

Transportation Safety Board
of Canada



Bureau de la sécurité des transports
du Canada

MARINE INVESTIGATION REPORT
M08C0081



COLLISION

**BETWEEN THE BULK CARRIER *QUÉBECOIS* AND
THE BULK CARRIER *CAPT. HENRY JACKMAN*
BEAUHARNOIS CANAL, SAINT LAWRENCE SEAWAY, QUEBEC
17 DECEMBER 2008**

Canada

The Transportation Safety Board of Canada (TSB) investigated this occurrence for the purpose of advancing transportation safety. It is not the function of the Board to assign fault or determine civil or criminal liability.

Marine Investigation Report

Collision

Between the Bulk Carrier *Québécois* and
the Bulk Carrier *Capt. Henry Jackman*
Beauharnois Canal, Saint Lawrence Seaway, Quebec
17 December 2008

Report Number M08C0081

Summary

At approximately 0431 eastern standard time on 17 December 2008, in darkness and reduced visibility due to snow, the upbound bulk carrier *Québécois* and the downbound bulk carrier *Capt. Henry Jackman* collided during a meeting situation in the Beauharnois Canal, near the port of Valleyfield, Quebec. Both vessels were able to proceed to their respective destinations. No injuries, structural damage, or pollution were reported.

Ce rapport est également disponible en français.

Other Factual Information

Particulars of the Vessels

	<i>Capt. Henry Jackman</i>	<i>Québécois</i>
IMO Number	8006323	5287847
Port of Registry	Sault Ste. Marie, Ontario	Toronto, Ontario
Flag	Canada	Canada
Type	Self-unloading bulk carrier	Gearless bulk carrier
Gross Tonnage	19 643	17 646
Length ¹	219.2 m	217 m
Breadth	23.13 m	23.15 m
Draught	Fore: 7.92 m Aft: 7.97 m	Fore: 3.5 m Aft: 6.25 m
Built	1981	1962
Propulsion	MAK diesel engines, 6962 kW, driving a single controllable-pitch propeller	C.G.E. Steam turbine, 7382 kW, driving a single fixed-pitch propeller
Cargo	25 553 tonnes of iron ore pellets	In ballast
Crew	23	22
Registered owner	Algoma Central Corporation	Upper Lakes Shipping Ltd.
Manager	Seaway Marine Transport	Seaway Marine Transport

Description of the Vessels

The *Capt. Henry Jackman* is a self-unloading bulk carrier with wheelhouse, accommodation, and machinery located aft.

The *Québécois* is a gearless bulk carrier of the traditional Great Lakes type with wheelhouse and some accommodation forward; machinery spaces, galley, and other accommodation are located aft.



Photo 1. *Capt. Henry Jackman* (photo courtesy of Seaway Marine Transport)

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

Each vessel is equipped with the standard navigation equipment normally found on Great Lakes vessels, including radar, depth sounder, and the mandatory automatic identification system (AIS). Both vessels also have an electronic chart system (ECS).

History of the Voyage

Capt. Henry Jackman

On 17 December 2008, the *Capt. Henry Jackman* left Snell lock at 0110² on a trip downbound and loaded for Québec, Quebec. After leaving the lock, the master handed the con of the vessel to the first officer (1/O), then returned to his cabin for some rest before the vessel arrived at the next lock at Upper Beauharnois.



Photo 2. *Québécois* (photo courtesy of Boatnerd.com/D. Beach)

The bridge team consisted of the 1/O, who was at the con, the second officer (2/O) as assisting officer, and a wheelsman on duty at the helm.

At about 0413, Seaway Traffic Control—Seaway Beauharnois (STC) called and inquired if the *Capt. Henry Jackman* would be first under the Valleyfield Bridge. The response was affirmative. STC then gave the bridge team local traffic information, including that the approaching *Québécois* was “upbound below Valleyfield Bridge.” At about 0414, the bridge team made the standard security call, announcing that the vessel was now two miles above Valleyfield Bridge.

Between 0428 and 0429, the *Capt. Henry Jackman* passed under the Valleyfield Bridge, after which the 1/O turned his attention to the upbound *Québécois*. At 0429, after observing that the approaching vessel with an aspect indicating a starboard-to-starboard meeting, he called on VHF (very high frequency) channel 14 to confirm passing arrangements. The call was delayed 10 to 15 seconds due to radio traffic. He then asked the *Québécois* if a starboard-to-starboard meeting was preferred, but the *Québécois* responded that it was already coming to starboard in preparation for a port-to-port meeting.

Québécois

On 17 December 2008, the *Québécois* left upper Beauharnois lock in the Saint Lawrence Seaway at about 0308 on a trip upbound in ballast for winter layup in Hamilton, Ontario. After leaving the lock, the master handed the con of the vessel to the 1/O, then returned to his cabin for some rest before arrival at Snell lock.

The 1/O was at the con, with the 2/O as assisting officer and a wheelsman at the helm.

² All times in this report are eastern standard time (Coordinated Universal Time minus five hours).

At about 0400, the 1/O called the *Capt. Henry Jackman* on VHF radiotelephone to clarify an upcoming meeting point. Shortly after this, the master of the *Capt. Henry Jackman* was informed of the upcoming meeting. The *Québécois* agreed to slow down so that the two vessels would meet below the Valleyfield Bridge – although no exact location was specified.

Just before 0414, the 1/O made the standard security call announcing that the vessel was two miles below Valleyfield Bridge. The *Québécois* continued to slow down and was making about 4 knots by 0423. For the next six minutes, until shortly before it collided with the *Capt. Henry Jackman*, the *Québécois'* speed increased at a rate of about 0.5 knot per minute, reaching a speed of 7.1 knots at the time of the meeting.

Collision Sequence

No attempt was made by either vessel to sound the appropriate signal for a port-to-port passing or warn the other vessel that its intentions were unclear. As soon as the 1/O on the *Capt. Henry Jackman* received confirmation of a port-to-port meeting, he ordered hard starboard and increased speed to help kick the vessel's head to starboard. At about the same time, he called the master to inform him of the developing situation.

On the *Québécois*, the 1/O had ordered a course alteration to starboard at 0429, and the vessel was coming slowly to starboard. The bridge team could distinguish some of the *Capt. Henry Jackman's* deck lights, but Christmas lights on its bow made its aspect difficult to determine. The 1/O on the *Québécois* ordered hard starboard and requested full ahead on the main engine to help kick the bow to starboard. At about the same time, the master was informed of the developing situation.

At 0431 in the centre of the channel and just above buoys C38/C39, the vessels began to pass each other port-to-port only a few metres apart. When the vessels were almost clear, both 1/Os gave helm orders to port to swing their respective sterns clear of each other. The vessels collided, making contact on their port quarters before clearing.

On the *Québécois*, the 2/O ran below and dropped a bow anchor as the 1/O put the engines full astern. The vessel's bow left the channel, coming close to the north bank of the canal before stopping. The vessel subsequently backed into the centre of the channel and continued its voyage.

The *Capt. Henry Jackman* continued downriver, staying within the channel to the south of Valleyfield Harbour.

Area of the Occurrence

Approaching Valleyfield from downstream, the channel curves to starboard. The area between the Port of Valleyfield and the bridge consists of a channel that is 182 m wide, with shoals to the south. Prevailing currents tend to set vessels towards the north shore.

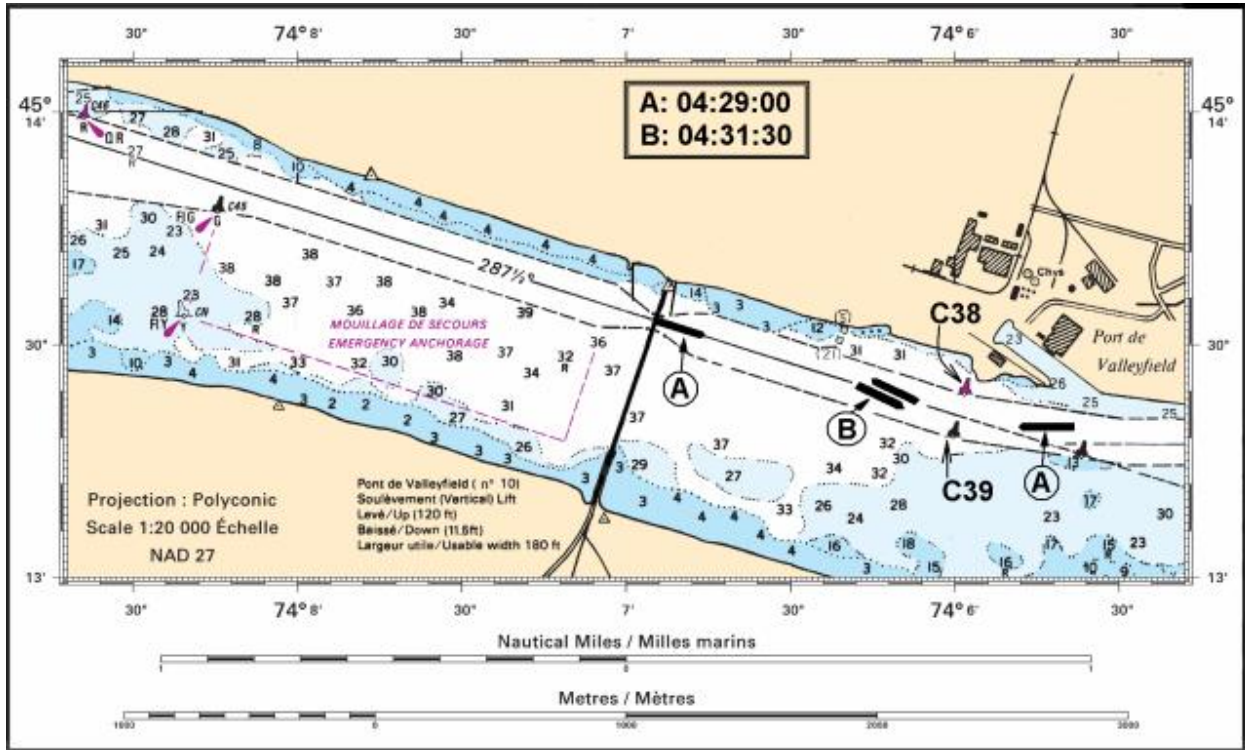


Figure 1. Vessel positions at 0429 and 0431:30, Capt. Henry Jackman is shown on the left, exiting the bridge.

Damage

Neither vessel suffered structural damage as a result of the occurrence.

Meeting Arrangements

In the Saint Lawrence Seaway, a vessel proceeding with the current (the downbound vessel) is considered the stand-on vessel and, therefore, proposes both the place of passage and the side on which it intends to pass. Upbound vessels are to keep out of the way and hold as necessary to permit safe passage.³ In this occurrence, the Capt. Henry Jackman was to propose the place of passage and indicate the side on which it intended to pass. The Québécois, as the upbound vessel, is the “giveaway” vessel, and holds as necessary to permit safe passage.

Meeting arrangements are also governed by Section 31 of the Seaway Practices and Procedures, which states, in part:

No ship shall meet another ship within the area between the caution signs at bridges or within any area that is designated as a no-meeting area by signs erected by the Manager or the Corporation in that area.

³ Collision Regulations, Rule 9-k (Narrow Channels – Canadian Modifications). Note that in practice, most meetings within the Seaway are port-to-port.

Weather and Visibility

The meeting occurred in darkness, and visibility had generally been greater than one nautical mile (nm) in snow until about 0425. At about 0429, as the *Capt. Henry Jackman* passed under the Valleyfield Bridge and, until the meeting, visibility was reduced to between 0.75 and 0.5 nm in snow flurries. Winds were light.

Vessel Certification

The vessels held valid certificates for the type of trade and voyage in which they were engaged. Since 09 April 2002, all inspections and surveys of the vessels were delegated by Transport Canada to the classification society Lloyd's Register.

The voluntarily adopted safety management systems for both the vessels and the ship manager had been audited by Lloyd's Register and found compliant with International Safety Management Code requirements. The Document of Compliance was issued to Seaway Marine Transport (SMT) on 26 August 2004 and was valid for five years.⁴

Personnel Certification and Experience

Québécois

The master, 1/O, and 2/O all held certificates valid for the vessel and voyage being undertaken.

The 1/O had been a watchkeeping officer since 2003, having started his career with this company that same year. In May and June of 2007 he undertook river pilotage training under supervision, piloting various company vessels upbound and downbound in the Seaway.

At the end of August 2007 the 1/O began relieving as 1/O and was piloting solo. Records show that the 1/O had made 43 trips between St. Lambert and Snell lock in the previous three years, including the training trips, 21 of which were upbound. As such, he met the criteria to be a piloting mate under the *Great Lakes Pilotage Regulations*.⁵

The assisting officer (2/O) had been on vessels since 1979 and as officer of the watch (OOW) since 1986. He had been 2/O with this company since 1990.

⁴ Seaway Marine Transport's quality management system was approved by Lloyd's Register Quality Assurance as having met the ISO 9001 standards; the certificate was issued on 16 December 2004.

⁵ The Great Lakes Pilotage Authority maintains an annual list of those masters and officers that were certified by the owners in compliance with section 4 of the *Great Lakes Pilotage Regulations*. As of 30 November 2008, the first officers in this occurrence were on the list and both had been attested to for all compulsory pilotage areas.

Capt. Henry Jackman

The master, 1/O, and 2/O held certificates valid for the vessel and the voyage being undertaken.

The 1/O had been at sea as an officer since 2000 and had been training for piloting duties since 2007. Records show that he had made 21 trips between St. Lambert and Snell lock in the previous three years, 10 of which were downbound. As such, he met the criteria to be a piloting mate under the *Great Lakes Pilotage Regulations*.

The assisting officer (2/O) had been on vessels as an OOW since 1979. He had been 2/O with Algoma since 1995 and was considered a non-piloting mate.

Piloting/Watchkeeping

While transiting the Seaway, the first officers on board the *Québécois* and the *Capt. Henry Jackman* did not stand a watch, but shared pilotage duties with the master. The other watchkeepers extended their watches and would assist the piloting officer. There was no indication that fatigue was a factor in this occurrence.

Requirements for Exemption from Pilotage

The Great Lakes Pilotage Authority is responsible for providing pilotage services within its boundaries. However, under the *Great Lakes Pilotage Regulations*, Canadian vessels are exempted from compulsory pilotage or certification, provided they are conned by a master or a deck watch officer who:

- is a regular member of the vessel's complement, and
- has been certified within the preceding 12 months by the vessel owner as having completed at least 10 one-way passages of the area in the preceding three years.

Discussions are underway between the Canadian Great Lakes domestic vessel operators, the Great Lakes Pilotage Authority, and Transport Canada regarding proposed changes to the *Great Lakes Pilotage Regulations* that may result in changes to the minimum requirements and qualifications for piloting deck officers aboard Canadian vessels. It is anticipated that the proposed changes will be published the *Canada Gazette, Part I*, by March 2010.

SMT Management Company

SMT manages a fleet of self-unloading vessels and gearless bulk carriers operating on the Great Lakes, Saint Lawrence River, and the waters of Eastern Canada. SMT is a partnership of Algoma Central Corporation and Upper Lakes Shipping Ltd. Vessel officers and crew, however, remain employees of their respective parent companies, Algoma Central Corporation, and Upper Lakes Shipping Ltd.

Pursuant to SMT's safety management system, both the *Capt. Henry Jackman* and the *Québécois* have the same navigation procedures and the same safety management manual.

SMT Pilotage Program and Training

When SMT was formed in 2004, the standard used by Algoma for pilotage training was adopted by SMT. It is the standard by which the company defines:

- the skills and knowledge required to safely navigate the confined waters of the Great Lakes/Saint Lawrence River and port systems;
- the training methods to acquire the skills and knowledge needed to pilot a vessel in these areas;
- the evaluation and reporting process to verify skills and knowledge for officers seeking to qualify for pilotage duties;
- the evaluation and reporting process to monitor and re-validate the skills and knowledge of those officers with existing pilotage qualifications; and
- the review process for the training and evaluation system.

The SMT pilotage program defines four levels of competency with respect to pilotage: non-piloting mate, piloting mate under supervision, piloting mate, and master. In April 2008, the 1/O on the *Capt. Henry Jackman* successfully attained the level of "piloting mate under supervision" for this section of the Saint Lawrence Seaway. Afterwards, however, he was not supervised but instead began piloting on his own.

Upper Lakes Shipping Ltd.

Although the SMT pilotage program was adopted by Upper Lakes Shipping Ltd. (ULS) for use on its vessels when SMT took over management, piloting mates on ULS-owned vessels continued to be evaluated under the ULS system.⁶ This system uses a standardized form, the River Proficiency Evaluation, to evaluate and document an officer's piloting expertise. The evaluation is based on 17 criteria across five categories: local knowledge, communication, ship handling, bridge resource management, and general knowledge. For each training trip, an officer's proficiency is graded against the criteria as follows: OK, needs improvement, or needs experience. The evaluation form also notes the section of the seaway where the pilotage took place and includes space for general comments.

⁶ Due to different collective agreements, each company continues to maintain separate human resources (HR) departments.

To determine whether an officer is ready to pilot without supervision, company administrators use both informal discussions with masters and evaluators who have supervised the officer, as well as comments on the River Proficiency Evaluation forms. In 2007, the 1/O of the *Québécois* had his knowledge and skill evaluated 25 times, along various segments of the Saint Lawrence Seaway between Montréal and Lake Ontario. These evaluations, which showed progressive improvement, were carried out by eight different people, one of whom commented that the 1/O was ready to pilot on his own – although subsequent evaluators nonetheless indicated that more experience was required.

Previous Occurrences

The TSB database indicates that there have been a total of seven other occurrences involving collisions in the seaway since 1999. Two of these were between Valleyfield Bridge and St. Lambert.⁷

Of the 2703 vessel transits in the Montréal-Lake Ontario section of the Saint Lawrence Seaway in 2008, 1695 were cargo vessel transits.⁸

Canadian Shipowners Association Passage Plans

The Canadian Shipowners Association, which represents six of the approximately 25 companies operating vessels on the Saint Lawrence Seaway, has developed generic, non-mandatory passage plans for members to use on upbound and downbound voyages – including courses, transit lines, parallel indexes, and dead ranges for each direction. The Canadian Shipowners Association passage plan for St. Lambert to Lake Ontario mentions one no-meeting area – between mile 13 and mile 15. This area is from just above the Mercier Bridge to below the CP Bridge in the South Shore Canal. Another area, near the Copeland Cut above Eisenhower Lock, is mentioned as an avoid-meeting area.

SMT has adopted the Canadian Shipowners Association passage plans, which are available to officers on all SMT-managed ships. These plans, which were on board, are generic and piloting officers or masters frequently supplement these with personal pilotage notes.

⁷ Of the seven collisions reported to the TSB, two were investigated: TSB Report M02C0064, *Canadian Prospector* and *Stellanova*, and TSB Report M05C0033, *Jo Spirit* and *Orla*.

⁸ *The St. Lawrence Seaway Traffic Report 2008 Navigation Season*, St. Lawrence Seaway Management Corporation, the Saint Lawrence Seaway Development Corporation, 2008.

Analysis

The Collision

As the *Capt. Henry Jackman* cleared the bridge and the bridge team observed the starboard sidelight of the upbound *Québécois* on their port bow, the intention of the upbound vessel became unclear. The *Québécois* had not yet completed its starboard turn along the middle of the channel and it therefore appeared to the bridge team of the *Capt. Henry Jackman* by the aspect of the approaching vessel that it was preparing for a starboard-to-starboard passing. As a result, the alteration to starboard was not initiated until the intentions of the *Québécois* were confirmed, and the *Capt. Henry Jackman* maintained its heading along the centre of the channel.

No attempt was made to sound the appropriate signal for a standard port-to-port passing or to warn the other vessel that they were unclear as to its intentions. Although the delay in establishing radiotelephone communication was only momentary (10 to 15 seconds), the subsequent alteration to starboard for the port-to-port passing did not prevent the collision and the sterns of the vessels made contact.

Managing the Meeting

Bridge watch officers are required to employ sound navigational practices aboard their respective vessels. This includes using all available resources and means to safely navigate their vessel and to monitor the progress of other vessels relative to their own, especially when the risk of collision exists.

As the stand-on vessel, it was the *Capt. Henry Jackman's* responsibility to determine both the meeting point and the passing arrangement. At 0400, some 30 minutes before the collision, the first officer (1/O) of the *Québécois* called the *Capt. Henry Jackman* to make meeting arrangements and agreed to slow his vessel in order to meet below the Valleyfield Bridge. The 1/O on the *Capt. Henry Jackman* agreed, but the exact location of the meet was not specified. The vessels met just 1.5 ship lengths outside the caution area below Valleyfield Bridge. This location, although not a no-meeting area, was still less-than-ideal given the relatively narrow channel width, the prevailing currents, and the limited distance available to properly line up for the bridge.

Once the *Capt. Henry Jackman* cleared the bridge, the vessels were 6.0 cables apart and closing at a combined speed of 16 knots over the ground. This left approximately two minutes until the meeting. In order to align themselves for a port-to-port meeting, the *Capt. Henry Jackman*, which had been obliged to remain in the channel centre until safely clear of the bridge, would have had to initiate its manoeuvre as soon as it cleared the bridge. The *Québécois*, meanwhile, first needed to complete its turn in the channel at Valleyfield. Both bridge teams were aware that upbound vessels making the starboard turn before the bridge generally maintain a heading to the channel's port side and a position near the centre to compensate for the set of the current to the north. In this instance, carrying out these manoeuvres when encountering another vessel further complicated an already difficult situation.

To mitigate the challenges of such meetings, it is vital that both teams monitor each other's progress, communicate effectively, and clarify their intentions via radiotelephone and sound signals. In this occurrence, however, the vagueness of the meeting arrangement was compounded by the inadequacy of subsequent communication between the two vessels.

Information About No-Meeting Areas

When vessels meet in the Saint Lawrence Seaway, it is in their best interest that this happens under the best possible circumstances. The volume of traffic means that not every location will be ideal, but the worst of these should nonetheless be ruled out. This has been done already – at least partially – via the Seaway's establishment of no-meeting areas (such as between caution signs). These areas, however, are all proximate to infrastructure such as bridges and do not take into account other variables that may increase the risks.

This occurrence revealed one previously unidentified area with a heightened risk for collision. In the absence of specific area risk assessments, other areas where there is a heightened risk of collision during meeting or overtaking situations may remain unidentified.

SMT Pilotage Training Program

Ships transiting above St. Lambert are required to be under the conduct of either a licensed pilot, a holder of a pilotage certificate, or a master or deck officer who has been certified by the ship-owner as having completed the requisite number of voyages within the compulsory pilotage area. Two of these four – a license and a certificate – require an assessment of the candidate's ability. Any evaluation of this ability must be objective, consistent, verifiable, and unambiguous. In theory, SMT's pilotage program does this – setting out the skills and knowledge that are required, the training methods to acquire them, and the evaluation/reporting process to verify that these have been acquired. Moreover, the company's standard goes beyond the *Great Lakes Pilotage Regulations* minimum requirement of 10 trips in three years.

In practice, however, because the evaluation standards at both companies have not been harmonized, SMT continued to use the ULS system to evaluate pilotage skills on ULS vessels. Unlike SMT's own pilotage program, this system does not appear to have clearly defined, unambiguous performance levels; instead, the company administrators use a combination of informal discussions and comments from the river proficiency evaluation forms. Although one evaluation commented that the 1/O of the *Québécois* was ready to pilot on his own, subsequent evaluators nonetheless indicated that more experience was required.

Moreover, although the 1/O of the *Capt. Henry Jackman* had previously been evaluated under SMT's program as a "piloting mate under supervision," there was no record that he had been evaluated and/or considered satisfactory to pilot on his own. However, at the time the vessel passed under the Valleyfield Bridge and collided with the *Québécois*, there was no supervision on the bridge for the 1/O – only the assistance of a "non-piloting mate." As a result, he may have been unprepared for the situation he encountered that night.

Safety management systems help shipping companies minimize the range of poor human performance-based decisions that can lead to an accident. This is particularly important with respect to pilotage. However, neither pilotage training program was a part of SMT's safety management system.

Had a pilotage training program been incorporated into the company's safety management system, it would have provided SMT an opportunity to harmonize the two evaluation standards. In the absence of effective evaluation, the overall efficiency of the pilotage training program may not be fully achieved and could result in shortcomings.

Findings as to Causes and Contributing Factors

1. The agreed meeting point of "below the bridge" was vague and resulted in the vessels meeting at a location that was less than ideal.
2. Communication between the vessels was less than adequate to safely manage the meeting.

Finding as to Risk

1. In the absence of specific area risk assessments, areas where there is a heightened risk of collision during meeting/overtaking situations may remain unidentified.

Other Findings

1. The *Capt. Henry Jackman* exhibited inappropriate lighting for a vessel underway.
2. In the absence of effective evaluation, the overall efficiency of a pilotage training program may not be fully achieved and could result in shortcomings.

Safety Action

Action Taken

On 27 February 2009, the TSB issued Marine Safety Information (MSI) Letter 02/09, *Inappropriate Lighting of a Vessel*. The letter, addressed to Seaway Marine Transport (SMT), states that the decorative lights displayed by the *Capt. Henry Jackman*, although they do not appear to have played a role in the collision, differ from those prescribed by the *Collision Regulations* for a vessel underway. Such lights, the letter states, “could impair the visibility of navigation lights and cause confusion in identifying the aspect and condition of the vessel.”

In a response dated 28 May 2009, SMT replied that it had issued the following guidelines to its vessels:

- decorative lighting (Christmas lights) displayed on the vessel must not interfere with the visibility of the ship’s navigation lights or aspect determination.
- decorative lighting (Christmas lights) are not to be displayed or in the “on” mode during the vessel’s navigation or underway condition. Lights may be displayed while berthed in port only.
- SMT will discontinue any “sponsorship” of contests which promote use of decorative lights which may impact safe navigation.

SMT has also forwarded MSI 02/09 to the Canadian Shipowners Association and the United States Lake Carriers’ Association for review and follow up.

This report concludes the Transportation Safety Board’s investigation into this occurrence. Consequently, the Board authorized the release of this report on 11 December 2009.

Visit the Transportation Safety Board’s Web site (www.bst-tsb.gc.ca) for information about the Transportation Safety Board and its products and services. There you will also find links to other safety organizations and related sites.

Appendix A – Area of the Occurrence

