

## Containers lost in heavy weather



The large container vessel was sailing on a SE course in the North Atlantic, bound for a European port. During the voyage, heavy weather was encountered from ENE at Beaufort scale 9, with 7 m waves. This meant that the wind hit the vessel on its port side, causing heavy rolling. The maximum rolling was 20° to starboard and 30° to port.

In the morning, the OOW heard a loud noise astern of the bridge. The master was also on the bridge, and when they looked out of the window they could see that some of the container bays had collapsed and that some containers had fallen into the empty bays.

The collapsed containers were all 20' TEU and were stowed within four bays. The side containers on the port side had toppled inboard to starboard into an empty space. However, some containers had also fallen overboard.

After the accident the master broadcasted a security warning over the VHF. In response to the heavy weather, the master ordered a more easterly course of ESE and reduced speed from 16 knots to 7 knots

The Cargo Securing Manual ("CSM") requires that the bottom containers on deck are secured by manual twist locks. However, the twist locks that were in the container shoes were unlocked. If the twist locks had been locked, they should have been damaged and would have remained attached to the toppled containers, but they did not.

As per the vessel's procedures, the lashings should be checked prior to every departure, which the Chief Officer said he had done. The Chief Officer had signed the lashing report in the loading port without any deficiencies.

The vessel had a maximum aft draught of 10 m and a GM of 11 m which made the vessel stiff.

This meant that the vessel returned to the upright position quickly after being heeled by an external force, e.g. wind or waves.

If a vessel is stiff, rolling will generate increased acceleration, creating increased force on those areas of the vessel progressively further away from its neutral axis, which is where the top side containers collapsed. In addition, a high GM will cause the ship's roll motions to match the contour of the wave, giving rise to more severe roll motions.

The GM can be reduced by ballasting the vessel, however this was not done by the crew in this particular case.

The combination of unlocked twist locks and a very stiff vessel sailing through heavy weather led to the collapse of the container stacks. ■

# Discussion

Go to the "File" menu and select "Save as..." to save the pdf-file on your computer.

You can place the marker below each question to write the answer directly into the file.



When discussing this case please consider that the actions taken at the time made sense for all involved. Do not only judge, but also ask why you think these actions were taken and could this happen on your vessel?

**1. What were the immediate causes of this accident?**

**2. Is there a risk that this kind of accident could happen on our vessel?**

**3. How could this accident have been prevented?**

**4. When doing the departure calculations, do we consider ballasting the vessel to improve the GM if it is high and causing a very stiff vessel, but within the requirements?**

5. What is a proper GM for our vessel?

6. What are our procedures regarding slowing down and altering course in heavy weather?

7. Do we have weather routing?

8. How do we ensure that the CSM is followed and that the containers are secured properly?

9. What sections of our SMS would have been breached, if any?

10. Does our SMS address these risks?

11. How could we improve our SMS to address these issues?

12. What do you think was the root cause of this accident?

13. Is there any kind of training that we could do that addresses these issues?