06:22, the speed over the ground was registering 36.5 knots. It is noted that the speed log is reported to be reading slightly high and was showing around 39 knots at this time. The speed remained at this level for the duration of the next phase of the voyage.
- 3.17 Also at 06:22 the Master announced that he was changing the radar from short to medium pulse. The quality of the screen of the Master's radar then changed to include a greater amount of sea clutter. The Auto-Clutter control was showing "on" and suppression was evident in the forward sectors. After sectors were distinctly more affected by the clutter. The change in pulse length on the master's radar to medium pulse also dictated this pulse length on the Chief Officer's (slaved X-ban) display thereby improving long range detection as acknowledged by the Chief Officer's comment (below). The Chief Officer set his display anti clutter controls to zero.

Extract from VDR transcript.

0622Z		Discussion wrt radar C/O using manual clutter (not exact)
	Capt.	Est ce que je change le pulse I am changing pulse length
	C/O	tu peux mettre un peu plus de pulse ça irait très bien You could increase the pulse a bit, very good
	Capt.	MP (Medium Pulse) Master's radar changes to medium pulse 062158Z, more suitable for use of C/O display at greater range.
	Capt.	J'ai plus d'image I have a better picture
	C/O	moi, je fait le anti-clutter manuel et je mets a zéro I'm using manual clutter and setting at zero

Approach to Area of Accident

- 3.18 At 06:38, a contact appeared close to the starboard side of the heading line on the Master's radar. The range was just over a mile. The contact passed down the starboard side clear by about 100 metres and was never commented upon by any person on the audio recording. It is not known if the contact was a boat but its strength and persistence suggests that.
- 3.19 At 06:41 the VDR recording of the radar registered a contact at the extreme edge of the radar screen, a small angle (fine) to starboard of the heading line. This contact was subsequently identified during the investigation as the fishing vessel LES MARQUISES - the casualty. Its range, was 1.08 miles due to the offset of the master's radar (VDR recorded) on 0.75 miles range. The quality of the

contact was showing a strong and sustained return, distinct from other intermittent echoes on the same screen.

- 3.20 There was no noticeable reaction to the contact. Conversation continued with one topic in particular dominating. The dominant conversation was between the Chief Officer and the Master and concerned fumes from the main engines entering the vehicle deck on start-up before the crew were able to close the stern doors prior to departure.
- 3.21 At 06:42, the contact was about 0.5 miles fine on the starboard bow. Trails appeared to indicate that its progress was towards the heading line. Soon after this, the contact was lost in the sea clutter very close to the vessel. There was no reaction of the bridge team apparent on the VDR recording. The conversation continued on subjects not directly associated with the navigation of the vessel.
- 3.22 At 06:42:41, a loud bang was heard followed immediately by an alarm that was identified as a bilge alarm on the void space in the forward two compartments of the starboard hull. The bridge conversation was immediately thrown into confusion as those present struggled to understand what was happening.
- 3.23 The engines were immediately slowed and the speed taken off the vessel.

Search and Rescue

- 3.24 At this point, an English voice was heard that was the Assistant Engineer¹ who was occupying the engineer's seat while the Chief Engineer was below on another task. He identified the bilge alarm source and immediately began communications with other personnel in relation to damage identification and control.
- 3.25 Damage control measures began immediately and the assistant engineer was heard communicating with staff on the vehicle deck where a systematic investigation of forward compartments began on the starboard hull.
- 3.26 Initial reports identified that water ingress was evident in the forward two compartments of the starboard hull. The aftermost of these compartments also housed the mounting recess of the "T-foil" - a stabilising hydrofoil - and the evidence from damage to the mountings visible within the space was that this had been detached. The damaged mounting was another point of water ingress. Emergency measures were taken that included additional portable emergency pumps and hammering in of wedges to the penetration point.
- 3.27 At 06:43:23, a contact was visible in the starboard wake. This would coincide with wreckage of what was later identified as the fishing vessel LES MARQUISES – the other party to the collision.

¹ This position is now known in the Condor Fleet as Engineer Officer of the Watch (EOOW) to prevent it's confusion with the terminology usually assigned to an engineer officer under training or probationary conversion to marine engineering from another branch of engineering.

- 3.28 At 06:43:50, the Chief Officer was heard to observe that the vessel had collided with something and that he should proceed aft to investigate for damage to steering and jet-drive units.
- 3.29 At 06:44:15, the contact in the wake had disappeared off the screen. Because of the offset, the after view was restricted to less than quarter of a mile. An announcement was made to the passengers to indicate that the vessel had collided with something unknown.
- 3.30 At this time, the Training Coordinator was at the aft end open deck when he felt a jolt. He did not hear anything above the high level of ambient noise on the open decks.
- 3.31 Sensing that the jolt was abnormal – at first he associated it with a major engine failure with which he had experience as a master himself – he proceeded through the passenger cabin towards the bridge. On the way he was aware of excitement among the passengers including what sounded like reference to something flying past the window.
- 3.32 At 06:44:50, the English voice of the Training Coordinator was heard on the bridge. He assumed a supernumerary role, offering his assistance to the Master. One of his first questions was “where is the lookout?” No reply to this question was detected on the VDR recording. Soon afterwards he could be heard asking of the Master what he wanted him to do and for provision of a radio, all within less than a minute. Activity on the audio recording was intense with a number of communications within the vessel associated with damage control going on in the background.
- 3.33 The Training Coordinator could be heard at around this time offering advice to damage control teams to check the port hull compartments after those of the starboard hull.

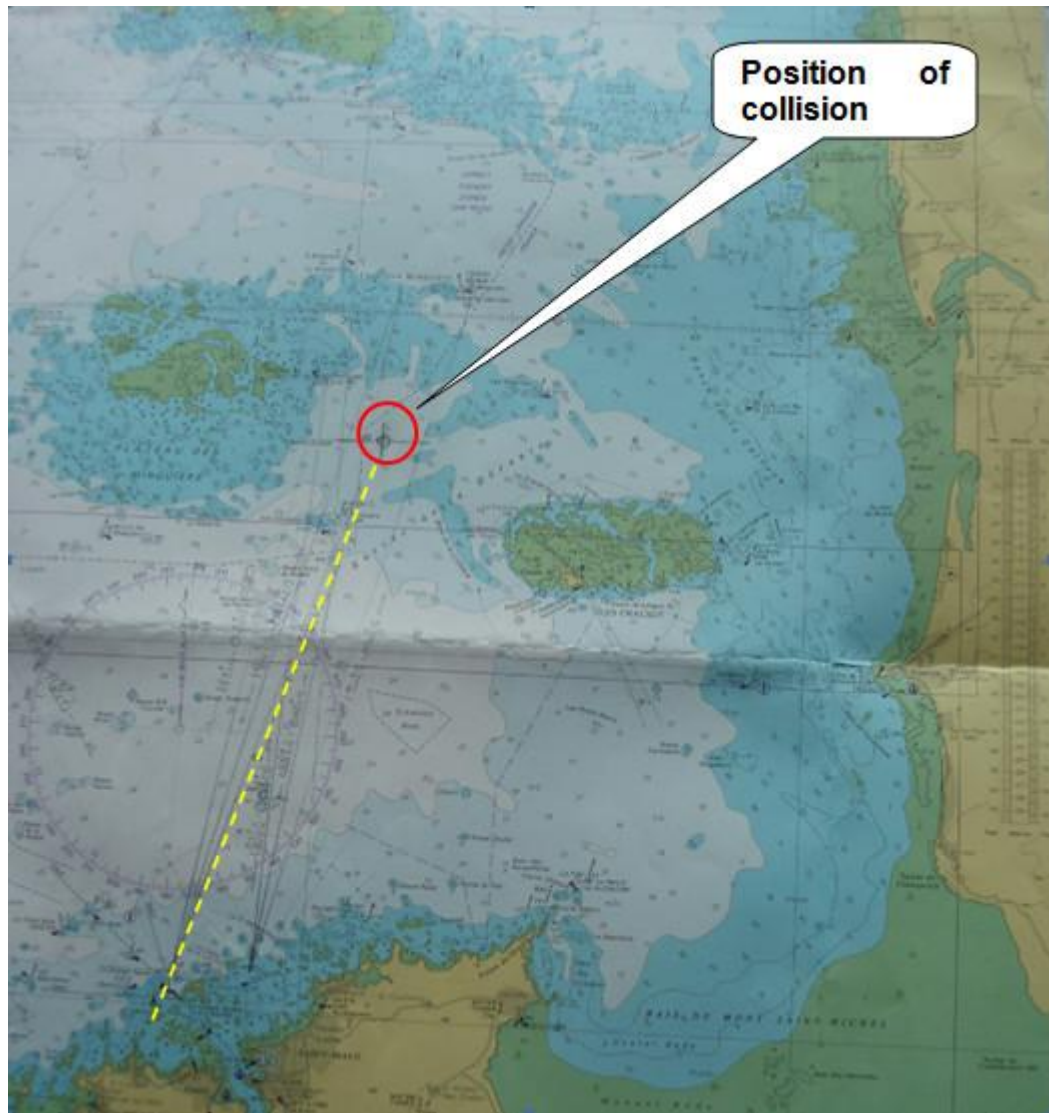


Figure 1: Chart from CONDOR VITESSE showing position of collision and course taken (highlighted in yellow dashes)

- 3.34 During the period immediately following the impact, the vessel was slowing. At 06:46:06 the Master could be heard to say, in English (as though to appeal for assistance), “Something (is) wrong with the steering”.
- 3.35 During the period that followed, the Master was functioning but was apparently in a state of shock. The supernumerary master – the Training Coordinator - was increasingly involved in the damage control and search and rescue operations that followed.
- 3.36 At 06:48 an announcement was made “Working Party Code 1”, which is a coded message mustering the crew to damage control and other duties. The vessel was, at this time turning slowly to starboard. The speed had reduced to around 5 knots.
- 3.37 At 06:49, the Master could be heard saying, “I hope it is not a boat”.

Extract from VDR transcript

06:49 49 Z	Capt.	J'espère ce n'est pas un bateau I hope it is not a boat
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- 3.38 At 06:50, a cabin attendant came to the bridge and advised the Master that a passenger had seen something and wanted to report it to the bridge. The Master responded by saying that the passenger should be invited to the bridge, whereupon the passenger was brought in and can be heard explaining what he had seen.
- 3.39 At 06:51, the vessel had turned to a heading of 216 and was maintaining a speed of 3.9 to 8 knots. The vessel was headed back towards the position of the impact. At the same time, the passenger visiting the bridge described what he saw as something that looked like a fishing boat as it flew past his window.
- 3.40 From immediately after the collision the Assistant Engineer, assisted by crew members, inspected void spaces and in the case of the holed compartments implemented measures to stem the flooding using wooden wedges and other packing materials. The subsequent checks on all other spaces were also carried out by this party, as was the introduction of portable pumps to remove water from the holed spaces and to supplement fixed pumping arrangements.
- 3.41 At 06:54, having been convinced by this stage that the vessel had collided with a boat the Master ordered a Mayday relay, which was transmitted by the Chief Officer. At the end of the transmission, the Chief Officer added that the vessel could not manoeuvre.
- 3.42 Jersey Coastguard MRCC immediately answered the call and established an SAR operation with CONDOR VITESSE as on scene commander.
- 3.43 Testimony from the surviving fishermen confirms that at this time visibility was poor. One of them estimated it to be between 20 and 25 metres.
- 3.44 The first rescue boat was lowered to the water from CONDOR VITESSE at 06:59.09 as the vessel reached the approximate area of the collision. There was no obvious indication of wreckage on the radar but a number of other fishing vessels had joined the search for survivors.
- 3.45 At 07:00, a conversation was heard between the Training Coordinator and the Master regarding the control of the vessel. It led at 07:04 to resolution of the problem, which was identified as an omission to disconnect the autopilot.
- 3.46 By 07:05, a second rescue boat had been launched. One of the rescue boats was carrying the bridge SART to keep track in the poor visibility.
- 3.47 At 07:10, one of the rescue boats picked up the surviving fishermen - two men - who advised the boat's crew that a third man – the skipper – was missing. In their later statements, the two fishermen confirmed that they had seen the skipper

floating on his back in the water, apparently unconscious. They themselves were able to board the floating wreckage of the transom and after end of the boat.

- 3.48 The surviving fishermen, in their testimony at interview confirmed that they heard the CONDOR VITESSE engines immediately before the collision but that the fog signal was not audible to them. They also confirmed they were on a westerly course laying down (shooting) lines of pots in a westerly direction – the direction of the tidal current at the time.
- 3.49 The surviving fishermen stated at interview that neither they nor the skipper were wearing lifejackets. They also stated that the vessel's liferaft inflated but was out of reach. There was also a life ring that was within reach and taken by the fishermen whilst they were on the stern section.
- 3.50 The search continued for the skipper and he was eventually picked up by a fishing vessel that then called for medical assistance. A call went out aboard the CONDOR VITESSE and a nurse who was a passenger volunteered to be taken to the vessel with the casualty aboard. The casualty was then transferred to the St Helier Lifeboat soon afterwards and taken to medical facilities in St Helier. He would have been transferred by helicopter to a French destination except that the visibility impeded helicopter operations. A helicopter that had been attending was forced to return to its French base, unable to assist because of this.
- 3.51 Various communications continued between CONDOR VITESSE, the fishing vessel that recovered the skipper and the MRCC in Jersey. When the identity of the skipper had been satisfactorily cross referenced with information provided by the two survivors, who were on board CONDOR VITESSE the MRCC stood the search down. This occurred at 08:34.
- 3.52 Both the fast inshore lifeboat and the all weather lifeboat from Jersey attended. The latter transferred the skipper to medical facilities ashore at St Helier where he was later declared deceased.
- 3.53 CONDOR VITESSE, after being released from the search and rescue operation, recovered all rescue boats and personnel and proceeded to St Helier at slow speed.
- 3.54 The two surviving fishermen travelled aboard CONDOR VITESSE to St Helier where they were transferred to ambulance and taken to medical checks from which they were later released to return to Granville, their home port.

4 ANALYSIS

- 4.1 In the early stages of events, as the vessel prepared to sail from St Malo, and during the sailing process bridge activities were in accordance with company procedures. Visibility was restricted but VDR records confirm that the bridge team were fully aware. Checks were being made prior to sailing and activity was audible on the VDR record.
- 4.2 At 05:46 – prior to departure - a visibility check was made from the vessel with the Port Control. The Port Control responded with a report from the incoming Brittany Ferries vessel BRETAGNE - she was unable to see the Grand Jardin Light. From this and other known points in the harbour, the visibility was estimated at about 50 metres.
- 4.3 Audible conversation on the bridge was detected on the VDR recording. At this early stage, immediately before and in the first stage of the voyage it was focused on the navigation. It suggested the bridge ambience at that time was professional with very little conversation. It was, to borrow an expression used in aviation – “sterile”. This condition remained for the full duration of the transit of the St Malo approach channel.
- 4.4 The route taken on this occasion was departing the channel to the west of Le Grand Jardin light through the Chenal du Bunel. An alternative route used during suitable tides passes east of Le Grand Jardin but as tides were at Neaps on this occasion, there was insufficient water to use this route.
- 4.5 Although from recorded conversation it is inconclusive, the situation at 06:02, when the vessel reached the outer end of the approaches to St Malo, was significant. The discussion around the difficulty seeing Grand Jardin light points to concern about the visibility but if it had been visible, visibility would have been better than the poor conditions at the time of leaving the berth. There is one caveat to this however. The effects of strong tidal currents in the area can create local fog conditions that are very isolated due to temperature changes in the body of water relative to the atmosphere above it. One particular condition that can occur is fog close to the water, making it difficult to observe the sea surface and by association, small craft and buoys on the surface of the sea, but at the same time, visibility at the level of the bridge may be excellent.
- 4.6 It is possible that the bridge team, on observing the clear sky conditions that emerged at this time may have been misled into believing that visibility was better than it actually was.

Clearing the Fairway

- 4.7 At 06:12, the vessel speed was increased. At 06:13, St Malo Port was contacted to report being clear of the fairway. Speed was being increased - by this stage it had reached 18.2 knots - but it was not obvious from audio recording on the VDR that visibility had improved particularly.

4.7.1. The vessel's speed is restricted to 12 knots in the fairway under company procedures unless it is able to quickly become fully dynamic. This restriction is in place to avoid wash generation in the vicinity of the Ile Cezembre. The vessel is freed from this restriction once clear of the channel.

Radar Quality

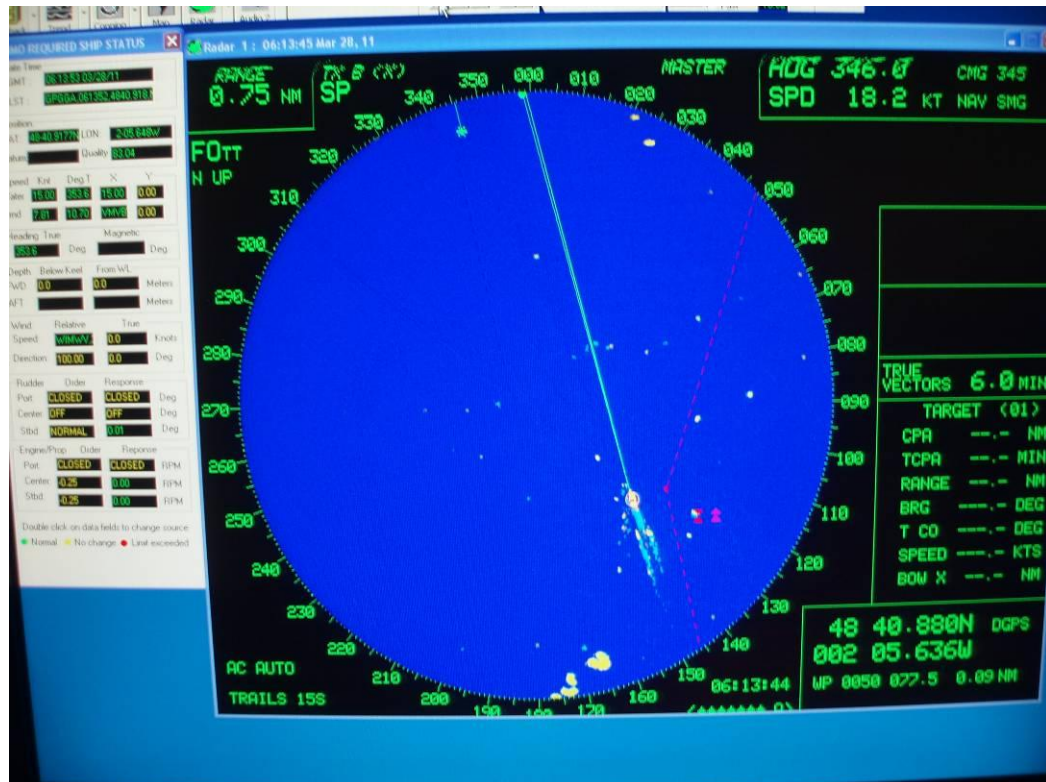


Figure 2: VDR Radar image for 06:13UTC. Clearing Channel: Bunel (west cardinal) Buoy on starboard quarter.

- 4.8 The overall quality of the radar picture that was recorded was good. The smooth sea conditions that existed at the time appear to have enhanced returns to an extent that fishing buoys were, for much of the time, returning strong echoes. The tuning of the radar was also good to the extent that even sea birds in flight were detected; a phenomenon that the Master and Chief Officer and other navigation staff during a subsequent familiarisation voyage confirmed was well understood.
- 4.9 The Radar image change at 06:22, by which time the pulse length had been switched to Medium, was not an unusual pattern. The predominance of clutter in

after sectors is common to many shipboard radars and is related to reflections off the vessel's structure (see Figure 3). Nevertheless, the difference between short pulse and medium pulse is very noticeable and was contributory in obscuring the contact immediately before the collision as well as after the collision when it might have been useful in tracing the wreckage for rescue purposes. The use of medium pulse did however permit better long-range detection on the Chief Officer's slaved display. The radar range on the Master's display was not changed from the relatively short 0.75 miles after the speed was increased to full sea speed.

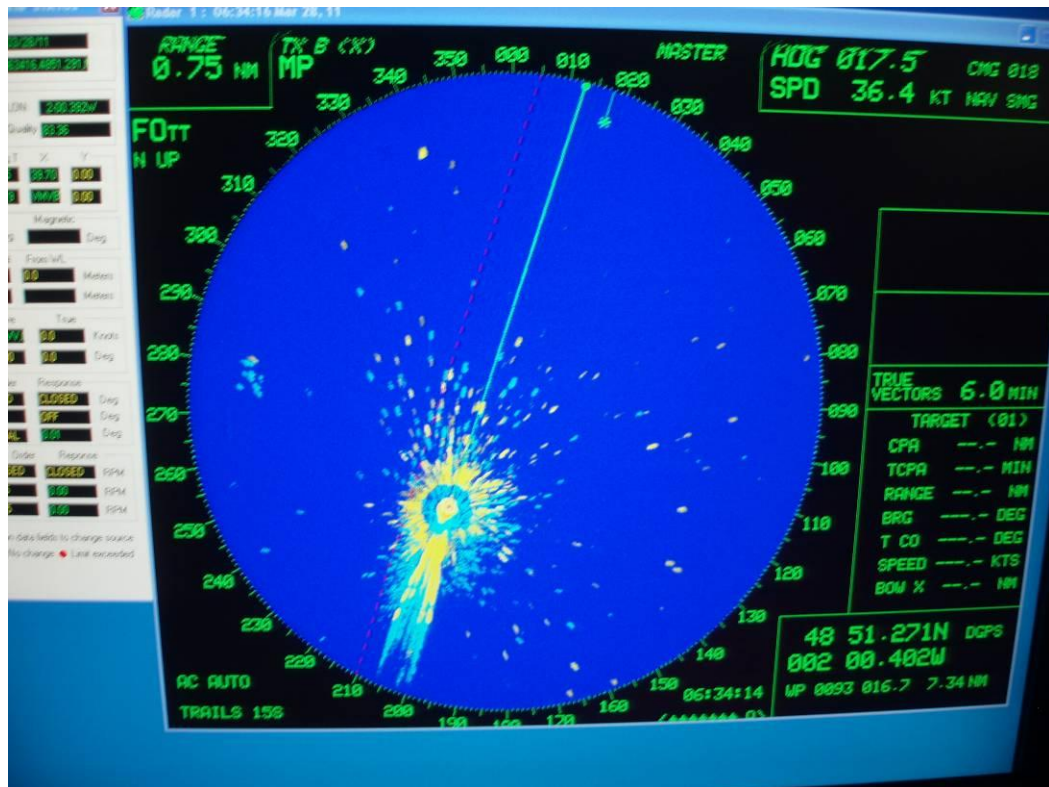


Figure 3: Radar screen after switching to medium pulse.

- 4.10 The decision to run two radars slaved together suggests a lack of operational effectiveness of the radar not being used (S-Band), or it suggests a perception of same by the navigating officers. The S-Band radar had been the subject of fault reports in recent times but had supposedly been addressed. Navigation officers however continued to detect what they interpreted as poor performance. On two occasions, a technician was called in but the technicians disagreed as to the cause of the problem. Other questions also arise relating to the safety management system for the maintenance of complex equipment: The question remains as to how effective either technician was in resolving the issue. Other questions relating to the safety management system also arise:

- How reasonable was it for the manager's to assess the technician's repair? and
- Could the manager's have effectively analysed the problem themselves by performance monitoring.

- 4.11 On a voyage aboard CONDOR VITESSE after the accident when radar conditions were reproduced as closely as possible to those on the voyage of the accident, it was observed by investigators from both BEA Mer and BMA that the Chief Officer's radar, when slaved, was less sensitive in its resolution than the Master's. This difference was very detectable in harbour where strong echoes were returning from shore structures. It was less obvious in open water, where small contacts remained fully visible. The Chief Officer's radar however is the one not recorded on VDR so there is no way of determining if it actually displayed the same contacts that were recorded from the Master's radar. At interview, both the Master and the Chief Officer testified that neither of them saw the contact. They acknowledged that the VDR confirmed it existed on the Master's radar but neither were able to say the same for the radar used by the Chief Officer and there was no other recording (such as a bridge CCTV camera) available to establish the fact.

Bridge Team and Procedures

- 4.12 During the departure from St Malo on the day of the accident the bridge team consisted of Master, Chief Officer, Chief Engineer and a rating lookout. Subsequent interviewing of the lookout has indicated that the position taken up was in the centre of the bridge immediately behind the central console, between the master and the chief officer.
- 4.13 The Company Route Operational Manual section 12.3.1.3 states:

Bridge team:

Procedures for reduced visibility are in place with the Master at the "con" the Chief Officer at the Navigation Consol and the Chief Engineer (or in exceptional cases the Assistant Engineer) at the Engine control consol. Two lookouts with Bridge Watch Rating Certificates are to be on the bridge. **The Lookouts are normally to be positioned on the bridge-wings where they can keep an effective lookout over a greater part of the horizon. Should conditions permit the adjacent bridge-wing windows should be partially opened.** The lookouts are to be briefed by the Master or Chief Officer on any contacts detected by Radar and must report any visual sightings or sound signals heard. The ride control A/C and Wipers and demisters are to be operated such that optimum conditions are achieved and the physical factors relating to Fatigue are therefore minimised. Fog signals are being sounded iaw Rule 35

(Bold and underline added in extract for clarity)

- 4.14 The single AB on lookout duty could have been doubled in poor visibility but this decision is ultimately left to the discretion of the master. The position of the lookout according to her testimony during interview, was in the centre of the bridge behind the master.
- 4.15 It is a matter of debate as to whether the positioning of the lookout(s) at the bridge wing end by an open window to provide an aural link with the outside environment could be effective with the vessel travelling at speed. The visibility at the time of the collision was such that the vessel, at 36 knots could be considered travelling too fast to react within the visible distance ahead. However, it is more likely that a lookout so positioned would detect another vessel's fog

signal aurally than would be the case in the centre of the wheelhouse. The wheelhouse, apart from the sliding panes at the bridge wings, is totally enclosed with no other opening windows.

- 4.16 The bridge team arrangement aboard CONDOR VITESSE at the time of the accident did not match the company advice. The Chief Engineer was not at his position but the Assistant Engineer was. This does not conflict with procedures. The lookouts however were not at the ends of the bridge wings with windows open. It is evident that there was only one lookout and although master's discretion is the final decider of this number it would appear that, a single lookout was inappropriate for the conditions that were highly likely to have been in existence at the time.
- 4.17 Subsequent consultation with the Marine Superintendent has clarified that exceptions for having windows opened would be driving rain because it would neither be practical to expose the lookout to such conditions and expect some improvement in the watchkeeping nor would it be conducive to preserving the integrity of the electronic controls nearby. Conditions at the time however did not include driving rain.
- 4.18 This bridge team arrangement was therefore in conflict with "normal" company procedures even though the same procedures did allow the master discretion whether or not to appoint the second lookout.

Visibility

- 4.19 The checking of visibility, as was heard on the recording during the departure from the port does not appear to have been continued after the vessel reached the end of the St Malo approach channel. Testimony from the Master and Chief Officer during interview as well as the lookout from the period, does identify that at that time there was an improvement of the visibility. The sun emerged but the surface was still obscured by mist. It is not clear to what extent horizontal visibility was affected at this time but it is understood not to have been completely clear.
- 4.20 The surviving fishermen both stated in their interview with BEA Mer and BMA investigators at Granville after the accident that the visibility at the time was poor. One of them estimated it at 30 metres. Both also stated that they did not hear any fog signal from CONDOR VITESSE immediately before the collision and one of them also stated that it was not operating when the vessel returned about 30 minutes later. The signal was heard however during the passage from the site of the accident to Jersey.
- 4.21 The fishermen also acknowledged that the LM was not operating a fog signal either. It is debatable if the signal would have been heard by a lookout at an open window, as per the company procedures but this would have given lookouts the best chance possible. It is almost certain that in the centre of the wheelhouse sound signals from outside would not have been heard.

- 4.22 The visibility at departure (05:54:46) had been poor. A whistle signal was given to signal to the crew to let go moorings. This whistle signal was the first of a series that continued in accordance with collision regulations as the vessel progressed from the port. It was a further recognition that the conditions were abnormal.
- 4.23 At 06:15, a conversation was evident on the audio recording of the VDR in which the Master discussed with the Chief Officer the need for the fog whistle. It was decided to discontinue the signal. The reasons for its discontinuance did not appear to be primarily concerned with safety of navigation. The primary consideration for discontinuing the signal as reflected in the conversation was noise in the cabin. Another comment in the same conversation was that the noise of the engines would be heard in any case. This comment strongly suggests recognition that audible warning might be appropriate in the conditions, even though visibility was not mentioned. Instead, however, the alternative of relying on the noise of the engines is in contravention of the collision regulations that include specific signals to indicate the vessel type and its status.

Speed

- 4.24 There is very little evidence of any formal discussion on the bridge to justify the increase of speed towards the end of the St Malo approach channel. Although it was not increased to full sea speed the reliance on a perceived reduction of traffic density and increase in sea room would appear to be the only pointers that a higher speed could be tolerated. By the time any recognition of an improvement of conditions was heard on the VDR – and this only related to sunlight breaking through, not surface visibility – the speed had been further increased to something approaching full sea speed. The vessel has fairly tight schedules to keep but company procedures do emphasise the need for safe speed.
- 4.25 In the company's Route Manual, section 12.3.1 addresses assessment of safe speed. The various items to be considered by a master include both radars operating. On the voyage under consideration, this was not the case, even if two displays were operating. There was therefore a specified procedural reason for questioning the safe speed at the time. The visibility and presence of small craft (or other obstructions) however, do not appear to have been continuously monitored after clearing the St Malo approach channel. Appropriate monitoring of conditions appears to have been relaxed.
- 4.26 It is recognised that this type of vessel can reduce speed very rapidly but the speed of the vessel also affects the available time in which watch keepers have to react. At 36 knots – the speed of the vessel at time of collision – the available reaction time will be half that at 18 knots – the approximate speed the vessel had reached by the time she cleared Le Bunel Buoy. There is no definitive proof available that visibility had improved sufficiently to justify this increase in speed.

Radar Procedures

- 4.27 Radars and ECDIS were set up with reduced visibility in mind. The Master's radar – the unit recording to the VDR was set on 0.75 mile range with offset to allow for an enhanced forward view of approximately 1 mile. The Chief Officer's radar was set at a longer range. At interview the Chief Officer suggested that it would be normal practice for his radar to be on an offset 6 mile range, giving a view ahead of approximately 8 miles or a little more. He was unable to say with certainty however if this was the case on the day of the accident.
- 4.28 At interview, both the Master and the Chief Officer acknowledged that having seen the VDR playback the radar contact indicating the presence of LM was clearly visible. Neither however could recall seeing it. Either they were not watching the radar or they were so distracted that its presence did not register sufficiently for them to take action. There remains one other possibility that the quality of the Chief Officer's radar display may have been lower to the extent that the contact was not displayed as strongly, although there is no evidence to conclude that even were this the case the contact could not have been properly assessed and appropriate action taken in time.
- 4.29 The status of the radars alone strongly suggests the visibility was poor and that expected vessels for which avoiding action would be needed would be at short range. The range of the Chief Officer's radar was reported at interview to be 1.5 miles but it was not recorded on VDR as this is set up to receive data from only one radar – the Master's.
- 4.30 Immediately after the accident on 28th March, when the vessel was in St Helier, Jersey the radars were found in a set-up that was confirmed by members of the bridge team as being exactly as they were at the time of the accident. This revealed that the Master's radar was set to 0.75 miles range with offset. More significantly the Chief Officer's radar was running as a slave to the Master's (X band) transceiver.
- 4.31 A reason has been sought for the switching of the radars and it is evident that the S-band radar had been giving problems in the period prior to the accident. The vessel had been attended on two occasions by radar technicians, one in St Malo the other in Poole. The two technicians differed in their diagnoses of the S-band problem. One felt it was a transceiver fault, whilst the other considered it to be due to a different cause. Both technicians appeared to consider that their diagnosis was correct and that they had resolved the problem. It would appear however that the vessel's staff did not feel the S-band was reliable, even after the supposed rectification of the fault.
- 4.32 During a subsequent repeat of the voyage on 20th April with a different bridge team, a simulation of the conditions on the day was arranged for investigators from BMA - the flag state - and French BEA Mer for the territorial waters in which the accident happened. It was shown that the Master's radar was on X band (3 cm) while it was stated by the Chief Officer during interview that his radar would normally have been on S band (10cm) and on a longer range – e.g. 6 miles

offset in open water in clear weather; probably 1.5 miles in restricted visibility - so as to provide early warning of approaching contacts. This arrangement was also confirmed by the bridge team on the simulation voyage.

- 4.33 During the subsequent voyage when the circumstances were recreated it was noticed that the radar display of the Chief Officer was less clear than that of the Master when the vessel was in port (St Helier) despite both being connected to the same transceiver. The significance of this factor is that in the absence of a recorded picture it cannot be ascertained beyond doubt that the clarity of the display would, on the longer range, have made the incoming contact as obvious as it was on the Master's (recorded) display. On the longer range, the contact would have been smaller. If it was suppressed it might also have been less discernible from other less permanent contacts. If it was visible however there should have been up to twice as much time in which to detect the presence of the craft and take action as necessary.

Approach to Collision

- 4.34 In the short period during which it was detected before the collision, the contact of what is now known to have been LES MARQUISES (LM) was clearly visible on the VDR representation of the Master's radar. The contact first appeared on the edge of the offset screen at 06:41, slightly to starboard of the heading line. Because of the offset, the 0.75 mile range of the radar allowed for this contact to be detected on the screen at just over a mile (see **Figure 4**).

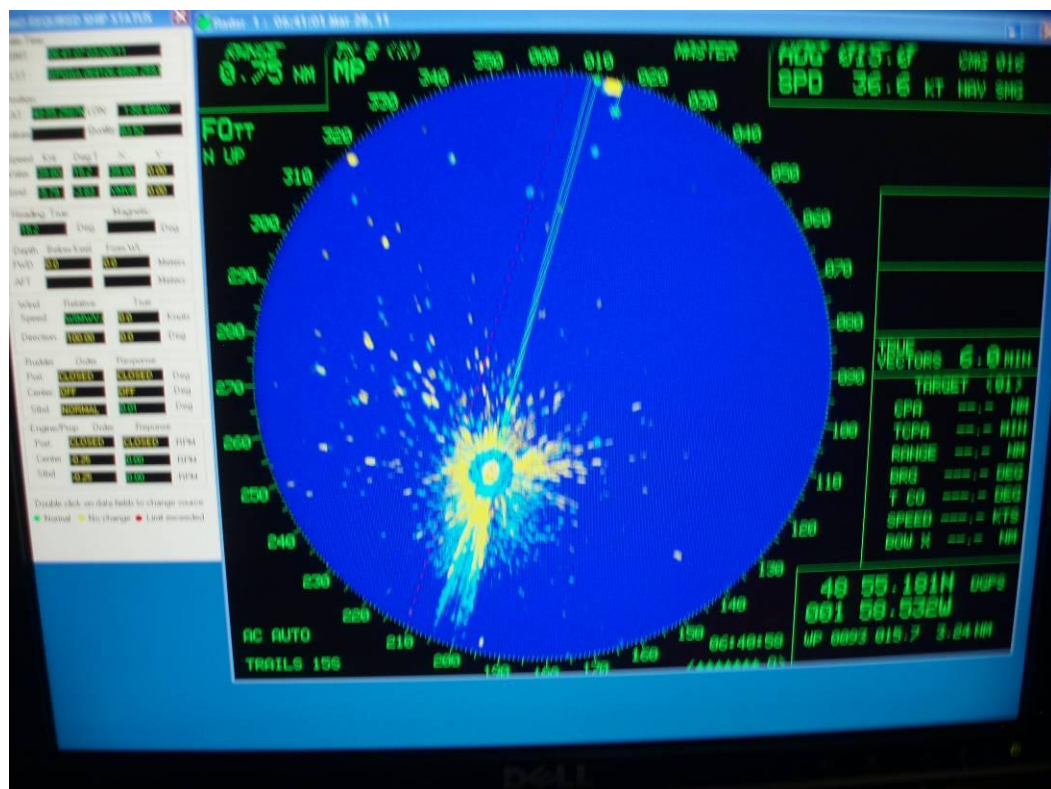


Figure 4: Contact – LES MARQUISES, first detection on Master's radar

- 4.35 The audio recording at this time was noisy. A number of conversations were taking place – none of them appeared to be addressing the navigation situation.
- 4.36 The lack of any realisation that at 06:38 a contact was detected close to the starboard side of the heading line on the Master's radar suggests that monitoring of the radar was not continuous and concentration was on matters not associated with the navigation of the vessel. The continued lack of realisation as the contact passed down the starboard side about 100 metres off further reinforces this conclusion. Based on the assumption that no visually detectable contact was seen it also reinforces estimates of visibility of between 20 and 30 metres described by the surviving fishermen. Conversation on unrelated topics continued throughout this period
- 4.37 As the LM entered the sea clutter at 06:42 there had still not been any reaction to the contact or any other navigational issue.

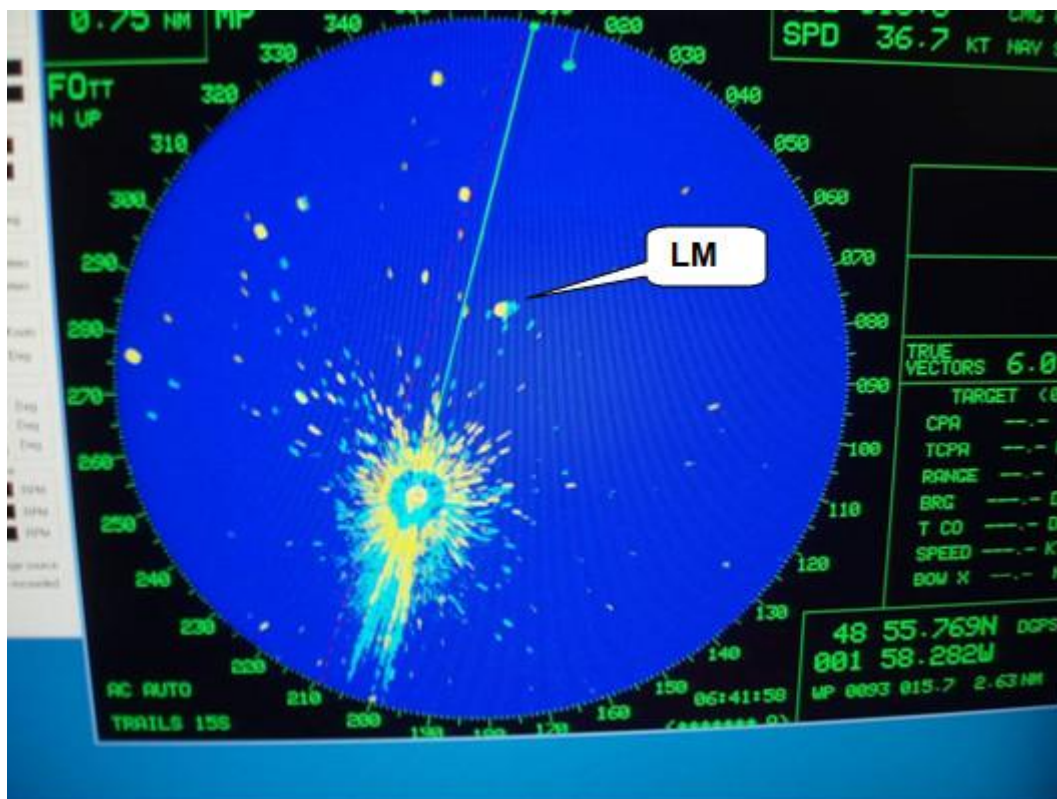


Figure 5: LES MARQUISES (LM) about 0.5 miles on starboard bow indicating slight movement towards heading line. Note pot marking buoys on port bow

- 4.38 The contact was not indicating much motion. After 06:42 the contact did possess a short tail (radar was set up to register tracks, see **Figure 5**) that suggested a westerly progress. Unfortunately, this was towards the vessel's heading line but it still did not generate any reaction in the bridge team.
- 4.39 At interview the surviving fishermen explained that at this time the LM was shooting a line of pots and was indeed heading in a westerly (down tide) direction, having just left one pot and headed for the next. The pots appear to be intermittently visible on the radar screen.

- 4.40 In this area there are numerous pots marked by buoys that, in good conditions are often visible on radar albeit intermittently (see **Figure 5**). HSC navigators are aware of them but there is no formal marking of particular pots on the chart. It is likely that the pots move considerably and cannot be regarded as permanent.

Collision

- 4.41 Impact was heard at 06:42.41. The sound – a loud bang – created a lull in audio as it appears the team struggled to comprehend what had happened. The speed indicating on the radar screen at the time, derived from GPS and therefore over the ground, was 36.9 knots.

Post Collision

- 4.42 During the period immediately following the impact, the vessel was slowing. At 06:46:06 the Master could be heard to say, in English, “Something (is) wrong with the steering”. The tone of this statement was as though to appeal for assistance. It indicated that either the steering had been damaged on impact or that the Master had not correctly assumed control of the steering buckets from the auto-pilot. It also indicated that he was in a state of shock that was probably impairing his decision making capacity.
- 4.43 The role of the Training Coordinator at this point became crucial. Himself a master with significant high speed craft and conventional vessel command experience, he was uniquely placed to render assistance at the time. It was noticeable on the recording that he was being careful not to undermine the Master’s authority but he became gradually more involved in the subsequent operations to the point that he was effectively coordinating most of the operations.
- 4.44 The assistance rendered by the Training Coordinator included a suggestion to extend the monitoring for ingress of water to the port hull even though the initial impact had been quickly determined to have been the starboard bow. This intervention was based on his own experience when a damaged “T-foil” had inflicted damage in a second compartment during an incident in which he was master. His support also included resolving the engine/steering control issue at a later time. This did not prevent the vessel being controlled by overriding tiller controls in the meantime.
- 4.45 Damage to CV was assessed as penetration of the forward two spaces in the starboard hull (the starboard wavepiercing tip, a small compartment forward of the collision bulkhead and No 1 Stbd Void space containing the attachment point for one of the vessel’s 2 “T” foils). The loss of the starboard T-foil, suggests the hull of LM passed beneath the hull. Damage to LM appears to have been catastrophic. The surviving fishermen described the point of impact as the port side of the wheelhouse. Marks on the starboard hull of CV (see **Figure 6** and **Figure 7**) suggest that she passed over the LM whose hull then failed and the two halves passed up either side of the CV Starboard hull. Scoring could be seen mostly on the outer (starboard) side of the CV hull but some scoring was also evident on the inner (port) side of the starboard hull.



Figure 6: Damage to starboard bow of CONDOR VITESSE.

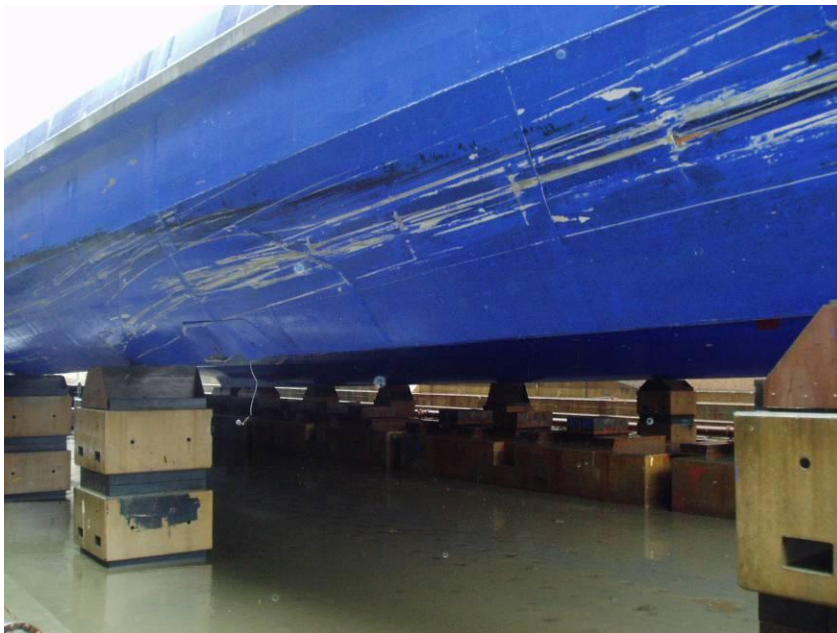


Figure 7: Damage in way of T-foil. (control cable seen hanging down from the connection recess aperture)

- 4.46 The skipper of LM was in the forward positioned wheelhouse at the time of the collision. It would appear that he was directly in line with the impact, whereas the other two hands were on the after deck, which passed along the starboard side of the CV.

- 4.47 The after section of LM must have had compartments that remained undamaged to the extent that air was trapped because that section of the wreck remained afloat long enough for the survivors to use it for floatation. It sank shortly after they had been rescued by one of CV's rescue boats.

Search and Rescue

- 4.48 The subsequent SAR operations were largely coordinated by the Training Coordinator. Rescue boats were launched quickly and efficiently and although there were times when visibility impaired this operation, it appears to have been conducted effectively. Communication was also established and maintained by the Training Coordinator with the Company Crisis Centre enabling appropriate support to be given (including embedding a senior manager within the Jersey MRCC and updating appropriate authorities in real time).
- 4.49 One of the rescue boats carried a Search And Rescue Transponder (SART) from the bridge of CV so as to be detectable on the radar in what was now acknowledged as restricted visibility. Some difficulty in this detection was experienced and one of the boats did, for a short time become isolated but the good radar conditions allowed its quick detection. VHF contact was maintained throughout between the bridge of CV and the rescue boats.
- 4.50 The fact that the fishermen were not wearing lifejackets does not appear to have jeopardised their survival on this occasion but had the LM's stern section not remained floating the situation might have been very different. The fishermen also had a life ring with them during this time. A liferaft from the top of the LM's wheelhouse however, whilst it inflated, also floated out of reach. The skipper was injured but may also have been similarly compromised in his survival by the lack of a lifejacket.
- 4.51 When the Jersey MRCC responded to the Mayday relay transmitted by CONDOR VITESSE there was some uncertainty as to jurisdiction as it was not known at this point which side of the UK/France median line the collision had occurred. It was later determined that the position was some 0.8 miles inside the French jurisdiction.
- 4.52 The French MRCC - CROSS Jobourg – also became involved. They launched a helicopter that was unable to assist due to poor visibility and they communicated with the French speaking fishing vessels that joined the search, but the operation was concluded by Jersey and the vessels involved in the search were stood down when all casualties had been accounted for. The survivors, aboard CV and the unconscious fishing skipper aboard the St Helier RNLI lifeboat, were transported to Jersey where the fishing skipper was pronounced deceased.

5 CONCLUSIONS

- 5.1 The collision occurred because:
- The visibility was restricted;
 - The lookout by the bridge team, in particular by radar, was ineffective (The radar lookout by LES MARQUISES also appears to have been ineffective);
 - The speed of CONDOR VITESSE was probably too fast for the conditions; and
 - The concentration on an appropriate level of alertness in watchkeeping appears to have lapsed as the vessel left the restrictions of the St Malo approach channel.
- 5.2 The beginning of the voyage from St Malo on the morning of 28th March 2011 was fully compliant with international collision regulations and company procedures with the possible exception of posting lookouts, adequate in number and in appropriate positions to maximise their detection of audible signals as required by Rule 5 of the Collision Regulations.
- 5.3 The decision to discontinue the fog whistle signal was not made on sound navigational observations but instead was based primarily on perceived comfort of passengers and other occupants of the cabin.
- 5.4 Having possibly perceived that visibility had improved as the vessel left the confines of the St Malo approach channel, although this was never evident in the audio recording of the VDR, the bridge management regime appears to have relaxed and conversation between team members moved to more mundane management issues such as drugs testing of new recruits and the vessel's start-up exhaust fumes entering the vehicle deck as well as some social topics. It ceased to be concentrated on the navigation of the vessel. The conversation was not limited to the bridge team alone at this point. There were additional people on the bridge who were not directly associated with the navigation of the vessel. The evidence of the VDR audio recording suggests that the visibility was not being questioned.
- 5.5 The speed of the vessel was increased, as the vessel moved into more open water but monitoring of conditions and factors relevant to an appropriate speed was not apparent.
- 5.6 There was no evidence to suggest that commercial pressure was a factor in the apparently inappropriate maintaining of the high speed of the vessel.
- 5.7 The range setting of the Master's radar at 0.75 miles was inappropriate for the speed of advance of the vessel on the sea passage. At that range, even the enhanced forward view of the offset screen at 1 mile would be transited in 1 minute 40 seconds. This left the Master with a very short period in which to take substantial action to avoid a close quarter situation. Had the radar been on twice

that range – as it was on the later familiarisation voyage. The available time for action would have been doubled. This assumes the contact was never detected visually.

- 5.8 The company has provided extensive guidance on what is considered a safe speed in restricted visibility (Route Manual 12.3.1.1). It is evident that this guidance was not followed after clearing the St Malo approach channel. Despite the advice given in the Company Route Manual, that the vessel could be crash stopped in a distance of less than 420 metres and could also effect a 90 degree turn in a similar short range, all the evidence that is available suggests that visibility was much less than the range of 5 cables submitted in the same advice as the minimum at which operating speed can normally be justified.
- 5.9 If, as is strongly suggested by events and testimony of third parties connected with the collision, the visibility was severely restricted, at least at sea surface level where small craft and other obstructions would be obscured, then the speed of 36 knots was probably too fast for the conditions that it appears were most likely to have existed.
- 5.10 The existence of pot marking buoys is well known and documented in the “Route Operational Manual.
- 5.11 The dominant conversation was between the Chief Officer and the Master that was concerned with fumes from the main engines entering the vehicle deck was a legitimate topic for a management meeting but was wholly inappropriate during the navigation of the vessel, in conditions that appear to have been prevailing at the time.
- 5.12 It is evident that the bridge team members responsible for navigation were both preoccupied with matters other than the immediate task in hand in the period after clearing the St Malo approach channel, right up to the collision itself. This approach extended to omissions of subsequent visibility checks so that the potential for a later deterioration of visibility, that must have occurred, was not recognised. The status of the bridge team was not restored to the heightened state of alertness that had existed on departure from St Malo. It is clear that at some stage between that point and the collision site it should have been if indeed conditions ever truly improved for it to have been relaxed in the first place.
- 5.13 The radar status, with both sets on the shorter range was either a recognition of reduced visibility or a failure to increase range to one that was more appropriate for faster cruising speeds in open water. If it was a recognition of reduced visibility, the actions of the bridge team were ineffective in their assessment of safe speed and to the sounding of signals as required by Rule 6 and Rule 19 of the Collision Regulations respectively.
- 5.14 There was an underlying condition of distraction in existence on the bridge of the vessel after clearing the St Malo approach channel. The bridge also serves as an office and in its activity was unrestricted to the extent that other members of the staff on board were free to converse with the operational bridge team. Paragraph 3.2.14.13 of the Company Group Management Manual, concerning bridge visits

alludes to the issue of distraction by visitors. Whilst this is most probably aimed at passengers (although that detail is not included), it should be equally applicable to other personnel not directly concerned with the navigation of the vessel.

- 5.15 The intervention of the Training Coordinator immediately following the collision was fortuitous in providing high quality support to the Master, the performance of whom appears to have been impaired by the shock of events. The Training Coordinator's seniority and experience were clearly contributory to a satisfactory performance of SAR activities after the event.
- 5.16 The action of Jersey MRCC was prompt and effective in initiating a general emergency in the area. The subsequent coordination between Jersey and France in continuing the operations with status of controlling authorities remaining unchanged was a major contributory factor in a satisfactory SAR operation even when it became evident that the accident had in fact occurred in French waters. The nature of the border between the two jurisdictions will inevitably create this situation more often than in some other parts of the world. The actions of both authorities and their cooperation with each other were commendable.
- 5.17 The omission of a sound signal by the fishing vessel, as admitted by the surviving fishermen could have been contributory to the collision but in the circumstances it is more probable that even if it had been sounded the signal would not have been heard from within the wheelhouse of CV.
- 5.18 The practise of not wearing lifejackets when working on deck, although it does not appear to have compromised the survival of the two fishermen from LM should be considered inadvisable. In this case, the sudden onset of the high speed craft allowed no time to don the lifejackets that would have been on board. It was admitted by the survivors that this contravened French Health and Safety Law. The fact that the stern section of LM floated for a period sufficient to allow for the fishermen to be found by rescuers was a contributory factor in their survival. Had the hull section sunk sooner they would have been left without buoyant support apart from a life ring and the liferaft, the latter of which inflated automatically but drifted out of reach.

6 RECOMMENDATIONS

Operators

- 6.1 Bridge procedures should be re-examined to establish if distraction is a possibility within the level of seclusion that surrounds an operational bridge team. The concept of “Sterile Bridge” similar to the “Sterile Flight Deck” principle in aviation might be considered as an addendum to bridge procedures.
 - 6.1.1 **Managers Action already taken** This subject will be subject to discussion at the next Master’s meeting in autumn 2011 where items for discussion will include the consideration of the installation of traffic light indicators on the bridge or other means of notification of restricted bridge access at certain times. The master already has authority to restrict bridge access.
- 6.2 The determination of numbers and positions of lookouts should be further examined by the company to establish if a more strictly defined rule can be established for use by masters.
 - 6.2.1 **Managers Action already taken:** Complete review of the Restricted Visibility procedures and a company instruction was issued on 26th July 2011 for immediate implementation and for inclusion in 2012 edition of Company SMS manuals requiring 2 bridge wing lookouts on HSC in reduced visibility.
- 6.3 Consideration should be given by the company to a more forceful emphasis of what is considered a safe speed and of the examination of all the factors to be considered in its determination. As well as in procedural manuals this could be incorporated into seminars of serving officers, training and peer review. Discussion from such events and schemes could be used to refine existing advice.
 - 6.3.1 **Managers Action already taken:** Complete reviewed and is considered to be sufficiently clear without restricting the master’s ultimate decision; the matter is also to be discussed at the forthcoming Master’s meeting in autumn 2011 and as a standard item at subsequent meetings.
- 6.4 The company does already emphasise in procedures² that no commercial factors should be used to justify the taking of risk but it is addressing risk of a general nature (including navigational risk). Consideration could be given to re-emphasising this company instruction in the sections specifically addressing safe speed and other navigational safety issues.

² Group Shipboard Manual – Master’s responsibilities, 2.2.4

- 6.4.1 **Managers Action already taken:** Reviewed and already implemented with guidance issued and documented

Industry and/or Regulators

- 6.5 Tests to establish if fog whistles are positioned optimally. Whistles placed in the forward part of the vessel would be closer to oncoming traffic and well away from the control centre. It is recognised that passenger comfort is not the overriding factor to be considered; disruption to bridge communications is more important. Tests should include sound levels in the passenger cabin and bridge to establish if the perception of disruption is valid but the need for safety of navigation must remain pre-eminent.
- 6.6 Research into distraction of operators has been carried out in a number of industries:
- On land in connection with rail and road drivers; and
 - In aviation, research has been carried out into levels of concentration among commercial pilots; but
 - In the marine field, similar research is not so evident.

Rail drivers are locked into an undisturbed cabin and road drivers are subject to strict laws relating to due care and attention.

In the case of aviation, a concept of “Sterile Flight Deck” has been established in which the discipline of flight deck operations is restricted to different levels according to the phase of the flight. There are many parallels between aircraft flight decks and vessel bridges, especially in high speed craft. Bridges are secured, but for security, not safety reasons, which leaves them accessible to security-cleared members of crew who are not members of the navigation team. A similar concept in the marine field generally to that established in the air may be worthy of adoption subject to a thorough examination of applicability.

Stakeholders

- 6.7 Operators, particularly of fast craft should examine their relationships with other stakeholders such as other operators, fishermen and leisure users in the areas in which their routes exist. Any opportunity should be taken to improve two way exchanges through existing liaison groups can resolve the potential for conflict and differences of interest. They could also inform those who may be unfamiliar with operational procedures and techniques in sectors outside their own. It is understood that forums already exist and that there are issues with their participants or potential participants not being fully engaged but it is still considered advisable for them not to be abandoned.