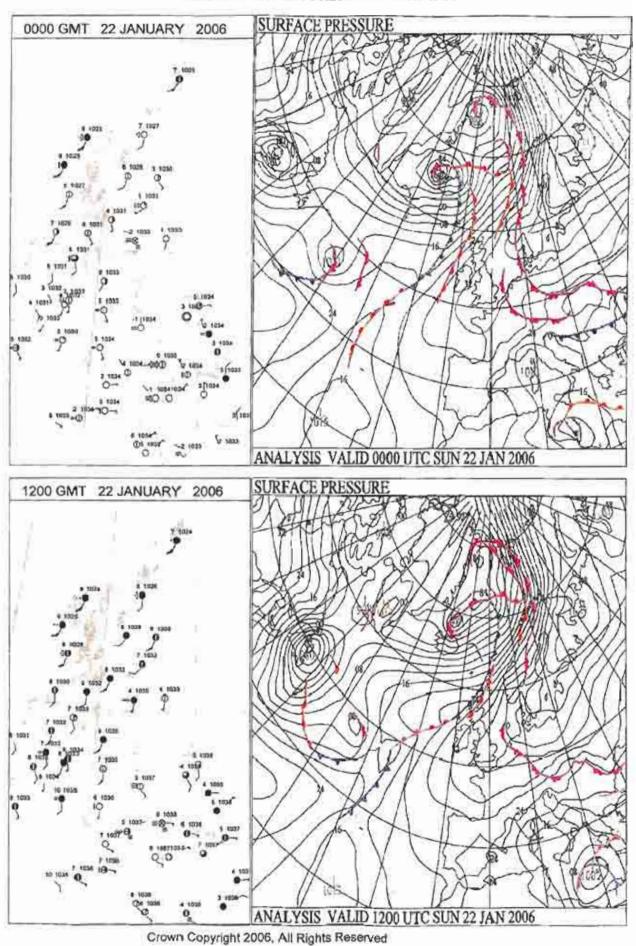
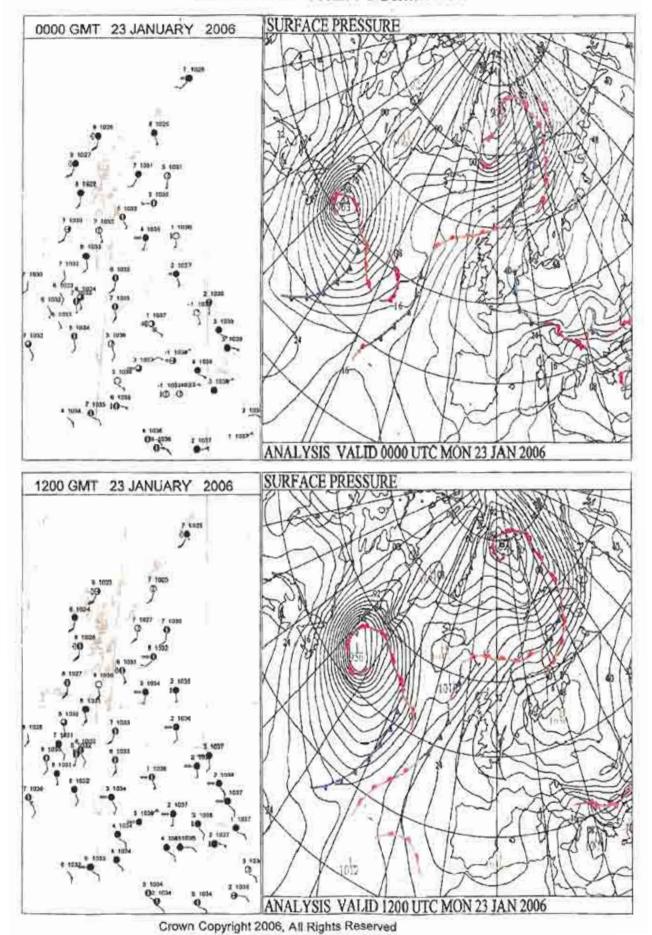
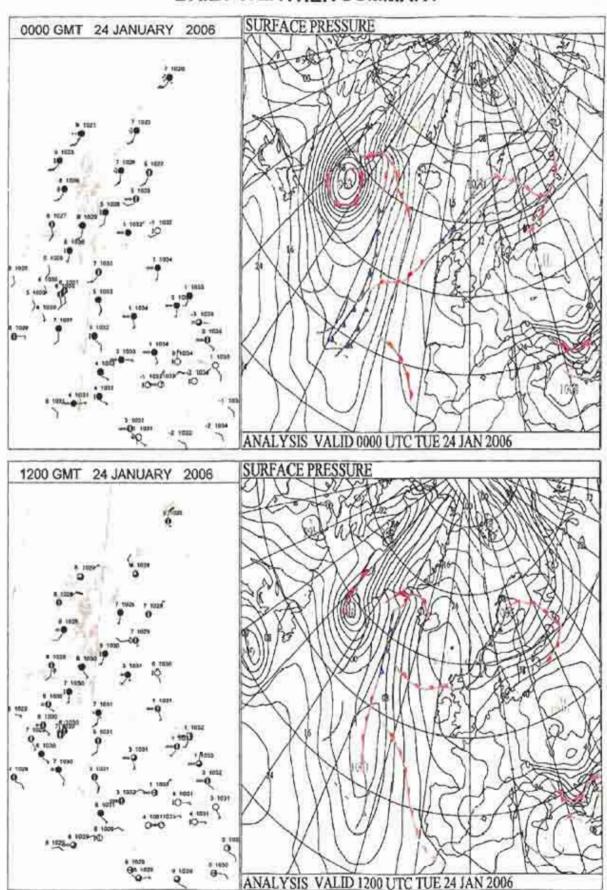
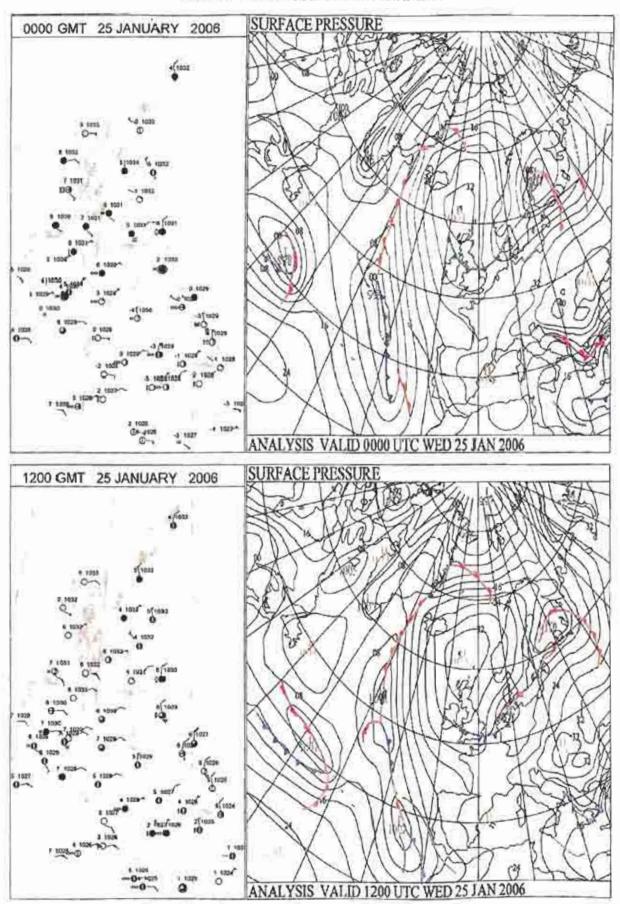
Meteorological office charts covering period 22 January to 29 January



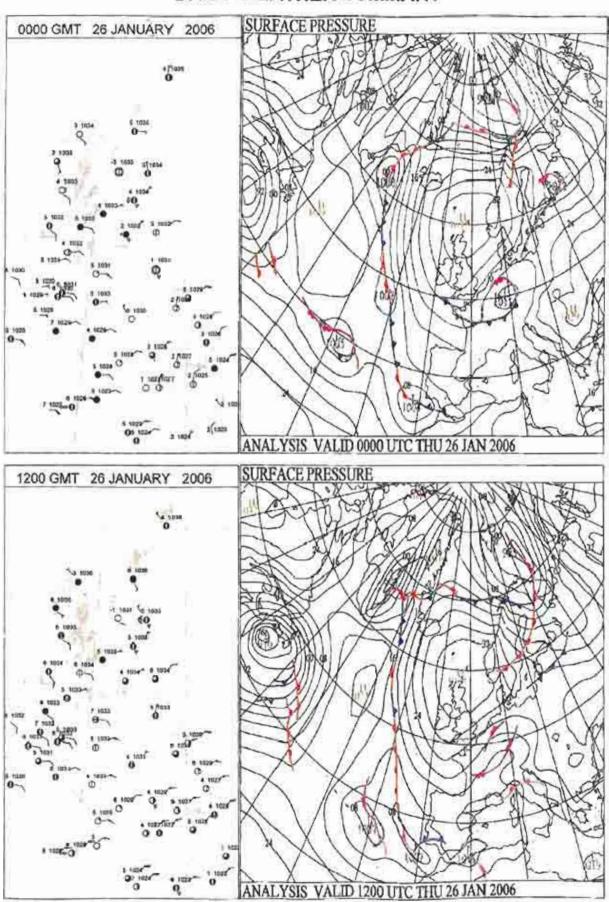




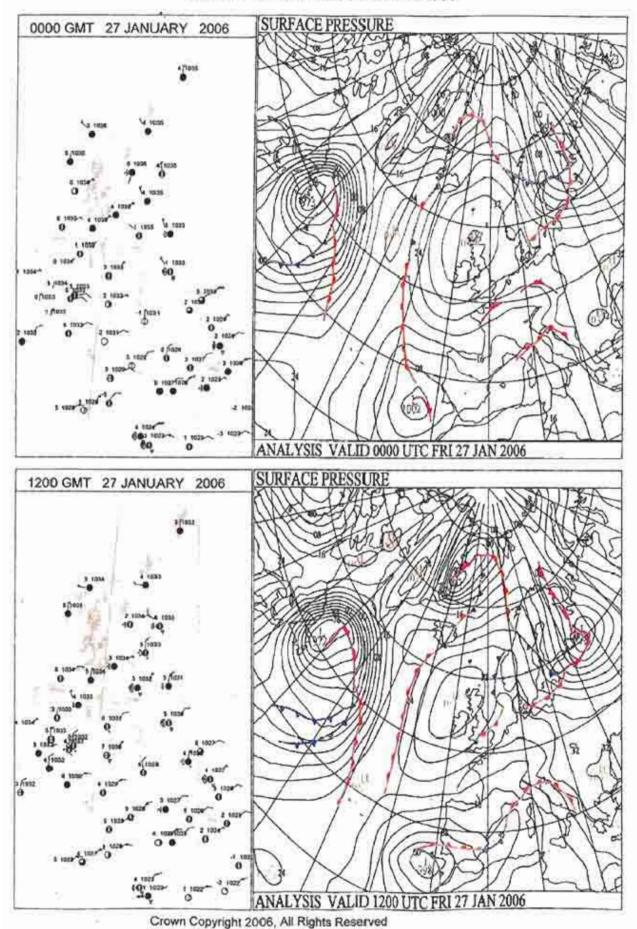
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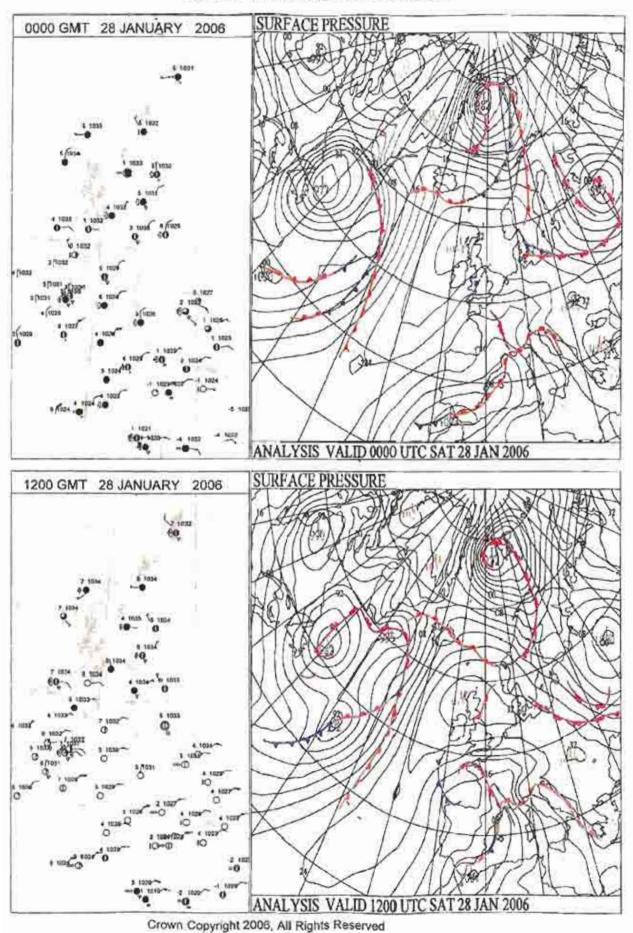


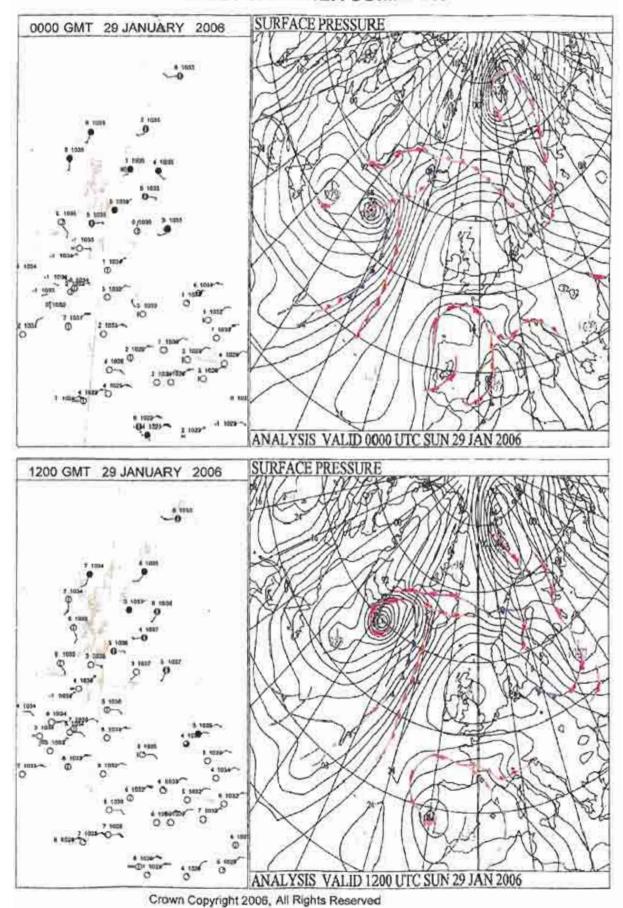
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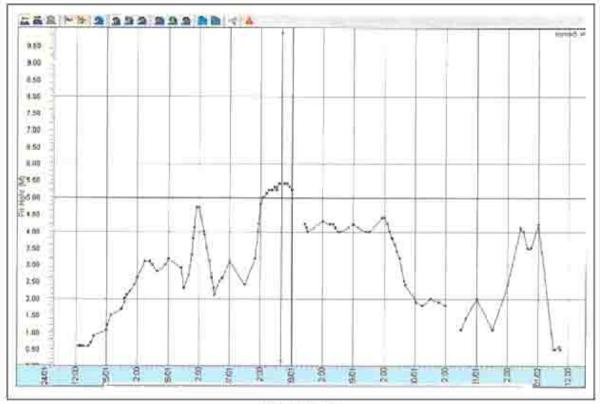
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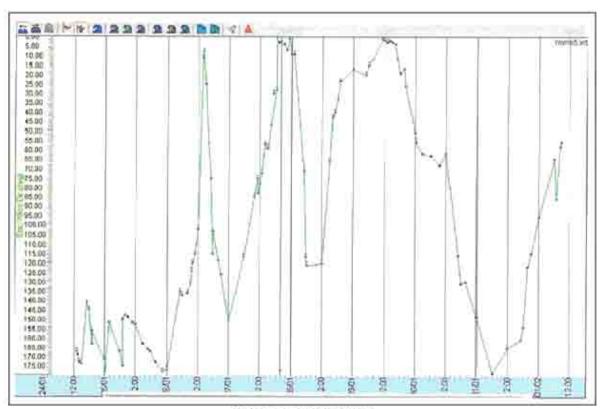




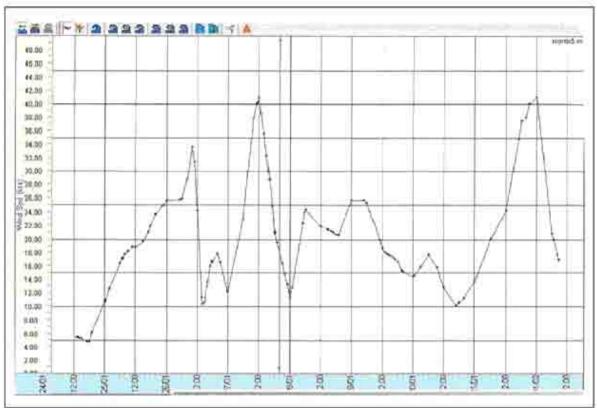
Conditions at the time of the incident



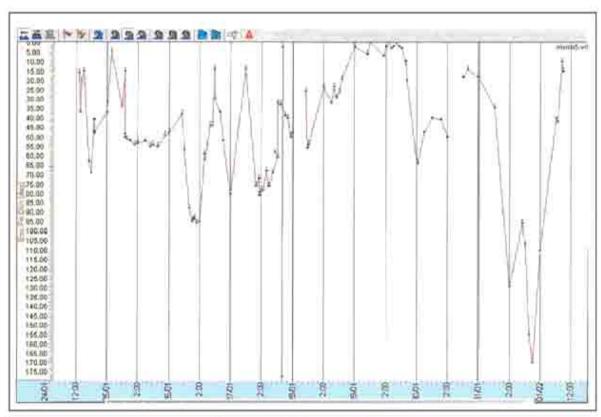
Wave height



Relative wind direction



Wind speed



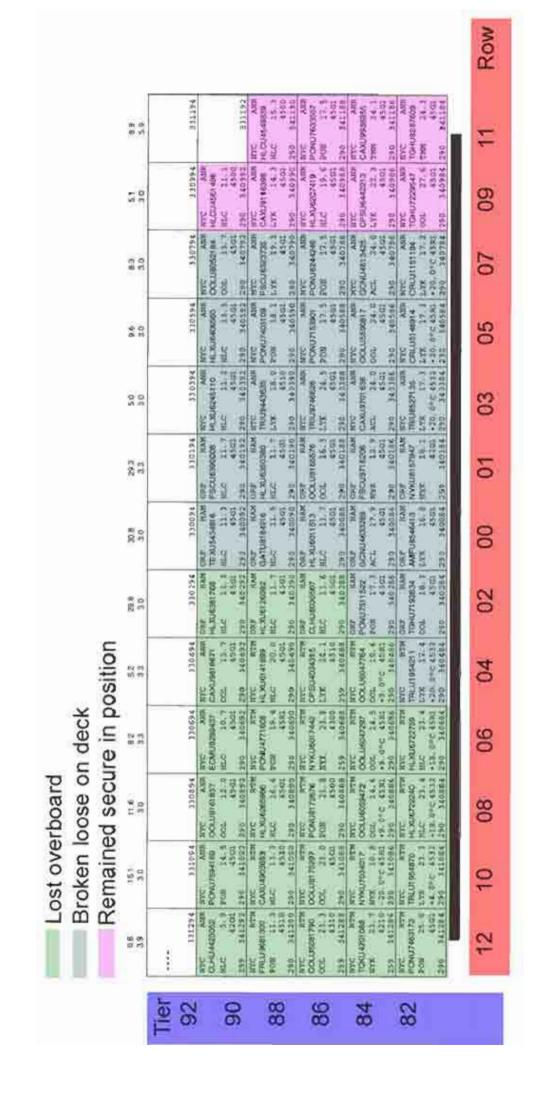
Encountered wave direction

Position of 8' 6" high containers

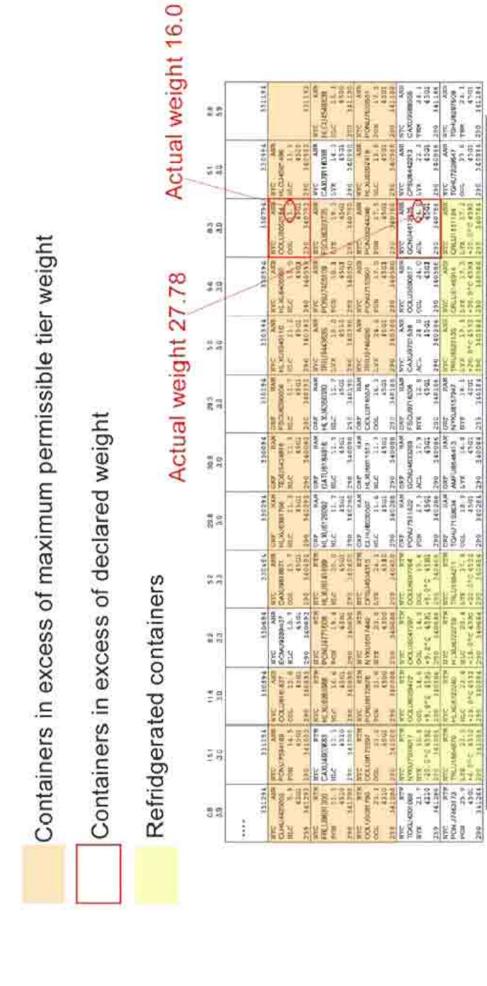
containers	
6" high	
of 8ft 6	
Position	
A STATE OF	

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es es	191364	HIC 1-9 (CD) (LIMESCOL) (HIC 1-9 (CD) 255 342392	11.2 651.0 11.2 651.0	12

Bay 34 - post accident



	Annex E
Containers in excess of maximum permissible weights laid down in cargo securing manual	



Weight in tonnes 100 94.9 100 91.7 100 90.4 100 95.0 100 70.7 100 69.2 100 70.2 100 94.8 100 91.8 100 88.4 100 84.9 100 89.2 4.2T 85 Individual actual stack weight Maximum permissible stack weight Overload

	Annex F
Blue Star Ship Management memorandum, after suffering 3 incidents of lost or damaged contain	ers

FROM: A1XOSIUN SUBJECT: Loss of Cargo File MA 1 (R) and SO 4

Lashings KWW class and heavy weather

In recent months we have experienced three incidents on this class of ship whereby we have lost or damaged deck containers. All incidents are directly attributable to heavy heather and the movement of the ship in a large seaway.

All Masters must take cognisance of all the weather information before planning their passage Including the data available from Orion and when on passage take suitable and timely action to alter their track or speed to reduce violent movement or the taking of white water fwd. Whilst the schedule always remains of importance, safety of the ship and delivery of the cargo undamaged takes precedence.

In the latest incident we have lost 12 containers overside, again weather was one of the factors but of more importance was the failure to comply with the requirements of the cargo securing manual, all be it for the best of intentions. The Cargo Securing Manual is the bible and Must always be complied with Regardless of individuals thoughts or beliefs.

All modern lashing systems today rely on complex forces and leave little room For manoeuvre, but all rely on the principal of NO heavies over lights. However The practicality of this is known therefore differences of up to ten percent between boxes can be considered acceptable.

# There should always be NO loaded boxes in the outboard row on the sixth tier

And for forty/forty five foot stows no loaded boxes in any row on the sixth tier.

I have copied this message to central planners for them to take note of, and no ship should be asked to disregard the rules, as any benefits gained by loading those last few boxes are quickly lost when we dump cargo into the sea.

Should any ship be approached by planners to contravene the requirements of The cargo securing Manual, which we would remind you is a legal document approved By class and flag state, we are to be contacted immediately. Instances of heavy containers loaded over light

Heavy containers loaded over light

Heavy containers loaded over light in excess of self imposed 10% difference

8 G. 80 W	11114	131192	ASS 549639 15.3 4500 341150	APR 173-557 171-5 4501 341188	A48 24.1 4501 441186	AAR 24 3 4 5 G1 341134	
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30.8	33065	TEXADS-23-016 TEXADS-23-016 HLC 11.3 45-21 290 340092	CATURISABIE CATURISABIE HLC 11.5 4501 290 140090	HC 11.7 45.21 61.0 61.0 45.21 25.0 25.0	GCNU46X1288 GCNU46X1288 ACL 17.9 45.21 290 34.0054	AMPUSSAG413 LTX 16.0 290 140081	00
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Row

Freight Container (Safety Convention) Regulations 1984 - factors to be considered in the examination

#### Factors to be considered in the examination

- 7. The competent person shall carry out a detailed visual examination of the exterior, and if reasonably practicable (eg if the container is empty at the time) of the interior of the container. All load bearing parts, including the base structure, should be examined. If, in the view of the competent person, the external condition of the container warrants, he may require a container to be unloaded. Exceptionally he may call for the removal of insulation where he has reason to believe that this may be covering significant defects. This removal of insulation should be no more than may be required to uncover the suspected defect. The underside of the container should be examined either when the container is resting on a skeletal trailer or, if the competent person considers it necessary, after the container has been lifted onto other supports. The competent person must consider at least the following factors:
  - (a) corrosion
  - (b) the condition of any welding
  - (c) the condition of any riveting or similar method of fastening
  - (d) the presence of mechanical damage
  - (e) the condition of at least the following structural components where fitted -

Corner fittings Grappler arm positions Fork-lift pockets Floor Upper and lower side rails External panelling

End frames, (and fixings in the case of folding end frames) Door and hatch closure gear Roof

Floor bearers

(f) the validity of the safety approval plate.

The above factors take no account of examinations required by other national or international provisions relating to the tanks of tank containers.

\* obtainable from the International Maritime Organisation, 4 Albert Embankment London SE1 7SA.

Parametric rolling calcuation

### Parametric rolling calculation

P&O Nedlloyd Genoa -Parametric rolling, approximate calculations

LOA 210m Breadth 32.3m

### Wave period/frequency

At critical wave length  $\lambda = L$   $T_w = 0.8\sqrt{\lambda}$ 

$$T_{\rm w} = 0.8\sqrt{210} = 11.59 \text{ secs}$$
  
 $\omega_{\rm w} = \frac{2\pi}{11.59} = 0.542 \text{ rad/s}$ 

### Encounter frequency

At 5 knots with seas 35° off port bow

V = 5 knots = 2.57m/s 
$$\mu$$
 = 180 - 35 = 145°  
 $\omega_{\tau} = \omega_{W} - \omega_{W}^{2} \text{ V cos } \mu$   
= 0.542 + 0.063 = 0.605 rad/s T<sub>E</sub> = 10.4 secs

Wave encounter period T<sub>E</sub>≈ 10.4 secs.

### Ships roll period

Ships roll period can be equated to  $w_0 = 7.854 \frac{\sqrt{GM}}{B}$ 

Before 15:32, GM = 0.82m

$$w_0 = \frac{7.854\sqrt{0.82}}{32.3} = 0.22 \text{ rad/s}$$

So, with GM = 0.82m, ship's natural roll period  $T_0 = 28.5 \text{ secs}$ 

After 15:32, GM = 1.17m

$$w_0 = \frac{7.854\sqrt{1.17}}{32.3} = 0.263 \,\text{rad/s}$$

So, with GM = 1.17m, ship's natural roll period  $T_o$  = 23.9 secs

### Parametric rolling criterion

For parametric rolling  $T_R$  has to equal 1.8 - 2.1 times  $T_E$  For  $T_E$  = 10.4 secs

$$T_R = 18.72 - 21.84$$
 for parametric rolling With GM =1.17,  $T_0 = 23.9 > T_R$ 

Vessel approaching but not meeting criterion for parametric rolling