



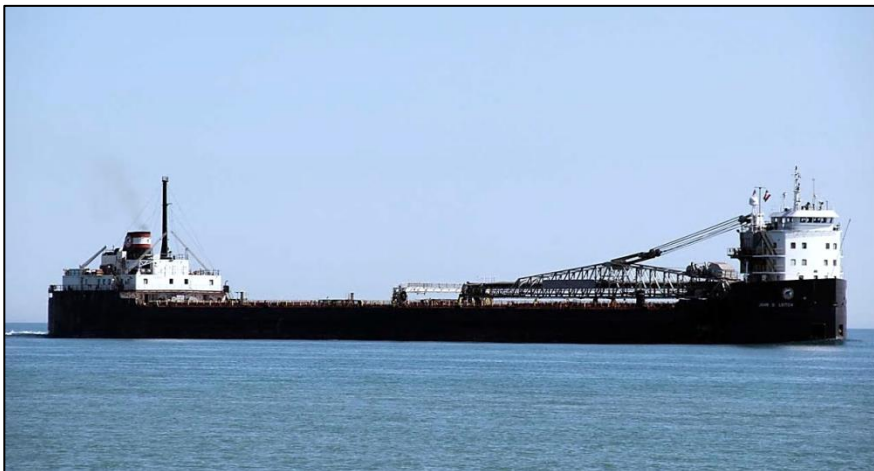
# National Transportation Safety Board

## Marine Accident Brief

### *Collision of Canadian Bulk Carrier John D. Leitch with Law Enforcement Vessel*

<b>Accident no.</b>	DCA13LM002
<b>Accident type</b>	Collision
<b>Vessels</b>	Canadian-flag bulk carrier <i>M/V John D. Leitch</i> 35-foot Boston Whaler law enforcement vessel owned by Lorain County (Ohio) Sheriff's Office
<b>Location</b>	Black River, Section E, Lorain, Ohio 41°28.225' N, 082°10.612' W
<b>Date</b>	October 3, 2012
<b>Time</b>	1912 eastern daylight time (universal coordinated time – 4 hours)
<b>Injuries</b>	None
<b>Property damage</b>	More than \$500,000
<b>Environmental damage</b>	None
<b>Weather</b>	Southwest winds at 15 knots, visibility estimated as more than 6 nautical miles, air temperature 63° F (US Coast Guard and National Weather Service data)
<b>Waterway characteristics</b>	Black River: 15-mile-long navigable waterway maintained by the US Army Corps of Engineers, width approx. 260 ft. at allision site, controlling depth 27 ft. at time of accident, water level reported as 12" above low water

The 730-foot-long Canadian-flag bulk carrier *John D. Leitch*, loaded with furnace coke, was outbound in the Black River at Lorain, Ohio, when the vessel collided with a 35-foot fiberglass-reinforced plastic law enforcement vessel and piling structure about 0912 on October 3, 2012.



Bulk carrier *John D. Leitch* under way on Lake Erie.  
(Source: [www.algonet.com](http://www.algonet.com))

The *John D. Leitch* departed Hamilton, Ontario, Canada, on October 1, 2012, in ballast condition bound for the Jonick Dock & Terminal on the Black River at Lorain, Ohio. The vessel transited east across Lake Ontario, navigated through the eight locks separating Lake Ontario from Lake Erie, and by afternoon was crossing

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Lake Erie toward Lorain.

The next morning, the *John D. Leitch* was upbound in the Black River channel under the control of the master. The master relied heavily upon the vessel's bow thruster as the waterway narrowed in width from 800 feet to 200 feet and required a series of turns both port and starboard while passing through three bridges. He also stationed two watch officers on deck to act as spotters and to call out distances off critical points and objects using portable VHF radios. The master maneuvered the vessel almost 3 nautical miles (nm) to the Upper Black River turning basin, swung the bow around, and then proceeded back downstream just over 1 nm and through one of the three bridges to his destination. The *John D. Leitch* was all secure at the Jonick Dock & Terminal on the east side of the Black River at 0900.

The vessel began loading coke about an hour later. Coke is a solid carbonaceous material derived from distillation of bituminous coal used primarily as fuel and in smelting of iron ore. Over the next 30 hours, more than 25,877 metric tons of coke was loaded on the bulk carrier.



**Location of accident (red star) on the east bank of the Black River channel, Section E, just off Coast Guard Station Lorain facility in Ohio. (Background by Google Earth)**

After loading, the vessel's drafts were recorded as 24 feet 3 inches forward, 24 feet 8 inches amidships, and 24 feet 10 inches aft. The controlling depth at that section of the Black River channel was reported to be 27 feet at that time.

At 1750, the vessel departed the Jonick Dock & Terminal bound for Port Cartier, Quebec, Canada. The vessel's master was in the wheelhouse and providing conning directions to an able-bodied seaman (AB) acting as helmsman. The first mate and third mate were on deck providing the master with distances off critical points and objects using portable VHF radios. The vessel's third engineer was on watch and in the engine room.

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The outbound transit required an immediate port turn from the vessel's general heading of 356°, and the master then steadied up briefly on a heading of about 292° to pass through the railroad lift bridge. The speed of the vessel ranged between 0.4 and 1.2 knots for this segment of the transit. Once the vessel safely cleared the bridge, the master maneuvered starboard to a heading of 341° before initiating a second turn to port to a heading of 284° to allow passage under the highway bridge. When the master began that port turn, the vessel's speed was about 0.6 knots.

As the vessel's bow cleared the bridge supports on the channel's east side, the master noticed that the bow was not swinging to port as intended, so he applied more engine thrust and pitch to the vessel's propeller but with no effect. The master had allowed the stern of the vessel to transit close enough to the west bank of the channel that the stern was influenced by bank suction (see box at right). As a result, the stern was pulled toward the west bank and the vessel's bow sheered to starboard, toward the east bank where the Lorain County Sheriff's Office (LCSO) law enforcement vessel was moored at Coast Guard Station Lorain. At 1912, the forward starboard bow of the *John D. Leitch* made slight contact with a piling structure and the sheriff's office vessel.

### Hydrodynamic Forces

Bank effects include bow cushion and stern suction. When a ship operates in an area with a shoal or shallow water near the channel edge, a positive (high) pressure area builds up off the bow near the shallow water and pushes the bow away from the shallow water or bank. This effect is known as bow cushion. As the water flow moves down the vessel's side, a negative (low) pressure area builds up at the vessel's stern and moves the stern toward the shallow water or bank. This effect is known as stern suction. Stern suction is stronger than bow cushion and requires constant corrective rudder and increased power to overcome. See R. W. Rowe, *The Shiphandler's Guide*, 2nd edition (London: The Nautical Institute, 2007).

The law enforcement vessel, manufactured by Boston Whaler, was owned and operated by the LCSO for the state of Ohio's Northern Border Initiative (NBI) program. The NBI is a collaborative approach of multiple law enforcement agencies to protect the state's northern border. (See [www.publicsafety.ohio.gov](http://www.publicsafety.ohio.gov) for more information.)



Lorain County Sheriff's Office Northern Border Initiative vessel on its trailer at the Boston Whaler repair facility in Edgewater, Florida.



### **Collision of Canadian Bulk Carrier John D. Leitch with Law Enforcement Vessel**

After contact with the piling structure and the LCSO NBI vessel, the master of the *John D. Leitch* maneuvered the vessel to the retaining wall on the west bank of the Black River and moored the vessel port side to. The master cooperated with investigators from the Coast Guard and local authorities. The next day, the vessel was released by the Coast Guard and departed Lorain, Ohio, for Port Cartier, Quebec, Canada, to discharge cargo.

Following the accident, five crewmembers on the *John D. Leitch*—the master, first mate, third mate, AB, and third engineer—were tested for illegal drugs and alcohol. All test results were negative.

The collision between the *John D. Leitch*, the piling system, and the LCSO's NBI vessel resulted in the following damages:

- *John D. Leitch*: Small scrapes along portions of the forward, starboard hull, with no plate inset.
- LCSO NBI vessel: Total damages to the LCSO NBI vessel exceeded \$500,000. A manufacturer's assessment of the damage determined that the aft port corner of the hull and inner liner and deck were crushed. The foam core, a structural component of the hull, was sheared and unrepairable. A complete replacement of the hull was recommended.
- Pile system: Minor damage and scraping.

No injuries were reported on board the *John D. Leitch*, and the LCSO's NBI vessel was unmanned at the time of the accident.



Coast Guard photo of the hull of the *John D. Leitch* behind the Sheriff's Office law enforcement vessel shortly after the starboard bow of the bulk carrier contacted the LCSO NBI vessel.

## **Probable Cause**

The National Transportation Safety Board determines that the probable cause of the collision was the failure of the master of the *John D. Leitch* to properly account for bank effect while maneuvering in the confined waters of the Black River.

## Vessel Particulars

Vessel	<i>John D. Leitch</i>	<i>350 Challenger</i>
<b>Owner/operator</b>	Algoma Central Corporation	Lorain County Sheriff's Office
<b>Crew complement</b>	22	0
<b>Port of registry</b>	Toronto, Ontario	Elyria, Ohio
<b>Flag</b>	Canada	United States
<b>Type</b>	Bulk carrier	Uninspected law enforcement vessel
<b>Call sign</b>	VGWM	n/a
<b>Built</b>	1967, Port Weller Dry Docks, Hull #41	2011 Boston Whaler Brunswick Commercial & Government Products, Inc.
<b>Official number (US)</b>	326395	n/a
<b>IMO number</b>	6714586	n/a
<b>Hull identification number</b>	n/a	BWCE0387J011
<b>Construction</b>	Steel	Fiberglass reinforced plastic
<b>Length</b>	730 ft. (222.5 m)	35.9 ft. (11 m)
<b>Width</b>	78 ft. (23.8 m)	11.7 ft. (3.6 m)
<b>Draft</b>	8.769 ft. (28.5 m) (intermediate freshwater)	1.9 ft. (0.57 m)
<b>Gross/ITC tonnage</b>	22,031 gross tons (30,745 ITC <sup>a</sup> )	Hull only: 15,000 lbs.
<b>Engine power and type</b>	7,500 hp (5,593kW) Burmeister & Wain single screw with Kamewa S-2157 controllable pitch propulsion	900 hp (671.1 kW) Mercury Outboards (3 each at 300 hp)
<b>Cargo</b>	Coal, self-unloading	n/a
<b>Persons on board</b>	5 crewmembers	Moored

<sup>a</sup> Measured according to International Tonnage Convention.

For more details about this accident, visit <http://www.nts.gov/investigations/dms.html> and search for NTSB accident ID DCA13LM002.

**Adopted: May 28, 2013**

The NTSB has authority to investigate and establish the probable cause of any major marine casualty or any marine casualty involving both public and nonpublic vessels under 49 United States Code 1131. This report is based on information provided by the US Coast Guard from its informal investigation of the accident. The NTSB did not conduct its own on-scene investigation.