

MAIB

MARINE ACCIDENT INVESTIGATION BRANCH

FLYER TO THE SHIPPING INDUSTRY

RIVERDANCE

Listing incident followed by the grounding of a ro-ro cargo vessel at Cleveleys Beach

On 31 January 2008, the Bahamas registered ro-ro cargo vessel, *Riverdance*, grounded and became stranded on the Shell Flats, off Cleveleys Beach, Lancashire. The prevailing severe weather conditions prevented the vessel from being refloated, and subsequent attempts to salvage her failed. *Riverdance* was finally cut up in-situ. Fortunately, the crew were all safely recovered and there was no pollution.

Image courtesy of MCA



The following is a summary of the main causal factors and key events that were identified during the investigation:

- The true weights and the disposition of the vessel's cargo were not known.
- The stability of *Riverdance* was not calculated before sailing from Warrenpoint.
- Ballast was never adjusted regardless of cargo or expected weather.
- The vessel was known to be tender.
- Some openings on the weather deck were not closed off in anticipation of the expected poor weather.
- The vessel was proceeding in following seas at a speed slightly slower than that of the following wave train. Under these circumstances, a reduction in the vessel's stability can occur and more pronounced rolling can be experienced. Guidance on this phenomenon is promulgated by the IMO and other sources.
- As the vessel approached more shallow waters, the seas became steeper and rolling increased further. This resulted in a small shift of cargo to port.
- The vessel sustained a series of large rolls to port which caused additional trailers and their contents to shift.
- In an attempt to bring the vessel's head into the wind, the master decided to make a broad alteration to starboard. This exacerbated the port heel causing the deck edge to immerse, possibly allowing water to enter the vessel through openings on her weather deck. Ingress of water would have further reduced the vessel's residual stability.

- The port main engine tripped due to the excessive list and, with only one engine, there was not enough power to bring the ships head into the wind. The vessel lay beam on to the wind and seas, rolling heavily with a large list to port as she drifted towards shallow water. The weather deck on the port side continued to be intermittently immersed.
- The vessel took the ground and returned to an almost upright position. An attempt was made to redistribute the ballast to compensate for the expected port list once she refloated on the rising tide.
- Because the disposition of the weights on board the vessel was unknown, the amount of ballast transferred was based on the master's estimate. The owner's shore based crisis management team did not have access to accurate stability information. Had this been available, they would have been able to provide better support to the master.
- Attempts to use the engines to refloat the vessel were unsuccessful and resulted in *Riverdance* drifting closer to the shore.
- *Riverdance* grounded again and began to roll progressively more heavily to starboard until she came to rest on her starboard bilge. During this period the vessel lost all power and the crew were evacuated.

Safety Lessons

- The stability of the vessel and security of its cargo should always be verified before sailing.
- Safety Management Procedures should ensure that relevant guidance, such as that from the IMO, is monitored and effectively provided to those requiring it.
- Terminal operators should have procedures in place to ensure vessels are given accurate cargo information, including the weight and stowage of cargo to be loaded, so that vessels can accurately calculate their stability.
- Hauliers and shippers should be provided with guidance on the additional securing of cargo needed on trailers intended for shipping by sea, to withstand the greater forces that may be experienced.
- Owners/Managers of vessels should give careful consideration to securing the use of third party services designed to enhance the support and oversight available to the Master in an emergency. The pre-planning and support provided by an Emergency Response Service, such as that delivered by many of the major classification societies, will greatly enhance the ability to analyse the potential risks throughout any incident, and to identify the optimum course of action.

This accident was the subject of an MAIB Investigation, which can be found on MAIB's website at: www.maib.gov.uk

A copy of the report and/or the flyer will be sent, on request, free of charge.

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September 2009