

MARINE OCCURRENCE REPORT

GROUNDING

**OF THE BULK CARRIER "ALGOSOUND"
PORT OF MONTREAL, QUEBEC
14 NOVEMBER 1995**

REPORT NUMBER M95L0182

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 14 November 1995, the Canadian bulk carrier "ALGOSOUND" was bound for Burn's Harbour in the United States with a cargo of 24,743 tonnes of iron ore from Pointe-Noire, Quebec. The vessel was transiting the Port of Montreal, Quebec, in poor visibility, under the conduct of a pilot. When the "ALGOSOUND" was abreast of buoy "Expo", the pilot ordered hard-a-port helm, and the vessel grounded shortly thereafter off buoy M191. There were no injuries or pollution as a result of this occurrence.

Other Factual Information

Particulars of the Vessel

Name	"ALGOSOUND"
Port of Registry	Sault Ste. Marie, Ontario
Flag	Canadian
Official Number	322232
Type	Bulk carrier
Gross Tonnage	17,563.3
Length	222.51 m
Draught	Forward: 7.9 m Aft: 7.9 m
Built	1965, (forepart) Lauzon, Quebec; (afterpart) Montreal, Quebec
Propulsion	Two steam turbines totalling 7,282 kW
Crew	21
Owners	Algoma Central Marine St. Catharines, Ontario

On 14 November 1995, the "ALGOSOUND", upbound in the Seaway with a pilot on board, was heading for the approach wall of the Saint-Lambert Lock at a speed of eight knots. The vessel was proceeding to the approach wall to moor until weather conditions improved and navigation resumed in the Seaway. Visibility was restricted in snow, and the wind from the north-north-east was estimated at 35 knots.

At 2237, when the vessel was abreast of section 43 SW of the Laurier Pier, the pilot ordered a course of 190° gyro (G), which should have enabled him to see the light of the "Île Ste-Hélène" buoy straight ahead. As the vessel moved through the turn, the pilot noticed a flashing white light on the port beam. Believing that this was the light of the "Île Ste-Hélène" buoy and that the vessel had passed the entrance to the Canal de la Rive Sud, the pilot ordered hard-a-port helm. This sudden order by the pilot apparently surprised the master and the officer of the watch on the bridge, but no one challenged the order because the officer of the watch was at the chart table and the master tried to visually ascertain what had prompted the pilot to give the order before countermanding it. No one asked the pilot to explain the reason for the course alteration. The engine speed remained the same at eight knots until the navigating personnel realized the error a few seconds later. By that time, the ship had already touched bottom.

As the vessel was already turning to port, the pilot's order for hard-a-port helm increased the rate of the turn. Shortly thereafter, the "ALGOSOUND" grounded off buoy M191, east of the channel.

The vessel managed to refloat herself at 0047 on 15 November 1995. No damage was reported as a result of the grounding.

Analysis

The analysis will focus on why the pilot lost situational awareness and confused the "Expo" buoy for the "Île Ste-Hélène" buoy.

Situational awareness can be defined as all the knowledge that is accessible and can be integrated into a coherent picture, when required, to assess and cope with a situation. To maintain situational awareness, a person scans for signals or cues which can be interpreted to reveal important information, such as location, speed, and the presence of hazards. A pilot who has the conduct of a vessel has to maintain situational awareness to navigate safely.

When performing routine tasks, people can err when they do not attend to all the salient situational cues. Because they do not attend to all relevant cues, they are susceptible to confusing an object that looks like, is in the expected location and/or does a similar job, for the intended object. This error form has been identified as perceptual confusion, that is, during routine tasks, this type of perceptual error usually takes the form of accepting look-alikes for the intended object.

In this occurrence, the pilot, who was familiar with the area, focused his attention ahead. He was expecting to see the white light of the "Île Ste-Hélène" buoy to confirm the vessel's position. The flashing white light that he noted on the port beam, however, was the light of the "Expo" buoy, which he confused with the light of the "Île Ste-Hélène" buoy. The misidentification of the "Expo" buoy for the "Île Ste-Hélène" buoy is consistent with perceptual confusion, in that the light of the "Expo" buoy looked like the light of the "Île Ste-Hélène" buoy, it was in the expected location of the "Île Ste-Hélène" buoy, and both buoys performed the same job of marking the channel. The perceptual confusion of the two buoys indicated that the pilot had experienced a loss of situational awareness, possibly influenced by the restricted visibility.

These two buoys have different signalling sequences, but both are fitted with white lights. The first is a west cardinal light buoy marked "Expo" and is situated on the east side of the channel. Its characteristics [Q(9) W 15s] are that of a group quick flashing white light with a group of 9 flashes regularly repeated 4 times per minute (every 15 seconds). The second buoy is a north cardinal light buoy marked "Île Ste-Hélène" and is situated on the northern tip of Île Sainte-Hélène. Its characteristics [Q 1s] are that of a quick flashing white light in which a flash is regularly repeated at a rate of 60 flashes per minute (a flash every second).

When the pilot saw the light of the "Expo" buoy, he mistook it for the light of the "Île Ste-Hélène" buoy. He did not try to confirm his assessment of the situation, but took the action that seemed appropriate to him without using other means at his disposal to determine the position of the vessel.

In this occurrence, although the pilot had the conduct of the vessel, the master was on the bridge following the vessel's progress on radar,

and he judged it to be normal. The pilot made an unexpected alteration of course without informing the master of the situation. No one, however, objected to the course alteration, and no one challenged the order or asked the pilot to explain the reason for this manoeuvre which put the vessel in a precarious situation. Bridge Resource Management (BRM) principles and techniques encourage the use of all available resources to ensure a team approach for the safe completion of the operation. Had BRM practices been in effect, the pilot's misidentification of the one buoy for the other could have been averted.

Findings

1. The vessel was transiting in the channel under the conduct of a pilot toward the Canal de la Rive Sud in restricted visibility.
2. The light characteristics of the two buoys are different, but they are both fitted with a white light; this may lead to confusion in restricted visibility if the sequence of the flashes is not observed for at least 15 seconds.
3. The pilot lost situational awareness and confused the light of the "Expo" buoy with the light of the "Île Ste-Hélène" buoy.
4. The pilot, who was familiar with the area, did not use the means at his disposal to confirm the vessel's position before ordering the course alteration.
5. The master, who was following the vessel's progress on the radar screen, did not object to the pilot's order for hard-a-port helm.
6. Although there was exchange of information between the pilot and the master during the transit, there was no discussion concerning the impromptu course alteration which led to the grounding.

Causes and Contributing Factors

The pilot, who had the conduct of the vessel, was not well aware of the situation and did not use the means at his disposal before ordering the course alteration. The pilot and the master did not consult with each other or exchange information to better assess the situation. The light characteristics of the two buoys are different, but they are both fitted with white lights; this may have led to confusion in restricted visibility if the sequence of the flashes was not observed carefully for at least 15 seconds.

Safety Action Taken

Following this occurrence, the Canadian Coast Guard decided to change the light characteristics of the buoys. The west cardinal light buoy

marked "Expo" was changed to a port buoy, and the light characteristics of the north cardinal buoy marked "Île Ste-Hélène" will be changed from [Q 1s] to [VQ 0.5s].

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 24 September 1996.