

MARINE INVESTIGATION REPORT

M99M0161

CAPSIZING AND SINKING WITH LOSS OF LIFE

THE FISHING VESSEL "WET N' WILD II"
MALPEQUE BAY, PRINCE EDWARD ISLAND

1 DECEMBER 1999

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 Investigation Report

Capsizing and Sinking with Loss of Life

The Fishing Vessel "WET N' WILD II"
Malpeque Bay, Prince Edward Island
1 December 1999

Report Number M99M0161

Summary

Whilst engaged in replacing oyster shells, oysters, mud and gravel in an area south of Bird Island in Malpeque Bay, the platform deck on which the load had been stowed collapsed, causing the vessel to develop a list. The skipper, in an attempt to reach a wharf on Lennox Island, turned the vessel and presented the lower side of the vessel to the weather.

In a freshening breeze and choppy seas the listing vessel shipped water and capsized. One of the five persons on board drowned.

There was no pollution reported.

Ce rapport est également disponible en français.

Other Factual Information

	"WET N' WILD II"
Registry/Licence Number	809852
Port of Registry	Charlottetown, Prince Edward Island (P.E.I.)
Flag	Canada
Type	modified Northumberland Strait
Construction	glass-reinforced plastic (GRP)
Gross Tonnage ¹	14.97
Length	12.13 m
Beam	4.27 m
Draught (at time of sinking)	unknown
Built	1993
Propulsion	1 Cummins diesel engine; 321 kW
Number of Crew	2
Number of Passengers	3
Registered Owner	Mr. B. C. Hutt Alberton, P.E.I.

The Vessel

The "WET N' WILD II" was a typical Northumberland Strait-style vessel of open construction, but with modified forward flare. Being under 15 gross tons, an inspection of the vessel by Transport Canada was not required, nor had such an inspection been performed.

"WET N' WILD II" was recently fitted with a temporary platform deck for ease of loading and discharge of the deck cargo. The platform was approximately 0.68 m above the watertight well deck. This platform consisted of 2.5 cm-thick plywood, covered with sheet metal, on a frame of 5 cm x 15 cm timbers. It extended 4.27 m, from gunwale to gunwale, and from the transom toward the wheelhouse a distance of 4.87 m, and had an area of approximately 20.8 m². The platform was reportedly supported by 39 vertical 5 cm x 10 cm timbers, and was secured to the GRP gunwale by two threaded steel "J" bolts on each side. These were so fitted that the lower leg of the "J" hooked under the inner lip of the gunwale. The longer (vertical) leg of the "J" bolt extended up through the platform, over which it was secured with a washer and nut.

¹ Units of measurement in this report conform to International Maritime Organization standards or, where there is no such standard, are expressed in the International System of units.

The platform fitted to “WET N’ WILD II” had been used successfully in previous years on a similar vessel. It had also been used successfully the day before the capsizing, and on an earlier trip on the day of the capsizing. It was not professionally designed, and no calculation had been made to establish a new centre of gravity of the vessel with the platform deck installed and cargo loaded.

History of the Voyage

On 1 December 1999 the “WET N’ WILD II” was loaded with a cargo of shells, mud and gravel at Ellerslie, P.E.I., at the shellfish association dock. There was no deadline for the completion of the dumping operation, on behalf of either the owner/operator or the charterer, the PEI Shellfish Association. The vessel left the dock at about 0845,² for the second trip of the day, bound for an area south of Bird Island. At approximately 0915, upon reaching the area of open water between Lennox Island and Bird Island, the vessel experienced adverse weather and started rolling slightly. When the “J” bolts pulled through the inner lip of the gunwale, the platform collapsed and the cargo suddenly shifted to starboard, causing the vessel to list to that side.

In an effort to minimize the effects of the list, the owner/operator attempted various manoeuvres—changing courses and headings. Meanwhile, attempts were made to reduce the list by shovelling the cargo over the side. These efforts were unsuccessful and the owner/operator headed the vessel back towards a disused wharf on Lennox Island. When the vessel initially listed to starboard, the starboard side was the lee side; however, once the vessel was turned around, the starboard side became the weather side and she started shipping water over the gunwale. An attempt to remove water from the well deck using a portable pump was unsuccessful. The vessel quickly capsized, and subsequently sank.

After the “WET N’ WILD II” capsized, the four survivors clung to each other and to the overturned boat. A fifth person was seen to be lying face down in the water alongside the vessel. Efforts to assist him were unsuccessful, as his legs were apparently trapped under the gunwale.

From a vantage point ashore, about 100 m away, a Lennox Island fisherman saw the vessel develop a list and became alarmed for her safety. On witnessing the capsizing he quickly launched his dory and brought the survivors ashore. The survivors were taken to a nearby hospital, medically examined and later released. The body of the deceased man was recovered from the water near the shore. An autopsy determined the cause of death as drowning.

The five persons on board were acquaintances and friends. Apart from the owner/operator and one crew member, the remaining three had come along for the ride, and to help spread the cargo into the water. No one on board was wearing a life jacket at the time of the accident; one survivor was wearing a floater suit. No one on board was a strong swimmer. There were three lifejackets on board the vessel when she sank. Two of these blue lifejackets were recovered by the local RCMP; they were of a type not approved by Transport Canada.

² All times are Atlantic standard time (coordinated universal time minus four hours).

Although not required for operating this vessel, the owner/operator had a valid Fishing Master, Class IV, certificate of competency issued in 1996. He also had held a certificate of competency as a Master, Small Craft which had expired in 1997. He had 17 years' experience in the fishing industry, most of it in the lobster fishery, during which time he had owned two other vessels of a type similar to the "WET N' WILD II". When engaged in lobster fishing, he usually had a crew of one. At the time of the occurrence, the vessel was engaged in transporting oyster shells in bulk. The curriculum for the fishing vessel master certification does not include knowledge on the construction and lashing of platforms such as those used in this occurrence.



The vessel had been hired by the P.E.I. Shellfish Association to replace 127 m³ of previously dredged oysters, shells, mud and gravel in two areas south of Bird Island (see sketch of occurrence area, Appendix A). The normal procedure is to dredge an area that is not actively used by oyster harvesters. The material so dredged is landed and spread in an open area to weather over the winter months. After this period of "purification," the material is then relaid in an area where, spread out on the bottom of Malpeque Bay, it forms a bed for new oyster growth. This is an accepted method of enhancing oyster growth in this area of P.E.I. Normally, the number of live oysters in the dredged material was small, but in 1999 the percentage of live oysters was higher than normal, and the P.E.I. Shellfish Association was asked to replace the material in December, rather than wait till the following spring.

The dredged material was loaded onto the platform deck in a long pile about 1 m to 1.2 m high. The exact weight of the deck cargo was not recorded. A 0.016 m³ sample of the cargo weighed 15.4 kg. Assuming that the pile on deck was prism-shaped, with sloping ends and sides, and having a volume of approximately 8.7 m³, the cargo is estimated to have weighed approximately 8347 kg. The platform and its attachments, plus the portable pump, are estimated to have weighed a further 1000 kg. The estimated vertical centre of gravity of the cargo would have been about 0.53 m above the gunwale.

With a reduced freeboard, the two well deck draining scuppers in the transom were plugged to stop the ingress of water.

A portable pump had been put on board and stowed immediately abaft the entrance to the wheelhouse. It was fitted with a 10 cm sea suction hose and a 5 cm discharge hose. The discharge hose was to be used to wash the cargo over the side of the vessel so that it was evenly spread when it reached the bottom of the bay.

It was reported that on the earlier trip on the day of the accident the deck load was greater than on the second trip. The size of the second load was reduced, as the weather forecast indicated stronger winds.

The owner/operator estimated an east-northeasterly wind of 20 to 25 knots at the time of the capsizing. The weather recorded at Summerside, the recording station nearest to Malpeque Bay, was (between 0849 and 0953): wind 030° at 31 to 34 knots, with gusts 41 to 44 knots.

Analysis

The Northumberland Strait vessel design is well proven for a variety of fishing activities. The freeboard of this type of vessel is such that once the vessel is heavily laden, the well deck and its draining scuppers are under water. As a consequence, this type of vessel is not well suited to carrying heavy loads.

The vessel's centre of gravity was raised by the weight of the platform deck and the load upon it. Despite this, no professional advice had been sought for the design or construction of the platform deck, and no technical review or stability calculation had been carried out. The platform deck was braced from below (to the well deck) to support its weight and that of the load. The structure was also attached to the inner edge of the GRP gunwale, but this securing arrangement was not strong enough to withstand the various forces imposed upon it in service.

Neither the owner/operator nor the charterer could provide an accurate assessment of the weight of the deck cargo. The centre of gravity of the load (and the consequential rise in the centre of gravity of the vessel) can only be approximated by calculation. However, the weight of the cargo and the platform increased the draught and reduced the freeboard to the point where the scuppers and the well deck were below water level. Consequently, the scuppers were plugged before departure to prevent an ingress of water. Any water shipped over the gunwale would therefore be retained on board. The resulting free surface effect and weight of retained water would have caused an additional, virtual rise of the vessel's centre of gravity. Combined with an already high centre of gravity, the free surface effect and the weight of the shifted cargo were sufficient to cause the vessel to capsize.

Because the platform deck had been used successfully in the past, on another vessel, and on the "WET N' WILD II" the day before the accident, it gave the operator a false sense of security. Consequently, the dangers associated with an improperly constructed and secured platform were not fully recognized by the crew.

Since 30 July 1999, the *Crewing Regulations* made under the *Canada Shipping Act* have required a Fishing Master, Class IV, certificate for vessels of 60 gross tons and over. The "WET N' WILD II" measured 14.97 gross tons. Although the owner/operator held a certificate of competency as a Fishing Master, Class IV, the operation of a vessel of this size did not require this certificate. In the examination syllabus for this certificate there is no requirement that a candidate exhibit knowledge or understanding of stability.

As the vessel was under 15 gross tons, the owner was not required by regulation to have his vessel inspected by Transport Canada; the vessel had not been voluntarily offered for inspection.

Findings

1. The “WET N’ WILD II” was engaged in an operation for which she had not been initially designed.
2. The platform was not professionally designed or constructed, and no professional stability review had been sought, although the weight of the platform and load had raised the vessel’s centre of gravity.
3. The arrangement by which the platform was secured to the gunwales could not withstand the forces imposed by the weight of the cargo and the vessel’s sea motions.
4. With the scuppers plugged, water shipped onto the well deck was retained; the resulting free surface effect and weight further reduced vessel stability.
5. Once the owner/operator turned the vessel towards the wharf at Lennox Island, the lower, starboard side of the vessel became the weather side and water was more readily shipped onto the well deck.
6. The vessel was not inspected, nor was it required to have been.
7. Neither the owner/operator nor the charterer knew the weight of the cargo loaded on board.
8. Although not required for a vessel of this size, the owner/operator held a valid Fishing Master, Class IV, certificate of competency.
9. In the examination syllabus for a Fishing Master, Class IV, there is no requirement to demonstrate knowledge of vessel stability.
10. The lifejackets recovered after the sinking were not of an approved type nor were they worn.

Causes and Contributing Factors

While the “WET N’ WILD II” was en route to Bird Island, the platform on which the cargo was stowed collapsed, causing it to shift and the vessel to heel to starboard. With an already high centre of gravity, the effect of the shifted cargo, combined with the weight and free surface effect of water shipped and retained on deck, caused the “WET N’ WILD II” to capsize and subsequently sink. Factors contributing to the occurrence were: the vessel was being used for a purpose for which she was not designed; the operator lacked knowledge of vessel stability, and had not sought a professional review of stability; the platform was inadequately secured to withstand operational forces; with the deck scuppers plugged, water shipped on board was retained on deck and the low side of the vessel was exposed to the weather.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 3 October 2000.

Appendix A - Sketch of the Occurrence Area

