

MARINE OCCURRENCE REPORT

MACHINERY FAILURE

ON THE BULK CARRIER "PINE ISLANDS"
IN THE GULF OF ST. LAWRENCE
23-24-25 AND 26 DECEMBER 1996

REPORT NUMBER M96L0156

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 23 December 1996, following a series of mechanical problems, the Belizean bulk carrier "PINE ISLANDS", in light condition, was adrift east of Anticosti Island, Quebec. Since there were strong winds in the area, a tug was called in case the vessel was driven ashore and the crew forced to abandon the vessel. The tug arrived on the scene on 26 December, and when the winds subsided, she was able to move in close to the vessel to tow her to Sydney, Nova Scotia. On 28 December, the vessel arrived in port without the crew having to abandon ship.

Other Factual Information

Particulars of the Vessel

Name	"PINE ISLANDS"
Port of Registry	Belize, Belize
Flag	Belize
IMO Number	7418311
Type	General cargo/Bulk carrier
Gross Tons	10,379
Length	148.01 m
Draught	Forward: 3.20 m Aft: 4.20 m
Built	1977, Rijeka, Yugoslavia
Propulsion	One Sulzer diesel engine developing 6,620 kW and driving one fixed-pitch propeller
Operators	Naviera Poseidon, Havana, Cuba
Owners	Lineas de navigation Gema S.A. San Ignacio, Havana, Cuba

On 02 December 1996, at 0025, the "PINE ISLANDS", in ballast, departed the port of Havana, Cuba, bound for Sorel, Quebec, where she was to load grain. At about 0810, the main engine had to be stopped due to water contamination in the fuel. In the next few days, the vessel experienced several power failures, causing the main engine to shut down. When the main engine is stopped for too long, the fuel oil in the main engine fuel lines must be replaced with diesel fuel to facilitate starting. Since this recurred continually, on 12 December 1996, the vessel had to put in at Shelburne, Nova Scotia, to replenish her supply of diesel fuel. On departing Cuba, the vessel was carrying enough fuel for a round trip. On 10 December, the vessel had been authorized by ECAREG Canada to enter Canadian waters.

On 13 December, the vessel departed Shelburne after loading some 30 tonnes of fuel. However, the machinery problems started again the next day. The fresh water feed pump for the crew accommodation and some machinery parts failed. A pressure relief valve on one of the cylinders of the main engine began to leak, requiring the engine to be shut down at 1048. At 1053, electrical power in the vessel failed due to contaminated fuel. The main engine was shut down but the fuel oil in the feed lines was not replaced with diesel fuel, since it was thought the repairs would be brief. The vessel was rolling severely while she was beam on to the sea, and it was difficult to separate the water from the fuel as it sloshed constantly about in the settling tanks. Electrical power was restored at 0500 on 15 December, and it was only at 0114 on 16 December that the crew were able to restart the main engine after purging the fuel lines with diesel fuel. On 18 December, it was decided to approach the entrance of the port of Sydney, Nova Scotia, to disembark the first officer, who had fractured his left arm; an injury caused by rough weather. At the same time, a technical supervisor came aboard with some spare parts for one of the two air compressors. After the vessel was under way again and off the coast, the engine was shut down at 0810 for repairs. At about 0410 the next day, 19 December, the voyage to Les

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

Escoumins, Quebec, was resumed. The tubes in the auxiliary boiler were inspected, and it was discovered that there was a leak and the boiler was unserviceable.

On 20 December, the vessel changed course and exited the recommended shipping lane in order to avoid a low-pressure area about 60 nautical miles to the west. The seas became very rough, and power was decreased to let the storm pass and reduce pitching. This situation lasted until 1600 on 21 December. Meanwhile, the temperature of the exhaust gas in the main engine was insufficient to enable the exhaust gas boiler to maintain a head of steam. As a result, the temperature decreased throughout the vessel. There was no longer any fresh water and no steam to heat the fuel oil and supply heat to the accommodation.

On 22 December, the vessel was under way to return to the recommended shipping lane. At about 2200, in position 48°59'36"N, 061°59'36"W, off Heath Point at the easternmost tip of Anticosti Island, the main engine shut itself down. The shut-down was caused by a loss of lubricating oil pressure. It was discovered that a cooling water pipe was broken inside the crank case, contaminating the lubricating oil and activating the main engine emergency shut-down system.

The oil purifiers were not working, so the oil could not be purified. It was therefore decided to transfer the oil to a settling tank. During the day of 23 December, the lines were purged with diesel fuel. By then, everything was very cold, start air pressure was too low, and the compressors, which were defective, could not raise it. At noon on 24 December, the lubricating oil was returned to the main engine sump, but the engine would not start.

Since a storm warning was in effect, a tug was called for fear the vessel would be driven ashore. At about 1540, the port anchor was dropped with 10 links of chain in the water and a request was made to evacuate the crew.

A "Pan Pan" message was broadcast to all stations by the Coast Guard Radio Station (CGRS) at Halifax, Nova Scotia, at 1640. The Canadian Coast Guard Ship (CCGS) "ANN HARVEY", which was over 120 nautical miles to the north-east, near the west coast of Newfoundland, sailed toward the vessel in distress. At 1930, she reported winds of 30 to 35 knots from the south-east and an air temperature of minus 1°C. At 2329, the "PINE ISLANDS" advised CGRS Halifax that there was no more diesel fuel on board. At that time, the vessel had lost all shipboard power and was adrift. Winds of 50 to 55 knots were blowing from the south-east, the sea was about six metres, visibility was two to three miles, and the "PINE ISLANDS" was rolling up to 38 degrees.

The weather forecast broadcast at 0135 on 25 December reported 45-knot winds around noon, diminishing to north-west gale-force winds at 35 knots after midnight. The "ANN HARVEY" arrived on the scene at about 0515. The situation was discussed with the master, and it was

strongly recommended that he evacuate the crew. The crew was to be evacuated to the "ANN HARVEY" using a Labrador-type helicopter. At 0952, it was learned that the master of the "PINE ISLANDS" had decided not to evacuate the crew. He requested a portable generator and some flashlights. The equipment was delivered to him by helicopter at mid-afternoon the same day.

On 26 December 1996, the tug "IRVING MAPLE" arrived on the scene before dawn, but weather conditions prevented a tow line from being passed to the bulk carrier. This could not be done until the afternoon. On the "PINE ISLANDS", the crew tried in vain to start a generator so they could weigh anchor.

On 27 December, a helicopter from the "ANN HARVEY" delivered food, gas, batteries, and a torch set to cut the anchor chain. During the afternoon, preparations for towing were completed and the vessels got under way for Mulgrave, Nova Scotia. Around noon on 28 December, the destination was changed to Sydney, where the vessels arrived around midnight. The crew were suffering from mild hypothermia but were nonetheless in good health.

In light of the repairs that were to be carried out at the destination, of the mechanical problems that occurred during the voyage, and of the condition of the main engine on the refit in Sydney, the general condition of the vessel apparently left something to be desired. A Port State Control inspection done at Sydney by Transport Canada determined that the vessel did not meet the standards and would have to be inspected again after the refit to confirm her seaworthiness. The vessel had had two Port State Control inspections in Canada when she was named the "AREITO"; the first in late 1992 and the second in late 1995. At that time, the vessel was under Cuban registry and was registered with the Lloyd's Classification Society. In 1996, the vessel changed to the flag of Belize and was registered with the Sociedad clasificadora RCB.

Analysis

The main engine of the "PINE ISLANDS" runs on fuel oil, and on diesel fuel for berthing manoeuvres, and the generators and auxiliary boiler use diesel fuel. The crew apparently had many problems with the diesel fuel for the generators during the first part of the voyage. All the diesel fuel that was loaded at Havana was burned, and as a result, no sample could be collected for analysis. There were some samples that had been collected when the fuel was loaded before departure, but as they had not been sealed and stored properly, they could not be used for analysis.

Before departing the port of Havana, the "PINE ISLANDS" had lain idle for several weeks. The last few days were spent waiting for delivery of the fuel required for the voyage. It is apparently difficult to obtain spare parts in Cuba. Before the vessel left Havana, arrangements were made with a company in Montreal, Quebec, to order the parts required for the refit that was planned when the vessel arrived at her destination. However, the voyage was made in extreme conditions and the vessel was delayed by many breakdowns; she became disabled in the Gulf of St. Lawrence.

During the repairs at Sydney, it was discovered that the steam cock used for cleaning the settling tanks and day tanks was open. The open cock allowed steam to be injected directly into the fuel. This explains why there was always water in the fuel and why the boiler used so much water. The crew apparently were not aware of this

situation.

All samples of fuel oil collected from the settling tanks and day tanks contained a significant quantity of water. Analysis of the samples revealed that the oil was of normal grade and contained moderately salty water. The fresh water came from the condensation of the steam injected into the tank via the steam cock that was left open. The source of the salt water could not be determined. When No. 4 double-bottom tanks, where the fuel oil was stowed for use on the voyage, were heated sufficiently to allow the contents to be transferred to the settling tanks, samples of the contents were collected. Analysis of these samples showed that the fuel oil was No. 5 (heavy oil) or No. 6 (Bunker "C"), and that it also contained water. Each sample of approximately 300 ml contained about 20 ml of partly saline water. The highest proportion of saline water was about one-third of the total volume of water. The openings of the air pipes for this double-bottom tank were examined and presented no defect. It is possible that a quantity of sea water entered No. 4 double-bottom tank during the voyage, in light of the sea conditions encountered by the vessel. However, only a limited quantity of water could have entered via these openings since the vessel was in light condition and the main deck was relatively high above the water, and as a result, it would have been difficult to flood the openings of the air pipes to the double-bottom tanks.

Since the diesel fuel carried in the bunkers had been used completely, no sample could be collected for analysis. The cause of the water contamination of the diesel fuel, even after the departure from Shelburne, could not be determined, although the tanks may have contained some water already and the purifiers were unserviceable.

The inspection certificates of the "PINE ISLANDS", all of which were valid, did not reflect the seaworthiness of the vessel. According to the list of items to be inspected prepared by the Registro cubano de buques, only a few items were due for late December 1996. This deadline allowed the vessel to sail from Cuba to Canada, and perhaps even return to Cuba, provided the vessel was not delayed too long.

On adopting the International Safety Management Code in November 1993, the International Maritime Organization (IMO) invited the companies to put in practice a safety management system at all levels of the company, both on board ship and on shore. As the Code does not go into effect for bulk carriers until 1998, the IMO can only promote it at this time. Proper safety management ensures that a vessel is maintained in compliance with regulatory requirements. Some resupply and maintenance items can be difficult to obtain in Cuba.

Findings

1. The "PINE ISLANDS" started experiencing problems with the fuel on the first day of her voyage to Canada.
2. Due to recurring engine failures, the vessel consumed much more diesel fuel than anticipated.
3. The main and auxiliary engines were in poor condition.

4. The weather was adverse for a large part of the voyage.
5. The crew were unaware that fresh water was being injected into the settling tanks and day tanks via the steam cocks that were left open.
6. Sea water contaminated the fuel, but the source of the contamination was not determined.
7. Analysis of the samples of heavy oil taken from the double-bottom tanks revealed that the No. 5 (heavy oil) or No. 6 (Bunker "C") fuel oil contained water.
8. All the inspection certificates were valid, but they did not reflect the seaworthiness of the vessel.

Causes and Contributing Factors

The "PINE ISLANDS" became disabled following multiple mechanical problems. Contributing to this precarious and dangerous situation were contaminated fuel, the poor condition of the main engine, an unserviceable generator, a defective auxiliary boiler, and other components in questionable condition, as well as adverse weather.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board, consisting of Chairperson Benôt Bouchard, and members Maurice Harquail, Charles Simpson and W.A. Tadros, authorized the release of this report on 12 February 1998.