

MARINE OCCURRENCE REPORT

OVERTURNING OF A TRUCK

**ON BOARD THE FERRY "L'HÉRITAGE I"
DURING THE CROSSING BETWEEN
TROIS-PISTOLES AND LES ESCOUMINS, QUEBEC
29 MAY 1996**

REPORT NUMBER M96L0052

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.

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Summary

On the morning of 29 May 1996, the ferry "L'HÉRITAGE I" was on a scheduled voyage. When the vessel was approximately four miles north-west of Île aux Basques, Quebec, she encountered a wave that was higher than the others. A truck parked on the forward vehicle deck broke its tie-downs and overturned. No one was injured as a result of this occurrence, but a small quantity of diesel fuel from the truck's tank was spilled. Smoke was seen emanating from the truck's refrigeration system, creating fears of fire. The damage was minor.

Ce rapport est également disponible en français.

Other Factual Information

Particulars of the Vessel

Name	"L'HÉRITAGE I"
Port of Registry	Québec, Quebec
Flag	Canadian
Official Number	329382
Type	Ferry
Gross Tonnage	456
Length	52.99 m
Draught	Forward: 1.73 m Aft: 1.88 m
Built	1973, Les Méchins, Quebec
Propulsion	Two diesel engines, driving two fixed-pitch propellers
Crew	10
Passengers	20
Owners	Compagnie de navigation des basques inc. Trois-Pistoles, Quebec

The "L'HÉRITAGE I" is a ferry providing seasonal service between Trois-Pistoles on the south shore of the St. Lawrence and Les Escoumins on the north shore. On 29 May 1996, the vessel left the Trois-Pistoles wharf at 1000 with 13 cars, one trailer, one truck and 20 passengers on board. The wind was from the north-east at 10 to 20 knots. When the ferry was approximately four miles north-west of île aux Basques, the sea became very rough, and the vessel began rolling to about 10 degrees.

Two men were sent to the vehicle deck to check the condition of the load. The truck was parked at the forward end. Before departure, the truck wheels had been chocked with wooden wedges and the truck secured to the deck with two tie-downs. Because of the rough sea, the two crew members were preparing to add more tie-downs to the truck. At the same moment, the bridge watch observed a wave that was much higher than the others (approximately 5 to 6 m, compared to an average of 2.5 m). They tried to turn the ferry to take the wave head on. Under the effect of the sudden vertical acceleration caused by the vessel's severe pitching upon encountering this exceptionally large wave, the two men on the deck saw the truck rise up and break its tie-downs. After pitching, the vessel rolled to about 35 degrees on each side, overturning the truck.

At 1045, the Les Escoumins Vessel Traffic Centre (VTC) received a call from the "L'HÉRITAGE I" reporting a fire on board caused by a truck that had overturned. A few minutes later, it was learned that there was no fire, just smoke emanating from the compressor of the truck's refrigeration system. The smoke stopped once the system was turned off. Fuel was found leaking from the overflow pipe of the

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All times are EDT (Coordinated Universal Time (UTC) minus four hours) unless otherwise stated.

truck's fuel tank. Once the leak was stopped and the damage was assessed, the vessel returned to Trois-Pistoles where she reported docking at 1224.

The tie-downs used to secure the truck broke at the steel rings permanently attached to the deck. The truck had been secured to the deck with two tie-downs. More tie-downs were not added until it was too late. At the time of departure, no such high waves were expected. The wind was blowing at less than 20 knots at the time of the occurrence.

Analysis

The broken steel rings were examined in the TSB Engineering Laboratory. The examination showed that both rings had ruptured under overload at the welded joint. It was determined that one ring had ruptured at the time of the occurrence, and that there was no prior cracking. The other had been cracked before the occurrence.

Analysis of the welds showed that they did not penetrate the entire cross-section and that they had not been heat-treated after welding. The rings therefore did not have their maximum strength of 74,000 lbs. The stronger ring could bear a load of about 30,000 lbs, whereas a similar ring without a weld joint could bear a load of about 1,000 lbs.

Findings

1. At the time of departure, only moderately rough seas were expected.
2. The truck parked at the forward end of the vessel was secured to the ferry deck with only two tie-downs.
3. An exceptionally large wave made the vessel pitch and then roll violently.
4. Under the effect of the pitching and rolling, the truck broke its tie-downs and then overturned.
5. One of the steel rings used to secure the truck to the deck was cracked before the occurrence.
6. The welding for the joints in both rings did not penetrate the full cross-section.

Causes and Contributing Factors

A truck being transported on the forward deck of the ferry "L'HÉRITAGE I" broke its tie-downs and overturned because there were

not enough tie-downs securing it and the vessel met with rougher seas than expected. The steel rings used to secure the tie-downs to the deck were in poor condition and could not withstand the strain.

Safety Action Taken

Following the occurrence, corrective measures were taken to prevent vehicles transported on the ferry (weighing as much as 20 to 25 tonnes) from shifting and turning over. All securing rings attached to the main deck were replaced with rings capable of supporting a test load of 15,000 lbs. From now on, all trucks and heavy vehicles will be secured with at least four tie-downs on each side.

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 04 April 1997.