

MARINE OCCURRENCE REPORT

**THE STRIKING AND DAMAGING OF FLOATS, PILINGS,
SMALL VESSELS AND DOCK BY THE TUG "SEACAP XII"
AND ITS TOWED BARGE "SEASPAN 619"
IN THE VICINITY OF CELTIC SHIPYARDS
IN THE NORTH ARM OF THE FRASER RIVER
11 MAY 1995**

REPORT NUMBER M95W0020

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.

MARINE OCCURRENCE REPORT

The striking and damaging of floats, pilings, small vessels and dock by the tug "SEACAP XII" and its towed barge "SEASPAN 619" in the vicinity of Celtic Shipyards in the North Arm of the Fraser River on 11 May 1995.

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Summary

The small tug "SEACAP XII" was towing the barge "SEASPAN 619" upstream in the North Arm of the Fraser River on 11 May 1995. While under the con of the deckhand, the tug veered when the wheel was left unattended, and the tug and the barge struck and damaged the dock, pilings and small vessels in the vicinity of Celtic Shipyards. The voyage to the Fraser River Terminals was resumed by the "SEACAP XII" after it had extricated the barge "SEASPAN 619" from the various other craft with which it was fouled.

Ce rapport est également disponible en français.

Other Factual Information

Particulars of the Vessels

Name:	"SEACAP XII"	"SEASPAN 619"
Port of Registry:	New Westminster, B.C.	Vancouver, B.C.
Flag:	Canadian	Canadian
Official Number:	348570	314859
Type:	Tugboat	Barge
Gross Tonnage:	51	513
Crew:	Two	None
Length:	13.77m	40.84m
Built:	1979, Vancouver, B.C.	1962, Esquimalt, B.C.
Propulsion:	Twin Screw/4 Rudders Kort Nozzles	None
Power:	1040bhp	None
Owners:	Valley Towing Ltd., New Westminster, B.C.	Seaspan International North Vancouver B.C.
Name:	"CELTIC"	"FULBOR"
Port of Registry:	Vancouver, B.C.	Nanaimo, B.C.
Flag:	Canadian	Canadian
Official Number:	391870	188296
Type:	Tugboat	Tugboat
Gross Tonnage:	10	7
Crew:		
Length:	8.14 m	7.31 m
Built:	1978, Delta, B.C.	1956, Vancouver, B.C.
Propulsion:	Diesel	Diesel
Power:	240 H.P.	240 H.P.
Owners:	Hodder Tugboat Co. Ltd., Richmond, B.C.	Q.B. Towing Ltd., Delta, B.C.
Name:	"CANADIAN NATURAL NO. 1"	
Port of Registry:	Vancouver, B.C.	
Flag:	Canadian	
Official Number:		
Type:	Barge	
Gross Tonnage:	139	
Crew:		
Length:	22.86m	
Built:	1988, North Vancouver, B.C.	
Propulsion:	None	
Owners:	Isamu M. Matsumoto Burnaby, B.C.	

In addition to the above vessels, the campbarge "JOE'S SALMON LODGE" and a five-metre runabout also suffered minor damage. The "SEACAP XII" is a steel tug primarily used in the Fraser River. It has twin propellers operating in Kort Nozzles and four rudders connected by a bar. There is an amidships deckhouse which has a galley at the after end and navigation equipment, steering controls and engine controls at the forward end.

There are two steering wheels, one in the deckhouse and another on top of the deckhouse. Both steering wheels use direct hydraulic

means to control two hydraulic rams which actuate the four rudders through a common connecting bar.

There is also an alternative system of steering consisting of four electrical controllers (jog sticks). One is located at the aft steering position, a second on top of the wheel-house and two within the wheel-house. These jog sticks operate an electro-hydraulic shuttle control valve in the steering compartment, which in turn controls the two hydraulic rams which actuate the rudders through the connecting bar. Any single jog stick can control the steering at any time and they each override the steering wheel. The steering gear is of the Wagner type and the jog sticks are of the Square D type, having been changed to the Square D type from the Wagner type some years ago.

The jog sticks are spring loaded so that they return to the neutral position when released. The aft deck jog stick was found to be defective in as much as it would remain in the port-engaged position until manually returned to the neutral position. Examination of the switch revealed that this defect had existed for some time prior to this occurrence. (See photographs). However, it was reported that the skipper never used the aft jog and the deckhand had not used it in the recent past. It was also reported that this jog stick had not jammed at any earlier date.

The barge "SEASPAN 619" is a rectangular steel barge surmounted by a covered box rising to a height of 4.8 metres above the hull and extending to about 90 percent of the length and 90 percent of the breadth of the barge. The barge is built for carrying paper.

Celtic Shipyards (1988) Ltd. is located on the north side of the North Arm of the Fraser River. There is a 35-ton Travelift hoist and berthing facilities on a floating dock for a number of small vessels. On the morning of 11 May 1995, a campbarge known as "JOE'S SALMON LODGE" was berthed at the floating dock. Some people were living on the barge and were asleep at the time of the occurrence.

There were also a number of smaller pleasure boats and tugs berthed on the outside of the floating jetties. The shipyard employs round-the-clock security at its site.

The tug took the loaded barge in tow off the North Arm Jetty at 0345 on 11 May 1995 and was bound for the Fraser River Terminals. The tug had on board a master and a deckhand who had been on duty since 1800 on 10 May 1995.

The master had a certificate of competency as Master of a Home Trade Steamship under 350 tons, the deckhand was uncertificated.

Shortly after taking the barge in tow, the master handed the con to the deckhand and went to the galley in the after part of the deckhouse to rest.

¹ All times are PDT (Coordinated Universal Time minus seven hours).

At about dawn, while approaching Celtic Shipyards the tug and tow were approximately in the middle of the river. The deckhand, intending to make a small port correction in the vessel's heading, moved the aft deck jog stick to port and went to the side of the tug. During his absence the aft deck jog stick jammed in the port position. It did not return to neutral as designed.

Instead of making the small correction intended, the tug veered sharply to port when the rudder reached the hard-over position. At this time the master was in the after part of the deckhouse. Observing the port swing, he tried to correct it by using the steering wheel in the wheelhouse but the wheel had been rendered inoperative by the jammed aft deck jog stick. The jog-stick was freed by the deckhand and control of the steering regained.

Except for the master and deckhand of the tug "SEACAP XII", no other witness saw the initial striking of floats and vessels by the tug and the tow. However the noise of the collision alerted the shipyard security guard and awoke some of the persons asleep on the camp barge. These persons witnessed the latter part of the occurrence.

It is believed that the tug "SEACAP XII" and barge "SEASPAN 619" first struck the aluminum barge "CANADIAN NATURAL 1" berthed at the old dock which is to the west of the shipyard. Both tug and tow rebounded, striking and damaging the guide piers which lead to the Travelift hoist.

The tug "CELTIC" and fishing vessel "MAY", berthed on the outside of the U-shaped main dock structure, were the next to be struck. The upper cabin structure of the "CELTIC" was damaged, setting off the interior security alarm. The tug "FULBOR" and a pleasure craft suffered crushing damage. The dock structure was damaged extensively as the piles holding the floats were knocked over and the floats themselves were damaged. These floats had electrical wiring in the form of overhead and other wires, which were also damaged. The gangway accessing the floats shifted when the floats moved and was tilted dangerously.

The "SEACAP XII" manoeuvred to extricate its barge "SEASPAN 619" which had become fouled with the other boats.

As a result of the striking, the dock structure became unsafe for use and the camp barge was moved to another location. After inspecting the damage to the dock and boats, the "SEACAP XII" resumed its voyage to the Fraser River docks. Damage to the "SEACAP XII" and the "SEASPAN 619" was negligible.

Valley Towing does not have a regime in place encouraging crew training. Neither the master nor the deckhand could recollect participating in a safety drill and there was no written company safety policy or instruction regarding the testing of control equipment on board. The crew lacked training in standard first aid and marine emergency duties. However, the tug complied with existing certification and manning requirements and the Fraser River By-laws regarding manning.

There is no specific by-law concerning navigation in the vicinity of the shipyard. McDonald Slough is on the south side of the river opposite the shipyard. Vessels tend to keep towards the north side of the river in order to avoid set when passing the slough.

The North Fraser Harbour Commission confirmed that the tidal stream in the vicinity of Celtic Shipyard on the morning of 11 May 1995 would not have been strong enough to have contributed to the above occurrence.

Analysis

The jog stick was examined by TSB investigators and an independent firm hired by the tugowner. It was conclusively established that, at some time in the past, the steering controller (jog) had been forced past the limiting screw on the port side. Thereafter it became easier to go past the limit position without meeting the resistance of the port side limiting screw. When this happened, as on 11 May 1995, the jog would not return to the neutral position on its own and would remain jammed in the port-engaged position. The crew on board the tug were not aware of this fault as they had not used the aft-deck steering jog during the few days prior to the occurrence.

Although the master's certificate of competency had been obtained twenty nine years ago, existing regulations do not require updates to his training. The deckhand had no formal training at all.

Training, in addition to reinforcing knowledge and skill, reinforce safe working practices. Because navigation in restricted waters like the Fraser River is a challenging task, shipping companies usually invest in training, particularly where some time has elapsed since the acquisition of a certificate of competency.

The International Chamber of Shipping in their "Bridge Procedures Guide" recommend the use of standard bridge check lists. The testing of the steering gear and controls is one of the most important checks prior to sailing. It is likely that, had there been shipboard regime or a company policy or instruction to ensure that controls and steering were tested before sailing, the previously undetected fault in the steering controller would have been discovered.

Findings

1. The incident occurred in partial darkness.
2. The master of the tug was taking a break and was resting in the galley section of the deckhouse at the time of the occurrence.
3. The deckhand left the jog stick by which he was steering immediately prior to the occurrence.
4. The tug veered sharply as the jog stick had jammed in the hard to port position.

5. It was positively established that the limiting screw on the aft jog stick for the steering had worn out rendering the jog stick defective and liable to jamming in the port-alteration position.
6. The defect in the aft electrical controller had been present for some time prior to the accident.
7. Any jog stick located on the tug overrides the steering wheel in the wheel-house.
8. The tug and barge struck the docks and other facilities at Celtic Shipyards and also other vessels berthed there before the tugmaster could regain control of the tug.
9. The tug "SEACAP XII" and barge "SEASPAN 619" were not damaged as a result of the occurrence, however the dock structure and other vessels were damaged to different extents.

Causes and Contributory Factors

The "SEACAP XII" with "SEASPAN 619" in tow struck various vessels and shore facilities in the Fraser River because the jog stick for the steering on the tug jammed due to an undetected defect. The steering control was left unattended for a brief period and the consequent delay in recognizing the problem and rectifying it contributed to the occurrence.

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 14 August 1996.