Transportation Safety Board of Canada

Bureau de la sécurité des transports du Canada

MARINE INVESTIGATION REPORT
M14A0348

COLLISION

PILOT BOAT *CAPTAIN A.G. SOPPITT* AND PASSENGER VESSEL *BAYLINER* MAIN CHANNEL INTO THE PORT OF SAINT JOHN SAINT JOHN, NEW BRUNSWICK 01 AUGUST 2014

Canada

Marine Investigation Report M14A0348

Collision
Pilot boat *Captain A.G. Soppitt* and passenger vessel *Bayliner*
Main channel into the Port of Saint John
Saint John, New Brunswick
01 August 2014

Summary

On 01 August 2014, at 2052 Atlantic Daylight Time, the pilot boat *Captain A.G. Soppitt* and the small passenger vessel *Bayliner* collided in dense fog while both vessels were transiting the main channel that leads into the Port of Saint John, New Brunswick. There were no injuries or pollution. Both vessels sustained minor damage.

Le présent rapport est également disponible en français.

Factual information

Particulars of the vessels

Table 1. Particulars of the vessels

Name of vessel	*Captain A.G. Soppitt*	*Bayliner*
Official number	837143	808649
Port of registry	Saint John, NB	Yarmouth, NS
Flag	Canada	Canada
Type	Pilot boat	Passenger/work boat
Gross tonnage	47.0	39.63
Length[1]	17.1 m	12.42 m
Draft at time of occurrence	Forward: 1.3 m Aft: 1.3 m	Forward: 1.4 m Aft: 2.6 m
Built	2012	1987
Propulsion	2 diesel engines (1066 kW total), twin-screw	1 diesel engine (252 kW), single-screw
Passengers	1	None
Crew	2	3
Registered owner	Atlantic Pilotage Authority, Halifax, NS	DMK Marine Services Ltd., Saint John, NB

Description of the vessels

Captain A.G. Soppitt

The *Captain A.G. Soppitt* is a purpose-built aluminium vessel designed and equipped for transporting marine pilots (Photo 1, Appendix A). The vessel has a hard chine,[2] deep-vee planing hull and a maximum speed of 24 knots. Propulsion is provided by two 5-bladed propellers measuring 89 cm in diameter, each driven by a diesel engine through a custom gear-driven marine transmission.[3] The vessel has 2 spade-type rudders. A series of 9 large windows provides visibility on the bridge.

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1 Units of measurement in this report conform to International Maritime Organization Standards or, where there is no such standard, are expressed in the International System of Units.

2 The term "hard chine" refers to a small interior angle where the sides of the hull and the bottom of a flat or V-bottom hull intersect.

3 The custom marine transmission on the *Captain A.G. Soppitt* provides 15 times faster clutch response and 10 times faster to full torque than the standard marine transmission.

Photo 1. *Captain A.G. Soppitt*

The integrated bridge includes a set of three 20-inch video screens that can display navigational information from 2 marine radars and 2 electronic charting systems (ECS) (Appendix B). The bridge is also equipped with 2 very high frequency (VHF) radiotelephones with digital selective calling (DSC), a magnetic compass, a satellite compass, an autopilot, a depth sounder, a weather station, and an automatic identification system (AIS).[4] The vessel is also fitted with a manually operated fog horn, a thermal camera, and an automatic horn, but neither the thermal camera nor the automatic horn was operational at the time of the occurrence.

The radars on the *Captain A.G. Soppitt* each have video plotters that allow the user to display electronic charts, plot the vessel's track, plot other vessels' tracks, enter waypoints/routes, and create a radar map of lines and marks. The radars have a target trails feature that, when activated, generates shading to show the track (trail) of targets moving across the display. This feature enables the operator to observe the vessel's own movement as well as other vessels' tracks, and can be used to assist in collision avoidance. Two electronic bearing lines and ranges can also be used to determine if an approaching vessel is on a steady bearing and, therefore, if a risk of collision exists. An electronic chart can also be overlaid onto the radar image to show the position of radar targets in relation to the charted area.

The vessel is owned by the Atlantic Pilotage Authority (APA), a federal Crown corporation responsible for providing marine pilotage service to the major ports in Atlantic Canada. The APA operates vessels throughout Atlantic Canada, and the *Captain A.G. Soppitt* is 1 of 2 pilot boats servicing the Saint John harbour and approaches.

Bayliner

The *Bayliner* is a small aluminium vessel of closed construction (Photo 2). The deckhouse is located forward of amidships and contains the conning station, the galley, and the entrance to the crew accommodation below deck (Appendix C). The navigation and communication equipment is located near the seated conning station on the starboard side of the vessel and includes a radar, a depth sounder, an autopilot, a magnetic compass, a fog horn, 2 VHF DSC radiotelephones, 2 global positioning system (GPS) receivers, and an ECS. The ECS is loaded

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4 Automatic identification system (AIS) is an automatic tracking system used on vessels and by vessel traffic services for identifying and locating vessels through the electronic exchange of data with AIS base stations, satellites, and other nearby vessels.

with colour charts for the area and also displays AIS data.[5] The vessel was not equipped with an AIS transponder, nor was one required.

The *Bayliner* is 1 of 5 small vessels operated by DMK Marine Services Ltd., a family-owned marine repair and service company located at the old marine wharf in the Port of Saint John. These vessels provide assistance to vessels, wharfs, and the Canaport monobuoy[6] by undertaking repairs, performing pollution patrols, providing divers, and transporting personnel, passengers and cargo. The *Bayliner* has also occasionally been used to transport marine pilots to and from large vessels in the area when the regular pilot boats were not available.

Photo 2. ***Bayliner***

Description of the main channel leading into the Port of Saint John

The main channel leading into the Port of Saint John is 1.45 nautical miles (nm) in length and 0.08 nm in width (Appendix D). The south end of the main channel begins at calling-in point (CIP) 7 and joins the harbour entrance at CIP 8. The channel is delimited by 3 red starboard-hand buoys (J12, J14, J16) and 5 green port-hand buoys (J1, J3, J5, J7, and J9).[7] A bifurcation junction (JC) buoy indicates the secondary channel to Courtney Bay. The inbound course is 333.5° true (T) and the outbound course is 153.5°T.

History of the voyage

Captain A.G. Soppitt

At 1951,[8] the *Captain A.G. Soppitt* departed the Port of Saint John with the master and a deckhand on board. The vessel was bound for the Canaport monobuoy to embark a pilot

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5 The electronic charting system screen on the *Bayliner* displays the name, bearing, range, and closest point of approach (CPA) of other vessels fitted with an automatic identification system.

6 The Canaport monobuoy is a floating platform anchored in deep water approximately 3.4 nautical miles to the southeast of the main channel. The monobuoy is used by large, deep-draft tankers for mooring, and loading or unloading.

7 Starboard-hand buoys mark the starboard (right) side of a channel or the location of a hazard that must be kept on the vessel's starboard side when the vessel is proceeding upstream. Port-hand buoys mark the port (left) side of a channel or the location of a hazard that must be kept on the vessel's port side when the vessel is proceeding upstream.

8 All times are Atlantic Daylight Time (Coordinated Universal Time [UTC] minus 3 hours), unless otherwise stated.

from a tanker and transport the pilot to Reeds Point wharf, located within the port on the east side of the harbour (Appendix D).

At around 1956, Marine Communications and Traffic Services (MCTS) Fundy Traffic[9] contacted the *Captain A.G. Soppitt* on VHF channel 12 and advised the master that the tug *Swellmaster* was inbound from Canaport and was at the berth where the *Princess of Acadia* ferry docks (Appendix D). Shortly thereafter, the master of the *Captain A.G. Soppitt* contacted the *Swellmaster* by VHF radiotelephone and identified himself by saying "*Swellmaster*, pilot boat."[10] The master of the *Captain A.G. Soppitt* then advised, "I'm to the east here; starboard-to-starboard work for you?" The *Swellmaster* replied "Roger, thank you." The vessels continued on their voyages and undertook the agreed-upon passing arrangement.

At 2039, the master of the *Captain A.G. Soppitt* advised Fundy Traffic that the pilot was on board and they were inbound for the Saint John harbour. The vessel was in dense fog, and the master was manually steering from the centre chair on the bridge. He was also keeping a visual lookout and monitoring the radars.[11] The deckhand was seated in a chair on the port side, adjacent to the master, and was keeping a lookout through the bridge windows. The pilot was seated in the starboard aft chair and was not involved in the navigation of the vessel.

At 2045, the *Captain A.G. Soppitt*'s main ECS froze in position 45.198° N, 065.992° W with a vessel heading of 000°. The time displayed on the ECS also jumped back by 1 minute and 4 seconds.[12] The bridge team was not using this ECS and was unaware that it had failed.

As the *Captain A.G. Soppitt* approached CIP 7, the master adjusted the range on the starboard radar to better observe targets in the channel. At 2049, as the *Captain A.G. Soppitt* was proceeding at 17 knots, the master contacted Fundy Traffic and advised "We're at checkpoint 7." He also asked if there was any traffic in the channel. Fundy Traffic replied "Affirmative sir, you have the *Bayliner* outbound now just at the junction [JC] buoy."

Bayliner

At 2041, the *Bayliner* departed the old marine wharf within the Port of Saint John with the master and 2 deckhands on board. The master advised Fundy Traffic that the *Bayliner* was

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9 The Marine Communications and Traffic Services centre at Saint John uses the radio identifier Fundy Traffic to provide vessel traffic services. Fundy Traffic uses very high frequency (VHF) channel 12. In this occurrence, all VHF radio communications between vessels and Fundy Traffic were made using VHF channel 12.

10 During very high frequency radiotelephone conversations with other vessels and with Fundy Traffic, the *Captain A.G. Soppitt* is routinely referred to as the "pilot boat" by all parties.

11 The starboard radar was on the 0.75 nautical mile (nm) range with the centre offset astern on the radar display. The port radar was on the 0.5 nm range and was centred on the radar display.

12 The electronic charting system did not start updating data again until the next morning at 0732:31, when the system time also jumped ahead by 5 minutes and 25 seconds.

outbound to anchorage D[13] to rendezvous with the oil tanker *Island Express*. The *Bayliner* was operating at a reduced speed of about 9 knots in the thick fog. The 2 deckhands were maintaining a lookout through the deckhouse windows and the open forward door. The master was seated on the starboard side of the bridge and was monitoring the radar, compass, ECS, and VHF.

At 2046, the master of the *Bayliner* called Fundy Traffic on VHF channel 12 and advised that the vessel was at CIP 8. Fundy Traffic in turn reported that "the pilot boat is inbound now, just past CIP 6, followed by the *Spitfire*." The master of the *Bayliner* acknowledged with "Roger that" and then reduced speed to an estimated 6 or 7 knots because the fog was becoming even thicker.

Events prior to the collision

Around 2050, as the *Captain A.G. Soppitt* was crossing the CIP 7 line about 100 metres east of the entrance channel and proceeding at 17 knots, the master called the *Bayliner* on VHF and identified himself by saying "*Bayliner*, pilot boat." The master of the *Bayliner* responded with "*Bayliner* back." At this time, the vessels were about 0.9 nm apart and were approaching each other at a combined speed of approximately 25 knots. Neither vessel was sounding signals to indicate that it was in restricted visibility. The master of the *Bayliner* checked the ECS, which was showing the *Captain A.G. Soppitt* to the east side of the main channel.

The master of the *Captain A.G. Soppitt* then proposed to proceed along the port-hand buoys[14] by stating: "I'll hug the greens, if that works for you?"[15] The master of the *Bayliner* promptly replied, "Works for us."

At 2050:44, the master of the *Captain A.G. Soppitt* altered course by 16 degrees to port to move closer to the port-hand buoys on the west side of the channel. He also reduced speed to 13 knots. The *Bayliner* altered course to starboard, which also put it closer to the port-hand buoys on the west side of the channel.

As the *Bayliner* was passing the J9 port-hand buoy, the master checked the ECS and observed the *Captain A.G. Soppitt* entering the east side of the channel. The master zoomed in the ECS[16] to better see the chart features and the *Captain A.G. Soppitt*'s AIS position, and decreased the radar[17] range scale on the display to better observe the targets in the channel. He then ordered the crew to keep a close watch out for the *Captain A.G. Soppitt,* as it was in the vicinity.

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13 Anchorage D is located in a southerly direction from the Saint John main channel.

14 A starboard-to-starboard passing commonly occurs when the outbound vessel's destination is east of the channel. The *Bayliner* often headed east to the Canaport monobuoy soon after a tanker had moored at the monobuoy, but on this voyage was headed southerly for anchorage D.

15 On the Marine Communications and Traffic Services recording of the conversation, "I'll" is not easily discernable.

16 The electronic charting system was on ship's head-up and relative motion.

17 The radar was on ship's head-up and relative motion.

Meanwhile, at the Saint John MCTS centre, one of the Fundy Traffic officers on duty was using radar to monitor vessels in the main channel. However, at 2051:31, the radar tracking position indicator for the *Captain A.G. Soppitt* swopped[18] to clutter on the radar, so the radar was no longer depicting the vessel's position accurately (Appendix E). Thirteen seconds later, the radar tracking position indicator for the *Bayliner* swopped to the J9 buoy radar echo, so the depiction of the *Bayliner*'s position was now also inaccurate. At the time, the Fundy Traffic officer was not aware that these target swops had occurred.

Just before 2052, the *Captain A.G. Soppitt* was inbound at 9.4 knots and heading for the J7 port-hand buoy, while the *Bayliner* was outbound on the west side of the channel passing close to the same buoy. The master of the *Bayliner* altered to starboard and reduced speed to move away from the *Captain A.G. Soppitt*, which was quickly approaching. At 2052, the vessels were only 0.16 nm apart, but both masters continued with the manoeuvre, expecting the other to alter to the east.

Shortly after 2052, the pilot on board the *Captain A.G. Soppitt* observed through the fog that the *Bayliner* was crossing to port ahead of the vessel and shouted a warning to the crew. The master saw the *Bayliner*'s wake and immediately moved both engine controls to the full astern position. Meanwhile, on the *Bayliner*, the deckhand standing lookout on the port side saw the *Captain A.G. Soppitt* through the fog on the port bow and called out a warning to the crew that it was going to hit them. The master of the *Bayliner* promptly turned the steering wheel to starboard and set the engine control to neutral.

Seconds later, the *Captain A.G. Soppitt* was at full astern on both engines and had turned to port so that the vessel was now roughly perpendicular to the *Bayliner*. At about 2052:12, the *Captain A.G. Soppitt*'s bow struck the *Bayliner*'s port side and then continued to ride up onto the *Bayliner*'s bulwark rubber side fenders until the D-shaped bow fender struck and rubbed against the side of the *Bayliner*'s wheelhouse, approximately 0.7 metre below the forward window.

Events following the collision

After the collision, the crew on each vessel confirmed that there were no injuries or significant damage, and the masters exchanged this information in person with the vessels alongside. During the ensuing discussion about the collision, there was some confusion about the agreed-upon passing arrangements. Although the vessels had been proceeding towards one another, both masters had understood that they were to "hug" (stay close to) the port-hand buoys on the west side of the channel.

At 2057, the master of the *Bayliner* reported to Fundy Traffic that the *Captain A.G. Soppitt* had collided with them. Fundy Traffic requested clarification about whether the *Captain A.G. Soppitt* had collided with a buoy or the *Bayliner*. The master confirmed that the *Captain A.G.*

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[18] A target swop occurs when incoming radar data for a tracked target become incorrectly associated with another tracked target or a non-tracked radar echo. Target swopping is known to occur regularly in this area of the Saint John main channel.

Soppitt had collided with the *Bayliner*. The master also reported that there were no injuries and only minor damage to the *Bayliner* above the waterline. The *Bayliner* then resumed its voyage to the *Island Express*.

At 2059, the *Captain A.G. Soppitt* confirmed with Fundy Traffic that there were no injuries or damage.

Damage to the vessels

Damage to both vessels was limited to black scuff marks where the rubber fenders had made contact (Photo 3 and Photo 4).

Photo 3. *Bayliner*'s port side

Photo 4. *Captain A.G. Soppitt*'s bow

Environmental conditions

At the time of the occurrence, there was restricted visibility of less than 30 metres due to dense fog. The wind was from the southwest at 5 knots, and the tide was about 2.35 metres above chart datum and ebbing. A high tide of 7.1 metres had occurred at 1606, and the next low tide of 1.5 metres was at 2221. Sunset was at 2053.

Personnel certification and experience

Captain A.G. Soppitt

The master held a 150 Gross Tonnage, Domestic Master certificate issued in 2010 and a Restricted Operator's certificate, Maritime Commercial (ROC-MC).[19] The master had also completed the Transport Canada Simulated Electronic Navigation Level 2 course in April 2010. He had worked on APA pilot boats for the previous 4 years, including the last

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19 A Restricted Operator's certificate, Maritime Commercial is issued by Industry Canada and qualifies mariners to operate very high frequency radiotelephones on commercial vessels operating within the North American A1 Sea Area, as defined in the Canadian Coast Guard publication *Radio Aids to Marine Navigation*, available at: http://www.ccg-gcc.gc.ca/Marine-Communications/Home (Last accessed 06 March 2015).

2 years as master. In 2007, he was issued a Fishing Master, Fourth Class up to 100 Gross Tonnage on a Near Coastal Voyage certificate, and had also fished commercially as master of his own vessel for the past 7 years.

Bayliner

The master held a Master, Limited for a Vessel of Less Than 60 Gross Tonnage certificate and a small vessel machinery operator certificate, both of which were issued in August 2013. He also held a ROC-MC. Prior to 1990, he had worked as deckhand and master on small commercial fishing boats and charter boats owned by DMK Marine Services and, in 2013, returned as master with the same company.

Vessel certification

Both the *Captain A.G. Soppitt* and the *Bayliner* were equipped and certificated in accordance with existing regulations.

International Regulations for Preventing Collisions at Sea

The *International Regulations for Preventing Collisions at Sea* (COLREGS) are an international convention that establishes, among other things, the rules of conduct to follow at sea when a risk of collision exists between vessels. The rules have been adopted by Canada and "apply to all vessels upon the high seas and in all waters connected therewith navigable by seagoing vessels."[20] Governments or states may adopt special rules for their waterways. These special rules, however, shall conform as closely as possible to the COLREGS.[21]

The COLREGS require vessels to, at all times, maintain a proper lookout 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.[22]

The COLREGS further stipulate that in areas of restricted visibility, vessels underway must sound 1 prolonged blast at intervals of not more than 2 minutes.[23] Although vessels must sound this signal at least every 2 minutes, shorter intervals are desirable when other vessels are nearby.

In addition, Rule 19 of the COLREGS, which deals with the conduct of vessels in restricted visibility, specifies that

> (*a*) This Rule applies to vessels not in sight of one another when navigating in or near an area of restricted visibility.

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20 *Collision Regulations*, C.R.C. c. 1416, Schedule 1, International Regulations for Preventing Collision at Sea with Canadian Modifications, 1972, Rule 1(a).

21 Ibid, Rule 1(b).

22 Ibid, Rule 5.

23 Ibid, Rule 35.

> (*b*) Every vessel shall proceed at a safe speed adapted to the prevailing circumstances and conditions of restricted visibility. A power-driven vessel shall have her engines ready for immediate manoeuvre.
>
> (*c*) Every vessel shall have due regard to the prevailing circumstances and conditions of restricted visibility when complying with the Rules of Section I of this Part [Conduct of Vessels in Any Condition of Visibility].
>
> (*d*) A vessel which detects by radar alone the presence of another vessel shall determine if a close-quarters situation is developing and/or risk of collision exists. If so, she shall take avoiding action in ample time, provided that when such action consists of an alteration of course, so far as possible the following shall be avoided:
>
> > (*i*) an alteration of course to port for a vessel forward of the beam, other than for a vessel being overtaken,
> >
> > (*ii*) an alteration of course towards a vessel abeam or abaft the beam.
>
> (*e*) Except where it has been determined that a risk of collision does not exist, every vessel which hears apparently forward of her beam the fog signal of another vessel, or which cannot avoid a close-quarters situation with another vessel forward of her beam, shall reduce her speed to the minimum at which she can be kept on her course. She shall if necessary take all her way off and in any event navigate with extreme caution until danger of collision is over. [24]

Very high frequency radiotelephone communications

The International Maritime Organization (IMO) has recognized that standardized communications and terminology contribute to the safe operation of ships and to greater safety of navigation.[25] To this end, the IMO has adopted guidelines[26] that include the following:

- The words "I" and "YOU" should be used prudently and should indicate to whom they refer.
- Where a message is received and only acknowledgement of receipt is needed, say "received."
- Where a message is received and acknowledgement of the correct message is required, say "received, understood," and repeat the message if considered necessary

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24 Ibid, Rule 19.

25 International Maritime Organization (IMO), *Standard Marine Communication Phrases (SMCP)*, Resolution A.918(22), 25 January 2002, available at: http://www.imo.org/blast/blastDataHelper.asp?data_id=24571&filename=A918(22).pdf (Last accessed 27 February 2015).

26 International Maritime Organization (IMO), *Proper Use of VHF Channels at Sea*, Resolution A.954(23), 26 February 2004, available at: http://www.imo.org/blast/blastDataHelper.asp?data_id=27131&filename=A954(23).pdf (Last accessed 27 February 2015).

(e.g. "Message: Your berth will be clear at 08.30 hours. Reply: Received, understood. Berth clear at 08.30 hours.").

- Where the message contains instructions or advice, the substance should be repeated in the reply[27] (e.g. "Message: Advise you pass astern of me. Reply: I will pass astern of you.").

The *VHF Radiotelephone Practices and Procedures Regulations,* which came into effect on 01 September 1981, prescribe practices and procedures to be followed by persons on board vessels with respect to bridge-to-bridge VHF radiotelephones to ensure safe navigation. The regulations state that every vessel shall make a navigation safety call in certain circumstances, including the following:

- when a risk of collision with another ship is deemed to exist under the provisions of the *Collision Regulations;*[28]
- when the navigation safety call of another ship indicates that a close-quarters situation may develop; and
- when doubt exists as to the actions or the intentions of another ship.[29]

The regulations further state,

> Nothing in these Regulations shall be construed as
>
> (*a*) relieving a ship of its obligation to sound the appropriate whistle signals required by, or
>
> (*b*) permitting a ship to carry out maneuvers that contravene the provisions of the steering and sailing rules of the *Collision Regulations* that apply in the area being navigated by the ship.[30]

The regulations also require that a navigation safety call, as is practicable, will indicate the identity of the vessel, location of the vessel, and the intended course of action.[31]

A British Marine Guidance Note entitled *Operational Guidance on the Use Of VHF Radio and Automatic Identification Systems (AIS) at Sea* states that

> There have been a significant number of collisions where subsequent investigation has found that at some stage before impact, one or both parties were using VHF radio in an attempt to avoid collision. The use of VHF radio

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27 This type of communication, whereby the information provided is repeated back in the reply, is known as "closed-loop" communication and is used to reduce the risk of a misunderstanding.

28 *Collision Regulations*, C.R.C. c. 1416, Schedule 1, International Regulations for Preventing Collision at Sea with Canadian Modifications, 1972.

29 *VHF Radiotelephone Practices and Procedures Regulations,* SOR/81-364, available at: http://laws-lois.justice.gc.ca/eng/regulations/SOR-81-364/FullText.html (Last accessed 06 March 2015).

30 Ibid.

31 Ibid.

> in these circumstances is not always helpful and may even prove to be dangerous.[32]

The note further states that, even where there is positive identification between vessels, there is still the possibility of a misunderstanding due to imprecise or ambiguously expressed messages.

Very high frequency radiotelephone use between vessels in the main channel

The meeting of vessels in the Saint John main channel occurs port-to-port or starboard-to-starboard, depending on the type of vessel and destination. A port-to-port passing is standard and occurs when the outbound vessel's destination is south or west of the channel. However, a starboard-to-starboard passing is common when the outbound vessel's destination is east of the channel.

When the masters of local small commercial vessels make passing arrangements in the Saint John main channel, a common practice is to communicate over VHF radiotelephone using phrasing that varies. For example, sometimes the issuer may indicate that the passing will be port-to-port or starboard-to-starboard, while other times, the issuer may indicate that the issuer's vessel will pass along the port-hand or starboard-hand buoys. The receiver may either repeat the instruction or simply acknowledge receipt of the message. On occasion, before ending the communication, the issuer may again repeat the port-to-port or starboard-to-starboard passing instruction.

Marine Communications and Traffic Services

MCTS provides communications and traffic services for the marine community 24 hours a day, 7 days a week to ensure the safe and efficient movement of vessels. MCTS has several objectives, notably to contribute to the safety of life at sea and to the safety and efficiency of navigation.[33] In fulfilling these roles, MCTS officers may provide traffic recommendations when it becomes evident that a vessel should take, but has not yet taken, appropriate action in response to information provided. The MCTS standards specify that MCTS officers shall at no time have, or attempt to have, the conduct of a vessel; MCTS communication shall be expressed in such a manner as to ensure that they cannot be regarded as assuming conduct of a vessel.[34]

In this occurrence, the MCTS officer advised the *Captain A.G. Soppitt* of the presence of the *Bayliner* when a request for traffic in the channel was made. The communication between the 2 vessels when they made their passing arrangement was heard on the MCTS frequency.

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32 Maritime and Coastguard Agency (MCA) United Kingdom, Marine Guidance Note MGN 324 (M+F), *Operational Guidance on the Use Of VHF Radio and Automatic Identification Systems (AIS) at Sea*, available at: https://mcanet.mcga.gov.uk/public/c4/solasv/m_notice/mgn/mgn324.pdf (Last accessed 06 March 2015).

33 Canadian Coast Guard, Marine Communications and Traffic Services (MCTS), *Marine Communications and Traffic Services Standards Manual*, Version 1.0, 16 June 2003, Foreword.

34 Ibid.

Use of navigational equipment

The *Captain A.G. Soppitt* was fitted with a variety of navigational equipment, including radars with charting and tracking features. The radars incorporated automatic radar plotting aid (ARPA) and also included several features to assist in collision avoidance, such as variable range rings, bearing lines, track plotting capability, target trails, and chart overlay.

In this occurrence, the master of the *Captain A.G. Soppitt* was using the radars to navigate the vessel. The radar displays were in ship's head-up mode and relative motion. In this configuration, the radars were solely providing a real-time picture of the situation around the vessel. The anti-collision features had not been activated and were therefore not being used, nor was the ECS being monitored.

Plan continuation bias

Plan continuation bias occurs when a person or team continues with a plan even though conditions have changed to an extent that would not have necessarily been acceptable if they had been present at the beginning of a task. Decisions can be influenced by a wide range of factors such as individual perception of the situation, experience, training, expectations, time constraints, and contextual elements. Once a decision is made, there is a tendency for individuals to continue with the selected course of action unless there are compelling reasons not to do so.

Analysis

Events leading to the collision

As the *Captain A.G. Soppitt* and the *Bayliner* rapidly approached each other in dense fog, both masters were proceeding so as to remain close to the port-hand buoys due to a misunderstanding about the passing arrangement that had been communicated over the very high frequency (VHF) radiotelephone. The misunderstanding had resulted from a brief and informal communication, whereby the master of the *Captain A.G. Soppitt* had proposed a starboard-to-starboard passing arrangement by stating "I'll hug the greens," but the "I'll," as spoken, was not easily discernible over the VHF. The master of the *Bayliner* therefore understood the statement to be "Hug the greens" for a port-to-port arrangement, which was consistent with the *Bayliner*'s course at the time and destination south of the channel. As well, the master of the *Bayliner* was aware that the *Captain A.G. Soppitt* had a pilot on board, who would be disembarked at Reeds Point wharf on the east side of the harbour.

There were indications that a close-quarters situation was rapidly developing. However, both masters continued with their understanding of the passing arrangement, believing the other vessel would take the expected action and navigate to the opposite side of the channel. The masters reduced speed and increased the alertness of their lookouts, but they did not attempt to call each other on VHF to clarify the passing arrangements, nor did they take all way off their vessels. Persevering with the manoeuvre is indicative of plan continuation bias.

The *Bayliner* was at reduced speed proceeding across the *Captain A.G. Soppitt*'s bow to port when the vessels came into sight of each other at less than 30 metres apart. Both masters took immediate action: the *Captain A.G. Soppitt* put both engine controls to full astern, while the *Bayliner* turned to starboard and unclutched its engine. However, the *Captain A.G. Soppitt*'s speed was such that the vessel's forward momentum could not be stopped in time to avoid the collision.

Making passing arrangements on very high frequency radiotelephones

When passing arrangements are made by VHF radiotelephone, it is important that navigators make use of communication best practices, such as those set out in the International Maritime Organization (IMO) guidance, in order to reduce the risk of misunderstandings.

As a precaution, given the reduced visibility around the time of the occurrence, the master of the *Captain A.G. Soppitt* enquired about traffic in the main channel and, once informed of the presence of the *Bayliner*, communicated with the other vessel using VHF radiotelephone to make a passing arrangement.

However, the bridge-to-bridge VHF radiotelephone exchange that was used to initiate the passing arrangement did not conform to communication best practices with respect to the following:

- the radio communication did not confirm both vessels' positions and intended courses;
- the instruction was not repeated to close the loop and avoid the misunderstanding;
- the word "I" was used without specifying to whom it referred (e.g. I, the *Captain A.G. Soppitt* and you, the *Bayliner*); and
- the phonetically distinct terms "port-to-port" and "starboard-to-starboard" were not used to reduce the risk of misunderstanding about how the passing would be executed.

The brief and informal VHF radiotelephone communication used to arrange the passing led to a misunderstanding that resulted in the *Captain A.G. Soppitt* being manoeuvred for a starboard-to-starboard passing and the *Bayliner* for a port-to-port passing.

In the Saint John main channel, VHF radiotelephone communications initiated between vessels that are approaching each other usually include the vessels' names, but do not always include their positions, headings, speeds, destinations, intended courses and any vessel restrictions. Moreover, these passing arrangements do not always include the words "port-to-port" or "starboard-to-starboard," and the instructions are not always repeated back to close the loop and confirm a shared understanding. Since the buoys provide a good navigational reference, over time there is a propensity to use them in the wording of the passing arrangement instead of the words "port" or "starboard." This creates a risk of misunderstanding as to which vessel is to stay close to which buoys.

As highlighted in British Marine Guidance Note MGN 324 (M+F), misunderstandings may arise due to imprecise or ambiguously expressed messages. Insufficient or poor exchanges can result in the vessels not sharing a common understanding of how the vessels will navigate safely past each other.

If VHF radiotelephone communication used to make passing arrangements does not adhere to guidelines and best practices, there is an increased risk of misunderstandings and collisions.

Use of navigational equipment

To ensure the safe passage of a vessel, navigators must make full use of all available navigational equipment. This is essential to accurately monitor the vessel's progress and detect any possible risk of collision, especially in reduced visibility.

The radars on the *Captain A.G. Soppitt* had various charting and target tracking features that, when in use, help the master to determine the closest point of approach (CPA) of other vessels, among other things. However, at the time of the occurrence, none of these features on the radar had been enabled to continuously monitor the *Bayliner*'s CPA, nor were the electronic chart systems being monitored or overlaid with the radar targets to show the *Captain A.G. Soppitt*'s position in relation to other targets in the channel. As a result, the master of the *Captain A.G. Soppitt* did not have all navigational information that the radars could have provided, such as tracking of the *Bayliner*'s movement as well as its CPA,

available to him to make a full appraisal of the situation, which might have prompted early action to avoid the collision.

The navigational equipment on the *Captain A.G. Soppitt* was not optimally configured with all available charting and target tracking features to assist in monitoring both vessels' positions.

Sound signals in restricted visibility

In areas of restricted visibility, vessels are required to use sound signals to warn other vessels of their presence to help prevent collisions.

In this occurrence, neither vessel was sounding signals, even though the vessels were fitted with the required equipment. It was not common practice on either vessel to sound the appropriate signals when operating in reduced visibility. Nevertheless, the use of the sound signals provides an additional cue, particularly for the lookout, to detect the presence of another vessel and assess its proximity. Given that there were lookouts on both vessels, the sounding of a whistle or horn might have provided another indication of the developing close-quarters situation and might have initiated an earlier response to avoid a potential collision.

If a vessel underway in restricted visibility is not sounding the required signals, other vessels in proximity may not be alerted to a potential close-quarters situation for which prompt and effective avoidance action must be taken.

Findings

Findings as to causes and contributing factors

1. The very high frequency radiotelephone communication used to arrange the passing led to a misunderstanding that resulted in the *Captain A.G. Soppitt* being manoeuvred for a starboard-to-starboard passing and the *Bayliner* for a port-to-port passing.

2. The navigational equipment on the *Captain A.G. Soppitt* was not optimally configured or used with all available charting and target tracking features to assist in monitoring both vessels' positions for collision avoidance.

3. Both masters continued along their intended route, without additional radiotelephone communication, in the belief that the other vessel would take action and alter course towards the opposite side of the channel.

4. Once in sight of each other, both masters took immediate action to avoid collision, but the *Captain A.G. Soppitt*'s speed was too great to prevent the collision, and its bow struck the *Bayliner*.

Findings as to risk

1. If very high frequency radiotelephone communication used to make passing arrangements does not adhere to guidelines and best practices, there is an increased risk of misunderstandings and collisions.

2. If a vessel underway in restricted visibility is not sounding the required signals, other vessels in proximity may not be alerted to a potential close-quarters situation for which prompt and effective avoidance action must be taken.

Other findings

1. At 2045:42, the position and heading on the main electronic charting system on board the *Captain A.G. Soppitt* froze and only resumed indicating the vessel's actual position at start-up around 0730 the next morning.

Safety action

Safety action taken

DMK Marine Services Ltd.

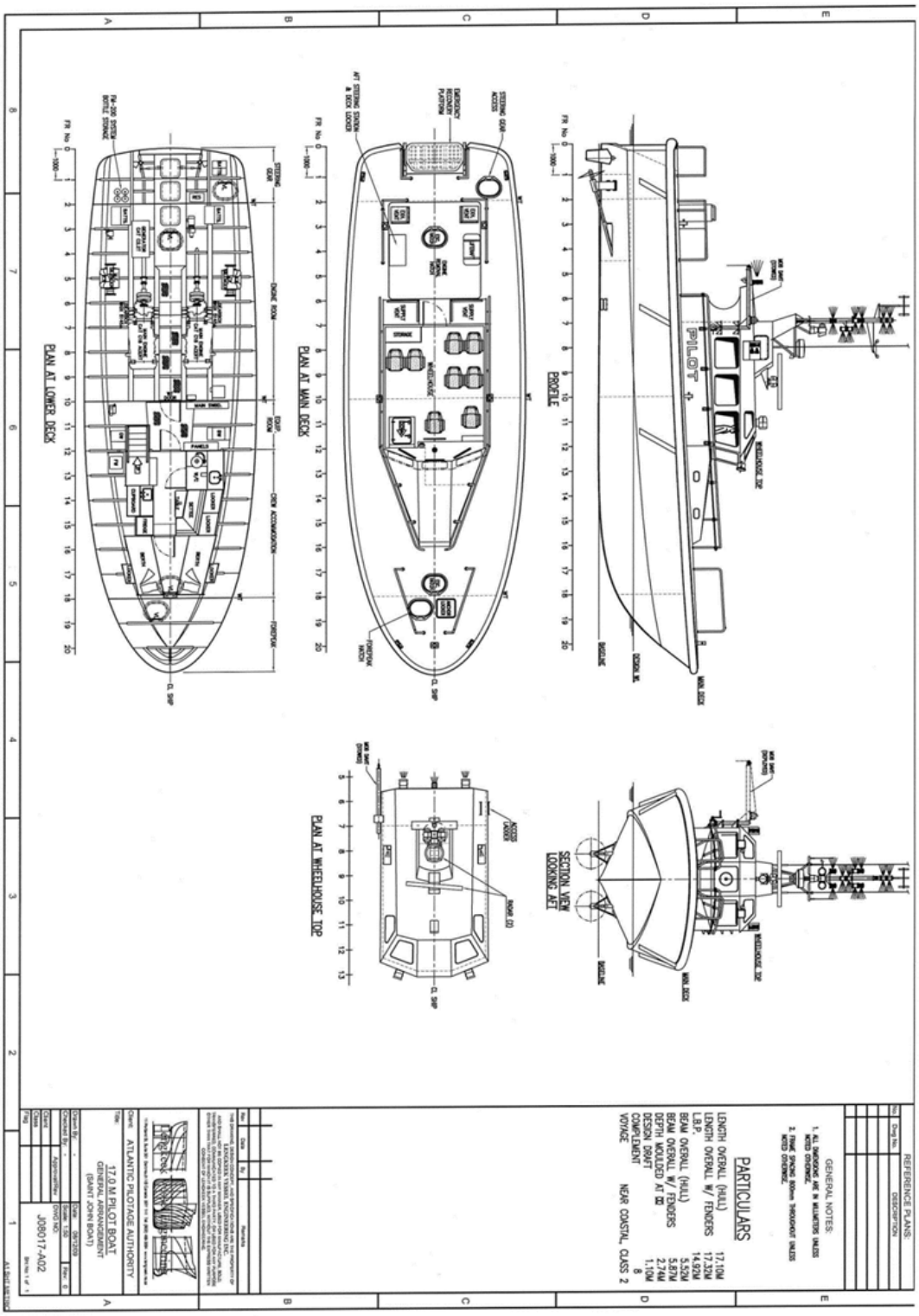
DMK Marine Services Ltd. has fitted the *Bayliner* with a Class B automatic identification system (AIS). This means that other vessels fitted with AIS will be able to obtain navigational information for the *Bayliner* (position, heading, etc.) that can help them when determining if there is a risk of collision.

This report concludes the Transportation Safety Board's investigation into this occurrence. The Board authorized the release of this report on 03 August 2015. It was officially released on 11 August 2015.

Visit the Transportation Safety Board's website (www.tsb.gc.ca) for information about the TSB and its products and services. You will also find the Watchlist, which identifies the transportation safety issues that pose the greatest risk to Canadians. In each case, the TSB has found that actions taken to date are inadequate, and that industry and regulators need to take additional concrete measures to eliminate the risks.

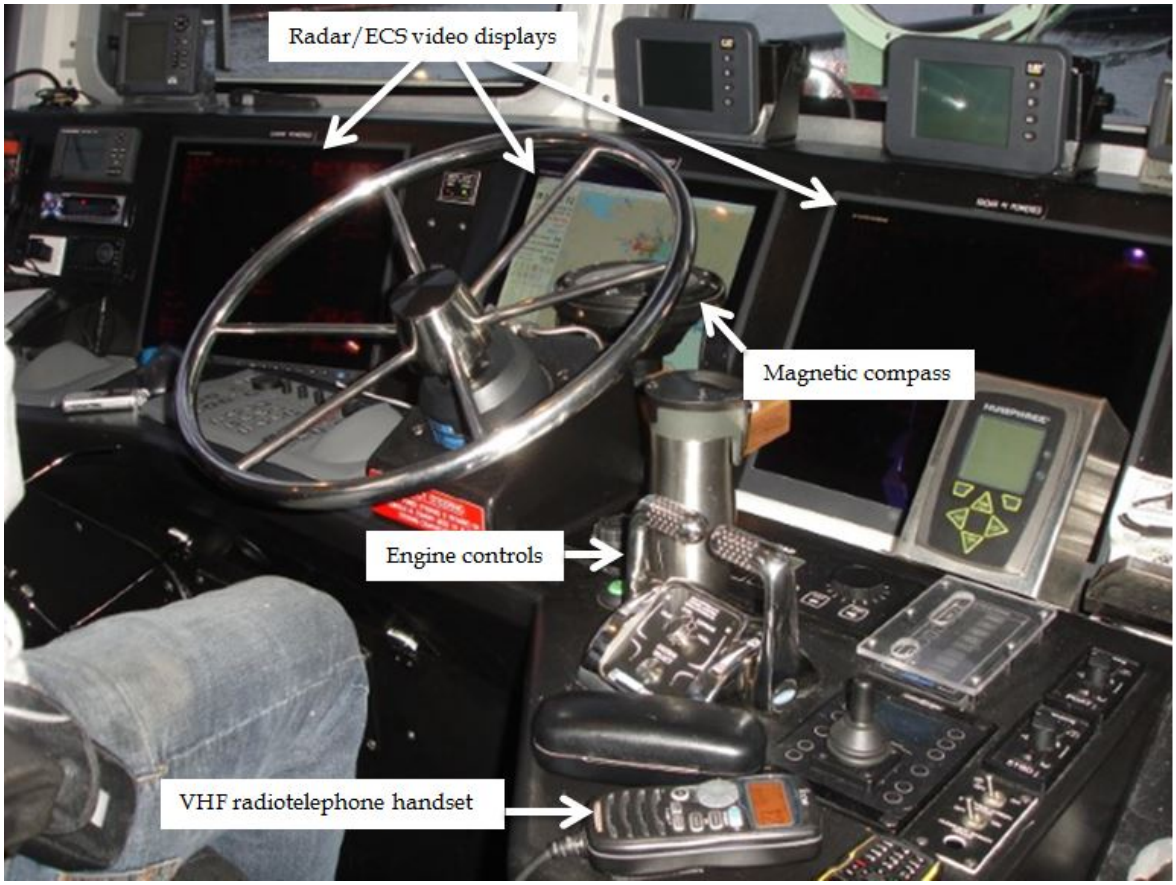
Appendices

Appendix A – Captain A.G. Soppitt *general arrangement*

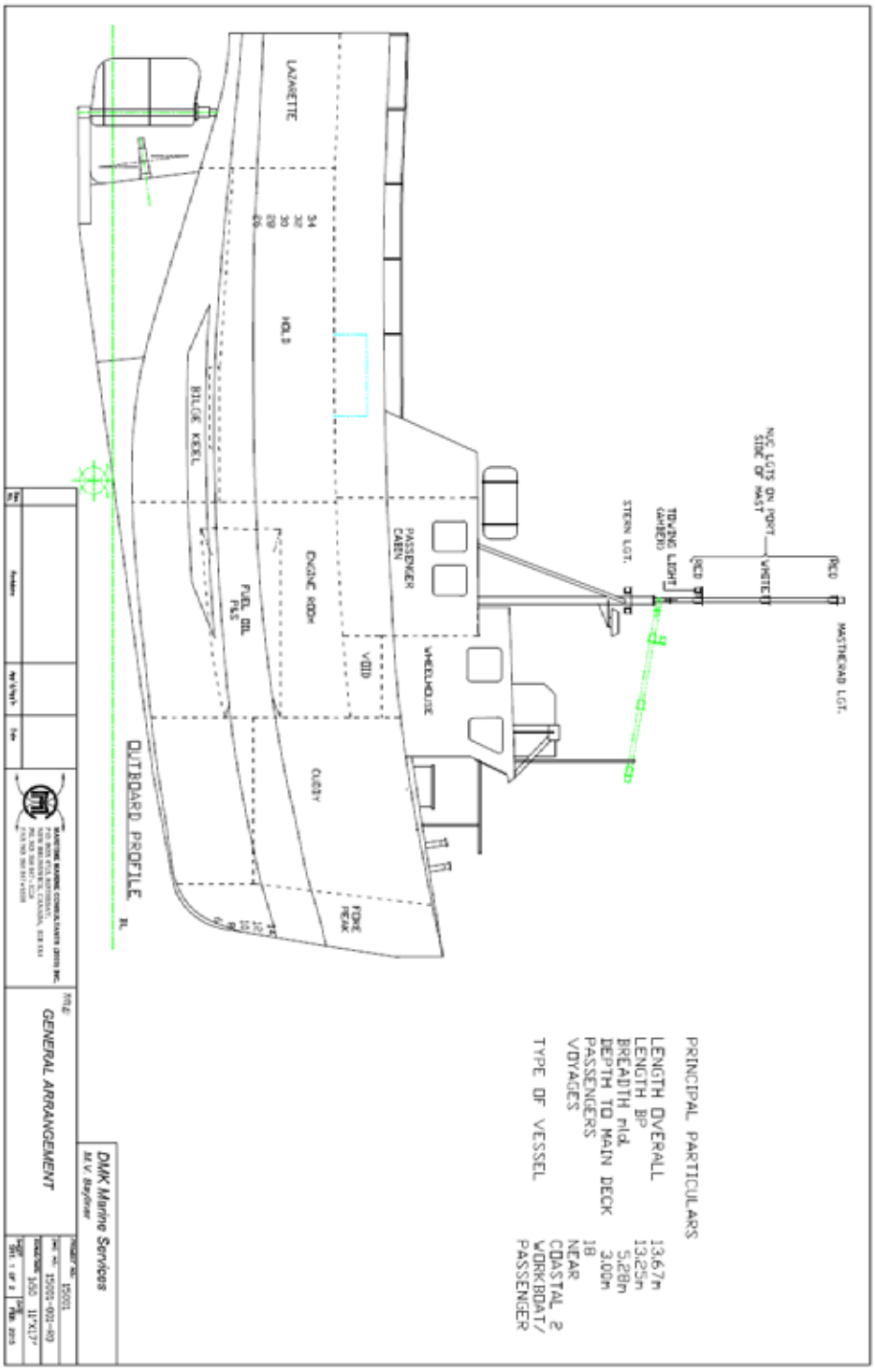


Source: Atlantic Pilotage Authority

Appendix B – Captain A.G. Soppitt *conning position*

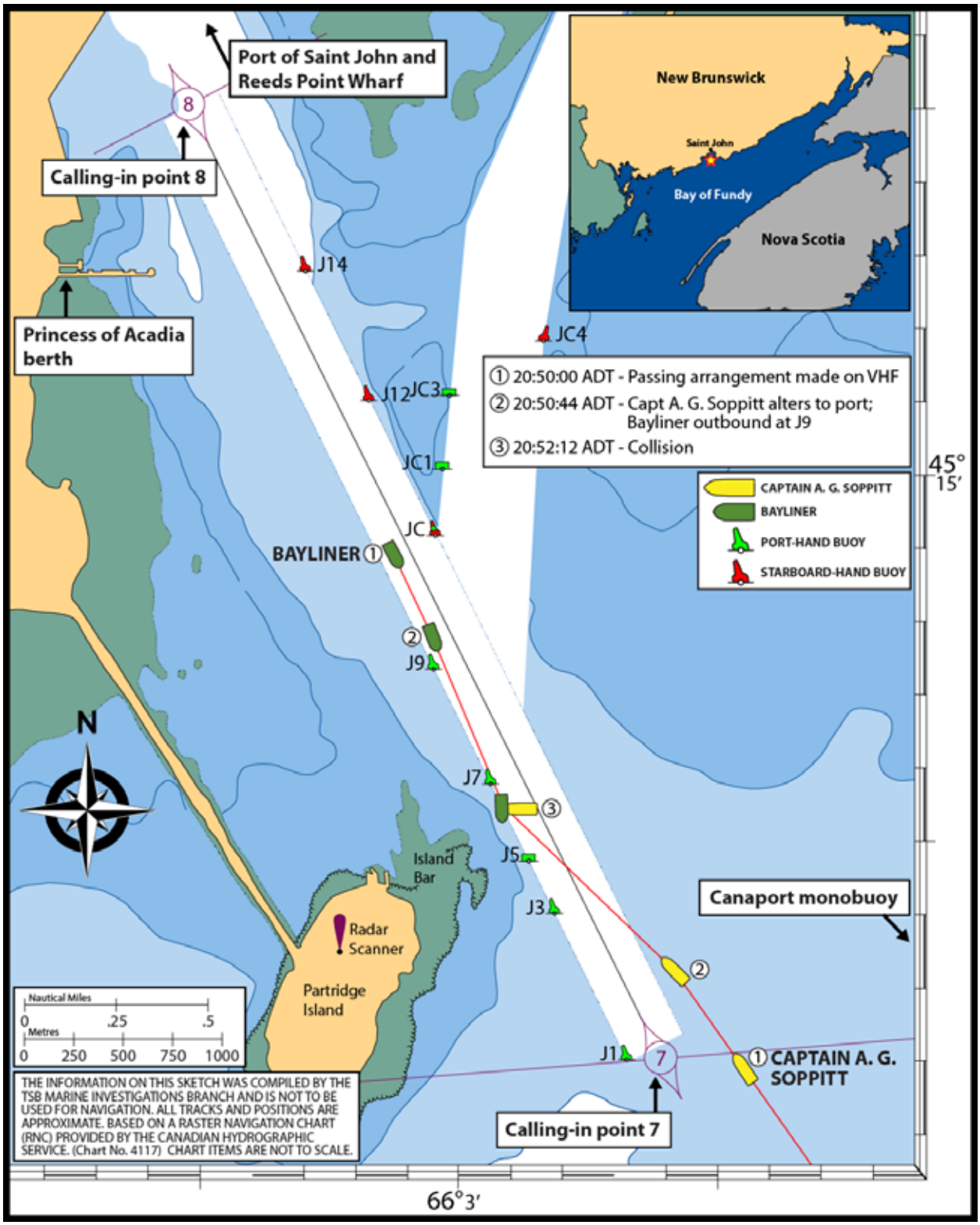


Appendix C – Bayliner *general arrangement*

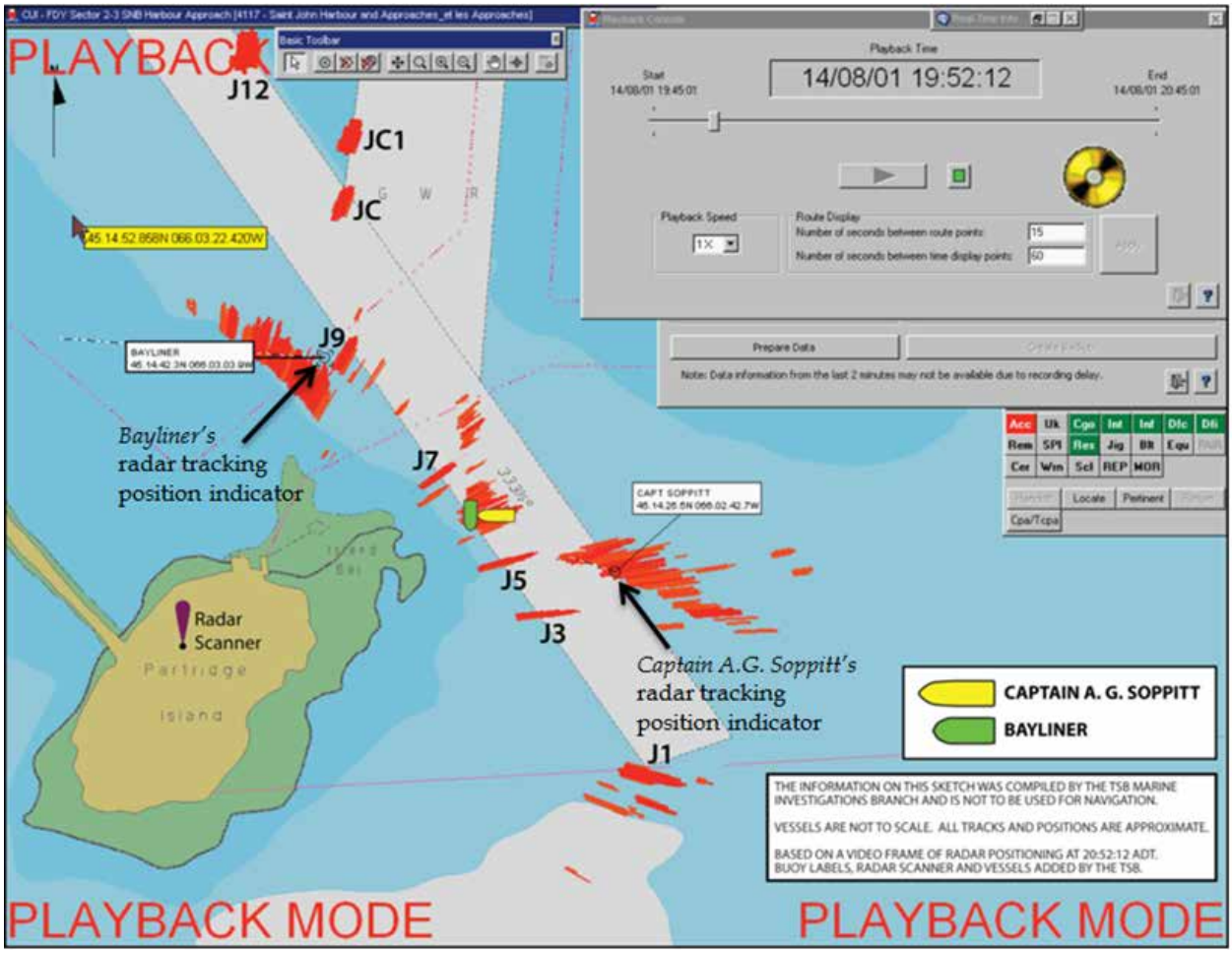


Source: DMK Marine Services Ltd.

Appendix D – Main channel leading into the Port of Saint John



Appendix E – Screenshot of Fundy Traffic radar



Source: Marine Communications and Traffic Services (MCTS) Fundy Traffic radar (screenshot at the time of the collision, 20:52:12), with TSB annotations.