Surveyor's Notebook

Safety Recommendations for Container Operators

The UK Marine Accident and Investigation Branch (MAIB) issued its final report regarding the loss of the container ship the *MSC Napoli* in April 2008. Its conclusions are of considerable interest and we recommend that vessel operators should keep a copy of the report on board their ships for reference purposes.

On 18 January 2007, the *MSC Napoli* experienced severe weather conditions in the English Channel and suffered a catastrophic failure of her hull in way of her engine room bulkhead. After the Master and crew had safely abandoned the vessel, it was taken under tow and deliberately beached on the UK south coast, in order to prevent it from sinking.

The MAIB investigation identified a number of factors that contributed to the failure of the vessel's hull structure:

- The vessel's hull did not have sufficient buckling strength in way of the engine room.
- The Class rules applicable at the time of the vessel's construction did not require buckling strength calculations to be undertaken beyond the vessel's amidships area.
- There was no safety margin between the hull's design loading and its ultimate strength.
- The load on the hull was likely to have been increased by 'whipping effect' (this occurs when the hull impacts heavily with the sea, causing significant vibration of the hull girder).
- The ship's speed was not reduced sufficiently in the heavy seas.

The MAIB identified with the assistance of the International Association of Classification Societies, 30 container ships of similar design that could potentially be vulnerable in a similar way. These vessels' classification societies have identified 12 vessels that may require remedial action.

Safety Conclusions

1. The incorrect loading weights of containers is an ongoing industry concern, but not one that was considered significant on this occasion. The discrepancies of the container declared weights would not have had sufficient effect to cause of the structural failure of the *MSC Napoli*, it would have reduced the bending moment safety margin.

2. Although it is likely that the wave loading experienced by *MSC Napoli* was increased by whipping effect, classification societies are unable to predict its magnitude or effect on a ship's structure with any certainty.

3. *T*he change of hull framing from longitudinal to transverse in respect of the engine room of the *MSC Napoli* is a possible weakness in the vessel's structure. Regular checks should be carried out as part of a vessel's inspection programme for structural deformation and fatigue cracking.

4. Notification of structural damage as required by Class Rules and repairs required and/or undertaken to rectify that damage need to be understood and not overlooked by ship's staff. Owners and operators should report to Class significant repairs to cracks and structures.

5. Although the vessel's speed was considered to be appropriate in the conditions, it is almost certain that a reduction of speed would have significantly reduced the risk of hull failure. Masters should ensure that an appropriate safe speed is used in heavy weather conditions.

6. Masters and owners should ensure that critical machinery items are operational before departure.

7. Owners should ensure Masters and officers understand the increased bending moments caused by the whipping effect in a seaway.

The Master was praised for the manner in which the ship's personnel safely abandoned the vessel in very heavy weather conditions. It was noted that the Master was particularly keen on lifesaving drills. Owners should actively promote a culture where the Master can make decisions on safety grounds with the full knowledge that he will have their full support.

(Article extracted from The Standard Club's publication – Standard Bulletin)