

MARINE OCCURRENCE REPORT

M96L0069

FATAL ACCIDENT

INVOLVING A TOW TRUCK  
ABOARD THE FERRY "CAMILLE MARCOUX"  
BAIE-COMEAU TERMINAL, QUEBEC  
09 JULY 1996





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 Occurrence Report

### Fatal Accident

Involving a Tow Truck  
Aboard the Ferry "CAMILLE MARCOUX"  
Baie-Comeau Terminal, Quebec  
09 July 1996

Report Number M96L0069

### *Synopsis*

On 09 July 1996 the Canadian ferry "CAMILLE MARCOUX" was docked at the ferry wharf at Baie-Comeau, Quebec. During the final stages of loading vehicles on the parking deck, a tow truck towing a cement mixer moved onto the apron leading to the parking deck. After parking the cement mixer, the tow truck backed up toward the loading ramp and struck a pedestrian who was walking on the loading ramp apron, with his back to the tow truck.

The Board determined that the pedestrian was struck by the tow truck as he was walking on the loading ramp apron, with his back to the truck, because access was not closed to vehicles while pedestrians were walking on the loading ramp, and because a signaller was not positioned at the rear of the tow truck to guide the driver while he was backing up. The driver did not see the pedestrian walking on the apron, the tow truck was not equipped with an automatic backing-up alarm and the pedestrian did not look out for the tow truck as he left the vessel.

*Ce rapport est également disponible en français.*



|       |   |    |
|-------|---|----|
| 1.0   | Factual Information .....                           | 1  |
| 1.1   | Particulars of the Vessel .....                     | 1  |
| 1.1.1 | Description of the Vessel.....                      | 1  |
| 1.1.2 | Description of the Loading Ramp .....               | 1  |
| 1.1.3 | Description of the Tow Truck.....                   | 2  |
| 1.2   | History of the Occurrence.....                      | 2  |
| 1.3   | Injuries to Persons.....                            | 3  |
| 1.4   | Damages.....  | 4  |
| 1.5   | Certification .....                                 | 4  |
| 1.5.1 | Vessel.....   | 4  |
| 1.5.2 | Personnel.....                                      | 4  |
| 1.6   | History of Personnel and Individuals Involved ..... | 4  |
| 1.6.1 | Master.....   | 4  |
| 1.6.2 | First Mate .....                                    | 4  |
| 1.6.3 | Boatswain.....                                      | 4  |
| 1.6.4 | Victim.....   | 5  |
| 1.6.5 | Tow Truck Driver .....                              | 5  |
| 1.6.6 | Loading Ramp Attendant.....                         | 5  |
| 1.7   | Weather and Tidal Information.....                  | 5  |
| 1.8   | Société des traversiers du Québec.....              | 5  |
| 1.9   | Ferry Schedule .....                                | 5  |
| 1.10  | Traffic on the Loading Ramp .....                   | 6  |
| 1.11  | Loading Ramp Management Instructions.....           | 7  |
| 1.12  | Operating Instructions for the Parking Deck.....    | 7  |
| 1.13  | Backing-up Alarms for Heavy Trucks.....             | 7  |
| 2.0   | Analysis .....                                      | 9  |
| 2.1   | Access to the Loading Ramp.....                     | 9  |
| 2.2   | Vehicle Traffic .....                               | 9  |
| 2.3   | Assistance for Drivers of Heavy Trucks.....         | 9  |
| 2.4   | Impact of Ferry Schedule on Safety .....            | 9  |
| 2.5   | Hazard Warning .....                                | 10 |
| 2.6   | Backing-up Alarm.....                               | 10 |
| 2.7   | Written Safety Management Instructions .....        | 11 |

|       |   |    |
|-------|---|----|
| 3.0   | Conclusions .....                               | 13 |
| 3.1   | Findings.....                                   | 13 |
| 3.2   | Causes .....                                    | 14 |
| 4.0   | Safety Action.....                              | 15 |
| 4.1   | Action Taken.....                               | 15 |
| 4.1.1 | Coroner's Recommendations .....                 | 15 |
| 4.1.2 | Pedestrian Boarding Ramp .....                  | 15 |
| 4.1.3 | Audible Alarm .....                             | 16 |
| 5.0   | Appendices                                      |    |
|       | Appendix A - Sketch of the Occurrence Area..... | 17 |
|       | Appendix B - Sketch of the Loading Ramp .....   | 19 |
|       | Appendix C - Photographs.....                   | 21 |
|       | Appendix D - Glossary.....                      | 23 |

## 1.0 Factual Information

### 1.1 Particulars of the Vessel

|                  | "CAMILLE MARCOUX"   |
|------------------|---|
| Official Number  | 368318  |
| Port of Registry | Québec ,Quebec  |
| Flag             | Canada  |
| Type             | Passenger and vehicular ferry   |
| Built            | 1974, Sorel, Quebec   |
| Gross Tons       | 6,121.9   |
| Length           | 94,5 m  |
| Draught          | F: 4.65 m                      A: 4.92 m                                |
| Propulsion       | Four Ruxton Paxman diesel engines, developing a total power of 7,061 kW |
| Owners           | Société des traversiers du Québec, Québec, Quebec                       |

#### 1.1.1 Description of the Vessel

The "CAMILLE MARCOUX" is a roll-on/roll-off ferry; the parking deck is equipped with an after ramp. At the bow it is equipped with a visor that pivots upward, and a bow ramp that pivots downward to facilitate vehicle loading and unloading. The navigation bridge is forward of the accommodation and above the parking deck. The vessel has a capacity of 600 passengers and 126 vehicles.

#### 1.1.2 Description of the Loading Ramp

The Baie-Comeau terminal services one route to Matane, Quebec, on the south shore of the St. Lawrence River. The terminal has a ramp for loading and unloading vehicles which includes a pedestrian lane.

The loading ramp is hinged at the shore end to allow adjustment for the height of the tide. The pedestrian lane is roped off along the edge of the ramp and is covered with a non-slip mat.

<sup>1</sup> 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 (SI) of units.

<sup>2</sup> See Appendix D for all abbreviations and acronyms.

At the vessel end, the loading ramp extends into a hinged apron that rests on the bow ramp of the vessel. The apron is narrower than the loading ramp, and this section does not have a separate pedestrian lane.

### *1.1.3 Description of the Tow Truck*

The tow truck has tandem rear axles and is capable of towing heavy vehicles. It has a net weight of 12,610 kg. The field of view through the rear window of the tow truck cab is restricted by the hoisting apparatus. The tow truck is fitted with side mirrors for viewing the side rear.

## *1.2 History of the Occurrence*

On 09 July 1996, while the “CAMILLE MARCOUX” was docking at the Baie-Comeau marine terminal, the vessel’s bow visor was raised and the bow ramp lowered. At 1915 docking was completed and the loading ramp apron was lowered onto the vessel’s ramp. *The pedestrians aboard started across the loading ramp, followed by the 115 vehicles on board the ferry.*

*Vehicle loading began at approximately 1930. When loading was almost completed, the persons in charge of traffic on the ferry guided a tow truck, which was towing a cement mixer, toward the parking areas available in the forward section of the ferry. The former owner of the cement mixer, and his uncle, followed the cement mixer on foot and went aboard. The former owner wanted to assist the tow truck driver. The cement mixer was parked along the port side bulwark.*

*At about 1950 two blasts of the ferry’s whistle were sounded to signal that the vessel would be departing in about ten minutes. The first mate asked the former owner of the cement mixer to hurry and unhook the cement mixer and leave the parking deck. A brief but animated discussion followed between the former owner and the first mate. The tow truck, which was ahead of the cement mixer, was caught between it and the vehicles parked on the parking deck. The tow truck driver obeyed the signals of the boatswain assigned to guide him. After several manoeuvres, the tow truck was clear and it proceeded toward the ramp of the ferry. The signaller walked to the front and on the left of the tow truck.*

*When the tow truck backed onto the loading ramp apron, the driver and boatswain lost sight of the former owner and his uncle, who were walking back toward the loading ramp. The first mate asked the former owner to move aside but the latter continued to walk in the middle of the apron while his uncle was a few steps behind him, on the port side of the vessel ramp. The loading ramp attendant, who saw the tow truck backing up toward the former owner, shouted and waved his arms to signal to the former owner to move away; even the former owner’s son, who was at the edge of the loading ramp, signalled to him to clear the way for the tow truck. However, the former owner appeared not to realize that the tow truck was coming closer to him.*

---

<sup>3</sup>

Times are EDT (coordinated universal time (UTC) minus four hours) unless otherwise stated.

*At about 1955 the tow truck struck the former owner in the back, knocked him down on the apron, and the right rear wheels rolled over his body. When the driver heard shouting, he stopped the tow truck on the loading ramp, with the rear wheels on the ramp and the front wheels on the apron.*

*The victim was lying on the loading ramp apron between the front and rear wheels of the tow truck. The master was informed, and he used the ship's public address system to ask whether there was a doctor among the passengers who could offer assistance to the victim. A nurse went to the scene of the accident and immediately administered first aid. At 2001 the crew called for an ambulance. On arriving on board, the local police administered cardiopulmonary resuscitation to the victim, but to no avail. The victim remained motionless on the loading ramp apron. The ambulance attendants arrived on the scene at 2025, and the victim was transported to the local hospital, where a physician pronounced him dead.*

*According to eyewitnesses, the tow truck backed onto the apron at a speed exceeding the 5 km/h limit indicated on the traffic sign posted at the ferry exit.*

### 1.3 Injuries to Persons

|           | Crew | Passengers | Others | Total |
|-----------|------|------------|--------|-------|
| Fatal     | -    | -          | 1      | 1     |
| Missing   | -    | -          | -      | -     |
| Serious   | -    | -          | -      | -     |
| Minor     | -    | -          | -      | -     |
| No injury | 26   | 180        | 1      | 207   |
| Total     | 26   | 180        | 2      | 208   |

The chief coroner's office took charge of the victim's body to conduct an autopsy. According to the forensic report by the ministère de la Sécurité publique du Québec, death was caused by multiple trauma due to crushing.

## *1.4 Damages*

The vessel sustained no damage. Neither the loading ramp nor the tow truck were damaged in the accident.

## *1.5 Certification*

### *1.5.1 Vessel*

The “CAMILLE MARCOUX” is crewed, equipped and operated in accordance with existing regulations.

### *1.5.2 Personnel*

The personnel on the parking deck of the ferry consists of eight crew members: two officers, one boatswain and five deck-hands.

These crew members were certificated for the positions they occupied and for the service for which the vessel is used.

## *1.6 History of Personnel and Individuals Involved*

### *1.6.1 Master*

The master had 46 years' sailing experience, including 26 years as master. Since 1983, he was the master of the “CAMILLE MARCOUX”, as a permanent employee of the Société des traversiers du Québec (STQ).

### *1.6.2 First Mate*

The mate had 16 years' sailing experience, including 3 years as first mate. He had held a permanent position as first mate on board the “CAMILLE MARCOUX” since 27 June 1995.

### *1.6.3 Boatswain*

The boatswain had 29 years' experience at sea, including 18 as boatswain. He had held a permanent position as boatswain on board the “CAMILLE MARCOUX” since 1979.

#### 1.6.4 *Victim*

The man who lost his life had a permanent position in a factory in Baie-Comeau, and was also the owner of the cement mixer company Béton D'Astous. He had sold his fleet of vehicles and, at the time of the accident, he was delivering the cement mixer to its new owner on the south shore.

#### 1.6.5 *Tow Truck Driver*

The tow truck driver had 25 years' experience as a mechanic, and he had been driving a tow truck for 6 years.

#### 1.6.6 *Loading Ramp Attendant*

The loading ramp attendant had 21 years' experience and had taken a loading ramp operator course in 1994.

### 1.7 *Weather and Tidal Information*

The weather conditions recorded by the crew agreed with the observations of other witnesses. The weather was clear, with northeast winds at five knots and a temperature of 11°C. It had rained earlier in the evening of July 9, but the loading ramp was dry at the time of the accident.

Mean low water was around 1555. The tide was rising at the time of the occurrence, and the loading ramp sloped slightly in relation to the vessel parking deck.

### 1.8 *Société des traversiers du Québec*

The STQ, a Crown corporation established 04 June 1971, operates a fleet of 13 vessels, 11 of which ply 8 routes servicing 15 terminals along both shores of the St. Lawrence River.

#### 1.9 *Ferry Schedule*

During the summer months, the schedule published by the STQ for Tuesday crossings between Matane and Baie-Comeau was as follows:

| Departure from Matane | Departure from Baie-Comeau |
|-----------------------|----------------------------|
| 1700                  | 2000                       |

The schedule does not state either the arrival time or the minimum stopover time in Baie-Comeau. The ports are approximately 33 nautical miles apart, and the vessel's service speed is 15 knots. Thus, the time required for the crossing, without allowing for weather and currents, is about 2 hours and 15 minutes.

In this instance, the ferry left Matane at 1701 and arrived at Baie-Comeau at 1915. During the stopover at Baie-Comeau, 226 passengers and 115 vehicles disembarked before 180 passengers and 103 vehicles boarded for the return crossing to Matane. As no reservation had been made for transporting the cement mixer, the stowage plan had to be modified at the last minute, which may have occasioned an unforeseen delay.

### *1.10 Traffic on the Loading Ramp*

At the time of the accident the ferry was not equipped with a gangway ladder for pedestrians. They and the vehicles used the same access to the vessel, the loading ramp and the vessel's bow ramp, which leads into the accommodation. Thus, according to the ferry wharf user guide published by Public Works and Government Services Canada for passenger embarkation and disembarkation attendants, at the beginning of each stopover the loading ramp is reserved for pedestrians disembarking from and boarding the ferry, and the unloading and loading of the vehicles is done afterward.

Red and green traffic lights mounted on the left side of the loading ramp indicate when vehicles are allowed to proceed onto the loading ramp. Passengers are not allowed on the parking deck during the crossing.

The terminals are designed differently at each port. In the case of the "CAMILLE MARCOUX", which transits essentially between the ports of Godbout, Matane and Baie-Comeau, docking is done as follows in the latter two ports:

The ferry is always docked bow-in at Baie-Comeau and stern-in at Matane. Thus, the vehicles drive forward to board via the bow ramp at the Baie-Comeau terminal, and they drive forward off the ferry via the after ramp at the Matane terminal.

In this instance, the tow truck was indeed driven forward when loading the cement mixer, but it was driven in reverse when leaving because space on the parking deck was limited, since the loading of the ferry was almost completed.

### *1.11 Loading Ramp Management Instructions*

The operation of the loading ramp is described in a guide entitled *Guide d'utilisation de l'embarcadère routier de Baie-Comeau*, prepared for loading ramp attendants by Public Works and Government Services Canada in February 1992. Paragraph 2.6 of this guide states that, as regards traffic control, no vehicle will be allowed on the ramp when pedestrians are using the ramp.

For several years, in talks with federal authorities, the STQ had promoted the installation of a pedestrian ramp. In his report on this accident, the coroner recommended that the relevant authorities, namely the federal and provincial departments of transport, jointly build separate access ramps for pedestrians and vehicles, in order to give pedestrians access to the vessel's deck without having to walk on the ramp used by vehicles, as in this instance.

Since then, the operators of the Matane-North Shore route acknowledged the coroner's recommendations, and stated that they have already implemented them in part. At the Matane and the Baie-Comeau terminals, work has begun on a ramp to provide pedestrians with a direct access to the vessel that is separate from the vehicle ramp.

### *1.12 Operating Instructions for the Parking Deck*

The crew members responsible for loading and unloading the "CAMILLE MARCOUX" meet a few times a year to discuss changes to shipboard operations. Arrangements made at these meetings are verbal. The STQ also provides training sessions on the signals that the parking deck crew are required to use when stowing vehicles.

The crew members assigned to loading and unloading guide the vehicles only on the parking deck. In practice, only one signaller is assigned to guide car drivers, while drivers of heavy trucks and semi-trailers are assisted by two signallers. At the time of the occurrence, only one signaller was used for the manoeuvres, when the tow truck was leaving, because it was on the parking deck not to be stowed, but only to bring the cement mixer on board.

### *1.13 Backing-up Alarms for Heavy Trucks*

In Quebec, backing-up alarms are not mandatory for all heavy trucks. Also, the Quebec Highway Safety Code does not contain any regulations respecting backing-up alarms.

To date, only the Commission de la santé et de la sécurité du travail (CSST) has adopted regulations requiring vehicles weighing 2,500 kg or more, operating on construction sites, to be equipped with such a device.

The coroner who conducted the inquiry into the occurrence on board the "CAMILLE MARCOUX" filed his report and recommendations in March 1997. Once again, in one of his recommendations, the coroner acknowledges the importance of backing-up alarms for heavy vehicles. That recommendation, made to the

Société de l'assurance automobile du Québec (SAAQ), is for vehicles over 5,500 kg to be equipped with automatic backing-up horns.

---

## *2.0 Analysis*

### *2.1 Access to the Loading Ramp*

The former owner and his uncle were not passengers and did not take part in the loading and stowage of the cement mixer on the "CAMILLE MARCOUX". It appears that the instructions provided in the user guide for the Baie-Comeau ferry wharf were not followed, in that the former owner and his uncle were allowed to move about freely on the loading ramp.

The former owner and his uncle left the parking deck and proceeded toward the loading ramp just as the tow truck was about to do the same. The former owner was struck by the tow truck when he was on the loading ramp apron, with his back to the tow truck.

### *2.2 Vehicle Traffic*

In the interests of safety, vehicles are driven forward when entering and exiting the parking deck so that less visual effort and concentration are required of the drivers of cars and heavy trucks. In this occurrence, because of the limited space at the front of the parking deck, when the tow truck driver had finished loading the cement mixer, no one asked him to turn around and drive to the exit in a forward gear. It would have been easier for the driver to see the pedestrians if he had been driving forward toward the loading ramp.

### *2.3 Assistance for Drivers of Heavy Trucks*

Owing to their dimensions, heavy trucks have a limited field of view, which includes more blind spots than does that of a car. Consequently, the help of a second signaller, positioned at the rear of the vehicle, would have enabled the tow truck driver to back up more safely, irrespective of the manoeuvre he had to make.

However, at the time of the accident there was only one signaller, positioned at the front of the tow truck, to help the driver proceed to the exit. A second signaller at the rear of the tow truck would have seen the pedestrians.

### *2.4 Impact of Ferry Schedule on Safety*

Ferries transport a considerable number of passengers and vehicles and operate on tight schedules, which they must adhere to as closely as possible, especially in summer. The employees of ferries and terminals must endeavour to avoid delays because once a ferry is behind schedule it is difficult to get back on schedule.

In this instance, loading the cement mixer with the tow truck slowed down operations. Two blasts of the whistle were sounded to remind the crew to finish loading as soon as possible. Although there was apparently no pressure on the crew to adhere strictly to the ferry's timetable, they could have interpreted the whistle blasts as the start of preparations for departure, and this could have added to their stress.

The limited time available to the ferry before departure and the signal to the crew that they had about ten minutes to prepare for departure contributed to rushing the operations on the ferry; which added to the tow truck driver's stress as he was backing up. This situation led to the rapid movement of the tow truck toward the ferry exit.

### *2.5 Hazard Warning*

Although the loading ramp is equipped with traffic lights to control the movement of vehicles, these lights are not designed to alert pedestrians to hazards. Apart from safety measures such as the embarkation of pedestrians before vehicles, and ropes that demarcate the lane on the loading ramp reserved for pedestrians, the ferry wharf user guide does not provide for signs or visual or audible alarms to warn pedestrians of hazardous situations. Virtually the only means available to loading ramp attendants to warn passengers of danger is to call out to them. The attendant and other witnesses did just that before the accident, but to no avail. Moreover, the witnesses had little time to inform the victim because the tow truck was backing up quickly.

### *2.6 Backing-up Alarm*

Despite the many recommendations made by coroners since 1988 following similar accidents, the Quebec Highway Safety Code still does not require heavy trucks to be equipped with backing-up alarms. With regard to the former owner of the cement mixer, he was possibly upset from the animated discussion that he had had with the first mate and by the fact that he was seeing for the last time the vehicles that he had sold; this may have made him less aware of his surroundings when he walked onto the loading ramp. The fact that he only noticed the tow truck at the last moment suggests that the sound of the tow truck backing up may have been masked by other ambient noises produced by shipboard operations, and so did not attract his attention prior to the accident.

Due to a growing interest in safety, some automobile manufacturers are currently working on the development of a detection system that would give drivers an audible and visual warning of a person or object behind their vehicle. The new technology should be on the market soon, and such a device could undoubtedly be installed on heavy trucks. In the meantime, some install an external backing-up alarm to help avoid such accidents.

## 2.7 *Written Safety Management Instructions*

On adopting the *International Safety Management Code* on 04 November 1993, the IMO invited companies to implement a safety management system at all levels of the company, on board ship and on shore. As the *Code* does not apply to ferries such as the “CAMILLE MARCOUX”— which are not subject to the International Convention for the Safety of Life at Sea (SOLAS)— the IMO can only promote the *Code*. Through safety management, written instructions can be developed to continuously improve the safety management skills of shore employees and shipboard personnel. Such instructions enable employees to use the latest procedures for the safe operation of roll-on/roll-off ferries.



## 3.0 *Conclusions*

### 3.1 *Findings*

- . Pedestrians and vehicles used the same loading ramp to proceed to the parking deck.
- . Two pedestrians were moving about freely on the loading ramp after the cement mixer had been loaded.
- . The driver of the tow truck found himself in a stressful situation, as he had to manoeuvre his truck out of a confined space in the short time before the expected departure.
- . There was only one signaller, positioned in front of the tow truck, to guide the driver to the exit while he was backing up in a confined space.
- . The crew did not require the tow truck to turn around on the parking deck before proceeding to the loading ramp.
- . The fact that the tow truck was backing up in a confined space without the help of a second signaller contributed to the accident.
- . The victim and the tow truck driver did not look out for each other on the loading ramp apron.
- . Repeated warnings made by the loading ramp attendant and others near the ramp failed to attract the attention of the former owner, who was moving toward the exit.
- . Witnesses had little time to inform the victim because the tow truck was backing up quickly.
- . Since 1988, coroners have made recommendations to the organizations concerned that they take action. Nothing has been put in place as yet to prevent this type of accident.
- . Despite the many recommendations to the Société de l'assurance automobile du Québec (SAAQ) that backing-up alarms should be made mandatory equipment on heavy trucks, to date the Quebec Highway Safety Code contains no provisions to that effect.
- . Only the loading ramp attendants have written instructions regarding their duties.

### *3.2 Causes*

The pedestrian was struck by the tow truck as he was walking on the loading ramp apron, with his back to the truck, because access was not closed to vehicles while pedestrians were walking on the loading ramp, and because a signaller was not positioned at the rear of the tow truck to guide the driver while he was backing up. The driver did not see the pedestrian walking on the apron, the tow truck was not equipped with an automatic backing-up alarm and the pedestrian did not look out for the tow truck as he left the vessel.

---

## 4.0 *Safety Action*

### 4.1 *Action Taken*

#### 4.1.1 *Coroner's Recommendations*

In the report on his investigation into this accident, the coroner made three recommendations:

- a) That the Société des traversiers du Québec (STQ) review its instructions regarding the unloading in reverse gear of any vehicle, to conform to articles 223 and 286 of the regulations governing industrial and commercial establishments made pursuant to the Act respecting occupational health and safety, and to regulation 9, chap. S-2.1 of the Quebec Pension Board, 1981, which states that when a motorized vehicle is backing up, a signaller must direct the driver if this movement of the vehicle can compromise the safety of a worker or of the driver.
- b) That the Société de l'assurance automobile du Québec (SAAQ) and the Ministère des transports du Québec modify the Quebec Highway Safety Code such that it require vehicles over 5,500 kg to be equipped with automatic backing-up horns.
- c) That the STQ, the Ministère des transports du Québec and Transport Canada combine their efforts to build, on wharfs belonging to them, a separate pedestrian access that allows pedestrians to get to the upper deck of a ferry without having to walk on the parking deck.

While the SAAQ finds the coroner's recommendation for automatic backing-up alarms to be a worthwhile goal, it considers that implementation would be problematic, as it would be difficult to justify the economic impact that the installation of a such device on more than 100,000 heavy trucks would have on the industry. The SAAQ recommends, rather, that a driver should make an initial check to ensure that the way is clear, and then be guided by a responsible person.

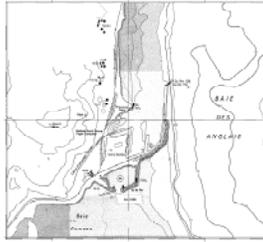
#### 4.1.2 *Pedestrian Boarding Ramp*

On 13 December 1996 the Board sent a Marine Safety Information Letter (MSI 03/96) to the STQ. The purpose of the letter was to advise the STQ of deficiencies identified in the instructions for passenger embarkation and disembarkation. The STQ developed a plan for pedestrian boarding and, in 1997, made improvements to the passenger boarding facilities at the Matane and the Baie-Comeau terminals. These included a covered walkway and a completely separate boarding ramp, which now allow for safer boarding of pedestrians.

### *4.1.3 Audible Alarm*

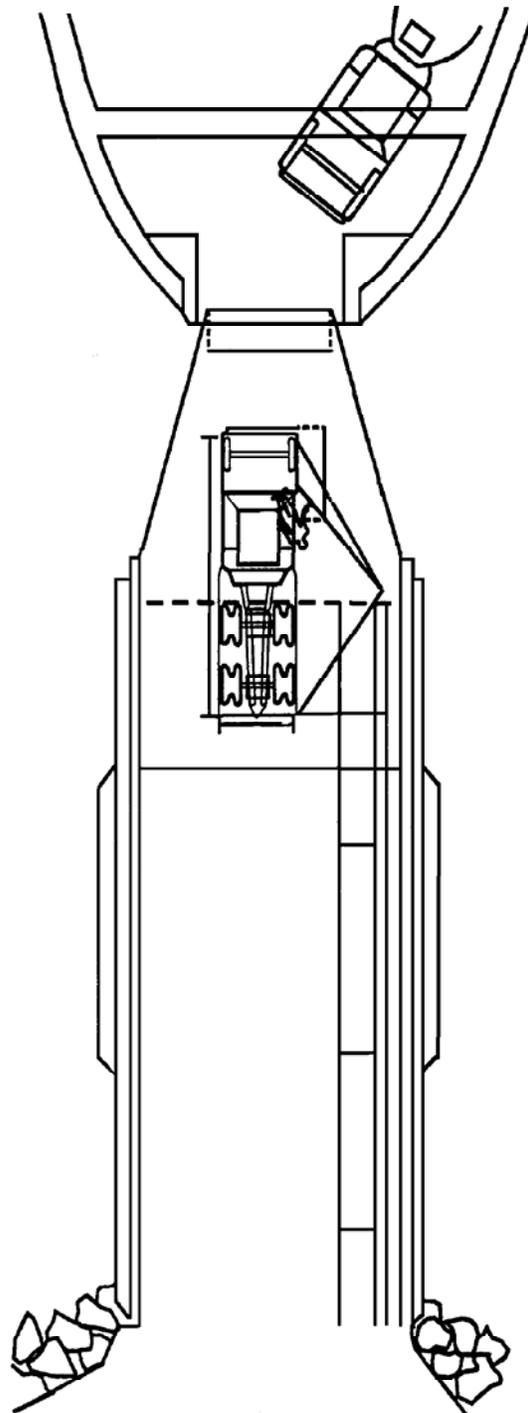
Following this accident, the owner of the tow truck had a backing-up alarm installed on the vehicle.

*This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board, consisting of Chairperson Benoît Bouchard, and members Maurice Harquail, Charles Simpson and W.A. Tadros, authorized the release of this report on 08 April 1999.*



*Appendix A - Sketch of the Occurrence Area*





*Appendix  
B - Sketch  
of the  
Loading  
Ramp*





**View of the traffic signs posted at the entrance/exit of the loading ramp at Baie-Comeau, Quebec.  
The top sign indicates the speed limit for vehicles using the ramp.**

### *Appendix C - Photographs*



**View of the exit through the bow visor of the CAMILLE MARCOUX.  
The photo was taken from the designated pedestrian lane on the ramp,  
looking toward the parking deck.**



**General view of the loading ramp at Baie-Comeau.  
The designated pedestrian lane along the ramp can be seen on the left.**

*Appendix D - Glossary*

|       |  |
|-------|--|
| A     | aft  |
| C     | Celsius  |
| CSST  | Commission de la santé et de la sécurité du travail    |
| EDT   | eastern daylight time                                  |
| F     | forward  |
| IMO   | International Maritime Organization                    |
| kg    | kilogram   |
| km/h  | kilometre per hour                                     |
| kW    | kilowatt   |
| m     | metre  |
| SAAQ  | Société de l'assurance automobile du Québec            |
| SI    | International System (of units)                        |
| SOLAS | International Convention for the Safety of Life at Sea |
| STQ   | Société des traversiers du Québec                      |
| TSB   | Transportation Safety Board of Canada                  |
| UTC   | coordinated universal time                             |
| °     | degree   |