

MARINE OCCURRENCE REPORT

STRIKING AND SUBSEQUENT SINKING

**OF THE SELF-UNLOADING BULK CARRIER "JAMES NORRIS"
COLBORNE, ONTARIO
11 NOVEMBER 1995**

REPORT NUMBER M95C0085

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

Striking and Subsequent Sinking

of the Self-unloading Bulk Carrier "JAMES NORRIS"
Colborne, Ontario
11 November 1995

REPORT NUMBER M95C0085

SUMMARY

On 11 November 1995, during loading operations with the vessel port side to the St. Lawrence Cement berth and the boom swung to starboard, the weather suddenly deteriorated at about 1200. The winds abruptly backed to the south-east and rapidly increased in velocity. While the rigging of the "JAMES NORRIS" was being secured, the wave height increased proportionally to the wind speed. At the time of the vessel's intended departure, winds were sufficiently strong to prevent the vessel from leaving the dolphin docking arrangement at the wharf. Repeated pounding of the vessel against the berth resulted in the perforation of the shell plating below the waterline in way of the engine-room spaces, and flooding commenced. Pumping could not cope with the ingress of water. The engine-room flooded and, at about 1800, the vessel sank in nine metres of water.

Ce rapport est également disponible en français.

OTHER FACTUAL INFORMATION

Particulars of the Vessel

| | |
|------------------|--|
| Name | "JAMES NORRIS" |
| Port of Registry | Toronto, Ontario |
| Flag | Canadian |
| Official Number | 178247 |
| Type | Self-unloading bulk carrier |
| Gross Tonnage | 12,962 |
| Length | 197 m |
| Built | 1952, Midland, Ontario |
| Propulsion | Uniflow five-cylinder diesel engine, 4,000 BHP; Bow thruster, 800 HP |
| Owners | U.L.S. Corporation |

On Friday, 10 November, in overcast weather, the "JAMES NORRIS" proceeded in ballast, heading for Colborne, Ontario. At that time, the barometric pressure hovered around 1,006 mb and forecast gale winds had not materialized.

The St. Lawrence Cement berth at Ogden Point is exposed to the weather and open sea conditions, especially from broadside seas, when the wind is from the south-west to south-east direction. The vessel anchored off the dock at 0030 on 11 November 1995 to monitor the weather conditions and forecast. Gale warnings continued to be issued for the area.

The vessel secured at the St. Lawrence Cement berth at 0750 and commenced loading at 0800. The wind was steady at 10 to 15 knots, mainly southerly but variable, and the barometric pressure was still falling.

Although the vessel's crew reported that the barometric pressure had remained the same until 1215 when it dropped below 1,000 mb and a sudden change of wind direction took place to a reported south-east direction, other weather stations in the area recorded a steady drop in pressure which accelerated at about 1215. At that time, the vessel had loaded approximately 11,500 of a maximum 17,000 metric tonnes of cargo.

Environment Canada weather stations at Canadian Forces Base Trenton and at Point Petrie recorded higher barometric pressures for the same period. The vessel was situated near the centre of a low trough moving to the north-east.

At 1225, in deteriorating weather conditions, the master decided to stop the loading operations and depart the dock. The hatches were secured and the unloading boom was swung in and secured in its saddle. This task is normally time-consuming, and the increasing vessel

¹ All times are EST (Coordinated Universal Time (UTC) minus five hours) unless otherwise stated.

motion made the operation even more difficult.

At 1315, with the hatches and unloading machinery secured, the "JAMES NORRIS" attempted to thrust herself away from the dock, in the hope of catching the wind head-on and departing in this fashion.

When this method failed, the next attempt was made by springing the stern off the dock using two forward backspring wires and two nylon hawsers. The vessel moved forward and, with hard-a-port rudder, attempted to get the stern off the dock, breaking several mooring wires in the process. The vessel was not able to operate on full power as one of the five cylinders in the main engine had been undergoing maintenance work.

At 1330, the master and chief engineer reviewed the options to secure the safety of the ship and crew, and at 1400, an attempt was made to flood the forward ballast tanks Nos. 1, 2 and 3, port and starboard, and pumping commenced.

The continual slamming of the stern into the dolphin loosened rivets which popped and were propelled across the engine-room at high velocity, endangering engine-room personnel, while other pieces of engine-room equipment, such as air receivers, were being jarred loose from their brackets, creating a further hazard.

At about 1500, a steam line to the forward winches fractured, and large perforations in the shell plating in several locations aft resulted in voluminous amounts of sea water entering the engine-room.

Between 1500 and 1530, the engineer stopped pumping ballast and used all available pumps to prevent the engine-room from flooding.

At approximately 1545, the master ordered all non-essential crew off the vessel and 17 crew members departed, leaving a skeleton crew of five.

The master then attempted to ground the vessel's bow against the shallows just past the easternmost dolphin, after deploying the stern anchor. As the sea continued to build up, the vessel pounded against the wharf incessantly. Except for fendering, little could be done to minimize the ensuing damage.

A small fire started in the steering flat at the electrical switch panel but was quickly contained.

At 1600, the master, with concurrence from the chief engineer, commenced shutting off fuel and lubricating oils to the main engines and began shutting down the engine-room operations.

At 1700, the remaining crew members departed.

At 1800, the stern of the vessel was seen to be sitting on the bottom in 9.5 m of water, approximately 8 m away from the dock. At that time, the vessel had 50 tons of diesel oil and 400 tons of bunkers aboard; however, no oil pollution was observed outside the engine-room spaces. The bow shoulder continued pounding against the

easternmost dolphin in 3 to 4 m seas.

Abandoned, the vessel remained at the mercy of the weather. During the evening, winds gusted to 75 knots and the maximum height of the seas was estimated at 4 to 5 m.

All the gale-force wind forecasts underestimated the severity of the wind experienced in the Colborne area.

The confluence of several cold and warm fronts over the Great Lakes produced an unusual weather pattern culminating in several low pressure systems moving generally in a north-easterly direction, causing a fairly steep pressure gradient over Lake Ontario on the morning of 11 November 1995. Such weather phenomena had not been seen in nearly 20 years. The second low passed through the Colborne area later in the evening and generated hurricane-force winds upward of 75 knots by 2200 at Point Petrie. Hurricane-force winds were not, and could not, have been predicted by the forecasters; the weather experienced is considered an "anomaly".

All the dolphins suffered varying degrees of damage. The "JAMES NORRIS" suffered much damage on the port side for most of the ship's length, extending from the main deck around the turn of the bilge to the bottom flat, and also aftward from below the No. 7 hold, including the propeller and rudder securing arrangements.

The self-unloading gear remained undamaged and was used extensively in the salvage operation. The damage on the port side of the vessel was temporarily repaired by divers. Tugs with equipment and the "CANADIAN PROGRESS" assisted in the securing and lightening of the "JAMES NORRIS", completing the operation on 18 November. The vessel was then towed to Port Weller, Ontario, for dry-docking and repairs.

ANALYSIS

Efforts to depart the wharf were complicated because, immediately to shoreward of the easternmost dolphin, the sea floor rises up sharply, parallel to the shore. There is an insufficient water depth for vessels to approach other than from a direction between west and south. In the case of the "JAMES NORRIS", because of the self-unloading gear disposition and the dolphin configuration, the vessel could only tie up port side to the berth.

The wind at the time of departure was too strong for the available power configuration of the vessel and kept her pinned to the dolphins. If the bow thrust power was insufficient in view of the strong south-east winds, then the use of the starboard anchor, deployed on arrival, may have helped the vessel to leave the berth. However, this action remained at the master's discretion, and the situation may have been aggravated if the anchor had dragged as the vessel departed.

Because of the wharf's exposed location, the barometric pressure was monitored, but the person monitoring the barometer did not record

that the barometric pressure was decreasing steadily. This may have been due to a faulty instrument or to the frequency of monitoring. As the weather stations at Toronto headlands and Cobourg were decommissioned in April 1995, nearshore severe weather warnings were not available to the bridge watch on VHF channel 16 or on the weather channels.

When all attempts to leave had failed and the weather continued to deteriorate, the master made a safe decision in getting the majority of the crew off the vessel, and eventually the skeleton crew as well before daylight finished. The storm weather conditions would have seriously impaired the crew's ability to get off later in darkness with the vessel pounding against the dolphins, and a delay could have resulted in casualties.

The sudden deterioration of the weather in the exposed loading location, the vessel's power configuration, the unavailability of accurate weather forecast information from shoreside facilities and the human interpretation of the decreasing barometric pressure information all contributed to the occurrence.

FINDINGS

1. The dolphin arrangement at Colborne exposes vessels to sudden deteriorations of weather. There is no shelter from, or breakwater preventing, incoming heavy seas, especially seas coming from a south-west to south-east direction.
2. Approach and departure methods are limited because the sea bottom profile does not allow vessels of normal Seaway draught to approach or depart the wharf from a direction other than perpendicular to the shoreline.
3. Based on all available weather data, the vessel was near the centre of a deepening depression. The vessel was caught loading alongside when the wind shifted rapidly and increased in strength from the south-east.
4. Human interpretation of the decreasing barometric pressure and the unavailability of accurate weather forecast information from shoreside facilities contributed to the delay in departing the wharf before the onslaught of the bad weather.
5. The master, in conjunction with the chief engineer, under difficult circumstances, made a safe decision in evacuating the crew in two stages, before the pounding became too serious, and additionally in preventing pollution by shutting off the fuel and lubrication oils while the engine-room was still accessible.
6. The "JAMES NORRIS" main engine was operating with four of its five cylinders at the time of the attempted departure, and thus had less than maximum power.

7. The "JAMES NORRIS" sank by the stern when the shell plating in way of the engine-room spaces was stove in by the continuous pounding of the vessel against a dolphin.

CAUSES AND CONTRIBUTING FACTORS

The "JAMES NORRIS" sank as a result of a combination of factors: the exposed loading location, the vessel's power configuration, the unavailability of accurate weather forecast information and human interpretation of the decreasing barometric pressure which delayed the vessel's departure from the wharf in deteriorating weather.

SAFETY ACTION TAKEN

Following the occurrence, the shipowners, U.L.S Corporation, met with the masters (assigned and relief) of the "JAMES NORRIS" to review the accident and to explore means to prevent recurrence. The owners also discussed with the Canadian Hydrographic Service concerning the survey and production of a more detailed chart of Ogden Point. The configuration of the St. Lawrence Cement berth was also reviewed to see if any modifications could be made for safer approach/departure.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board, consisting of Chairperson, Benoît Bouchard, and members Maurice Harquail and W.A. Tadros, authorized the release of this report on 09 October 1996.