

MARINE OCCURRENCE REPORT

MECHANICAL FAILURE

**ON BOARD THE BULK CARRIER "ALGOWEST"
ON THE ST. LAWRENCE RIVER
CAP-SAINT-MICHEL, QUEBEC
22 APRIL 1995**

REPORT NUMBER M95L0009

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 22 April 1995, the Canadian bulk carrier "ALGOWEST" was under way in the St. Lawrence River bound for Port-Cartier, Quebec, when one of the two main engines experienced a major mechanical failure. The vessel continued on, propelled by only one engine, to Sorel, Quebec, where she stopped over to assess the damage and check the status of the main engines. There were no injuries or pollution as a result of this occurrence.

FACTUAL INFORMATION**Particulars of the Vessel**

Name	"ALGOWEST"
Port of Registry	Sault Ste. Marie, Ontario
Flag	Canadian
Official Number	372057
Type	Bulk carrier
Gross Tonnage	20,309
Length	219.21 m
Draught	Forward: 7.92 m Aft: 8.00 m
Built	1982, Collingwood, Ontario
Propulsion	Two six-cylinder MaK 4SA diesel engines, type 6M552AK, 3,750 kW, driving a single controllable-pitch propeller
Cargo	28,325 tonnes of wheat
Owners	3013286 Canada Inc. Sault Ste. Marie, Ontario

On 22 April 1995, the "ALGOWEST" was under way in the St. Lawrence River bound for Port-Cartier from Toledo, U.S.A.

At about 0625, when the vessel was some three nautical miles north-east of Cap-Saint-Michel, the engine-room staff heard an abnormal noise. A check of the console in the control room revealed nothing unusual. The speed of both engines was at 70 per cent, corresponding to "full speed ahead", and no visual or audible alarm was on. When the control room door was opened, however, the engine-room was found to be full of smoke. The engineer on watch immediately reported to the wheel-house that there was a fire in the engine-room. He then went to alert the chief engineer. As they were getting back to the engine-room, they met the assistant engineer who informed them that there was no fire, just some trouble on the port engine. The engine was disengaged and then shut down after the nature of the problem had been determined. The "ALGOWEST" continued on her way as far as Sorel on one engine. On arrival, both engines were inspected and the extent of the damage was assessed.

Initial findings revealed that the No. 4 piston had seized up and damaged the bottom part of the cylinder liner. The damaged parts fell onto the crankshaft and were ejected with sufficient force that they passed through three crankcase doors. Superficial damage was found on the crankcase near the Nos. 3 and 5 cylinders. A more detailed inspection showed that two of the nuts of the No. 6 main bearing

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

cap were not tight enough, thereby reducing the amount of oil lubricating the No. 4 piston crown. The piston crown is lubricated via a piping system running inside the crankshaft and the connecting rod from the No. 6 main bearing.

It had been noticed since the beginning of the season that the pressure of the lubricating oil on the port engine stayed at a lower level than usual, but the cause could not be determined, and it was decided to wait for a stay in port to carry out a more thorough inspection. During the preceding winter, maintenance work had been carried out on both engines by the ship's crew. The chief engineer and the engineer on watch at the time of this occurrence were not involved in performing this winter work.

Tests performed after the repairs were completed on the port engine revealed that the protection system, which is supposed to stop the engine in the event of low lubricating oil pressure, was not working. It was also found that the hydraulic jack used to bolt the nuts needed to be replaced because it was in bad condition.

ANALYSIS

The reasons for the deactivation of the emergency shutdown system on the port main engine are still undetermined. There was considerable turnover among the engine-room staff, which compromised continuity in maintenance.

The electrical shutdown system had been disconnected, but none of the engineers on duty at the time of the failure knew when or by whom it had been deactivated.

FINDINGS

1. The nuts of the No. 6 main bearing cap were not tightened properly when maintenance work was performed during the winter.
2. Because of inadequate lubrication due to a drop in oil pressure, the No. 4 piston seized up and damaged the bottom part of the cylinder liner.
3. The damaged parts fell onto the crankshaft and were ejected with sufficient force that they passed through three crankcase doors.
4. The emergency shutdown system on the port main engine had been deactivated for reasons as yet unknown.
5. The smoke observed in the engine-room was in fact a haze of oil.

CAUSES AND CONTRIBUTING FACTORS

The mechanical failure of the port engine of the "ALGOWEST" was caused by inadequate lubrication of the No. 4 piston. Loose nuts allowed the No. 6 main bearing cap to leak a quantity of oil intended to lubricate the damaged piston. The port engine did not shut down when the lubricating oil pressure dropped because the emergency shutdown system had been deactivated.

SAFETY ACTION TAKEN

Following this occurrence, the owners/operators have reinforced the operating procedures for their fleet. The procedures now require the final tightening of all major engine components to be witnessed and recorded by the chief engineer. In addition, the procedure for handing over responsibility of work in hand has also been strengthened.

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 27 August 1996.