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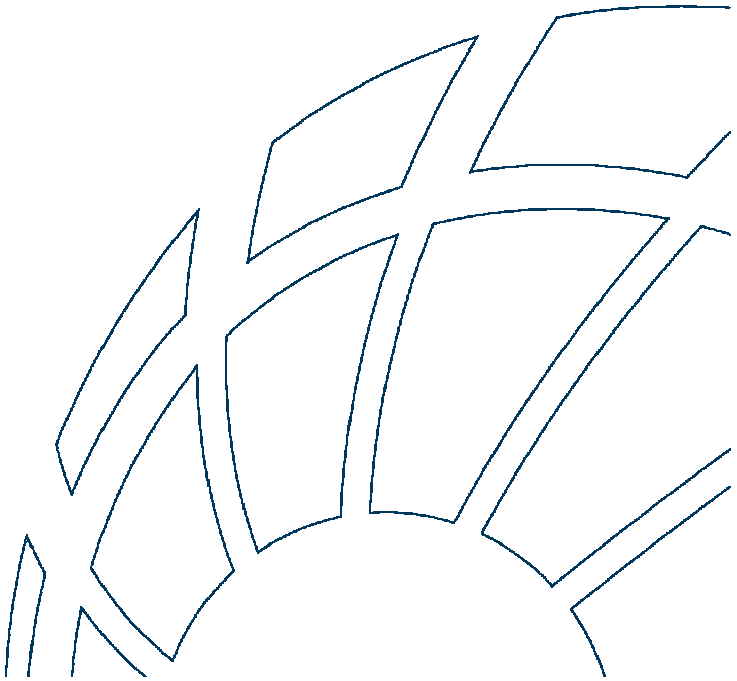
"Where will our knowledge take you?"

Trends in Recent Claims

by John M Noble
Development Director
BMT Group Limited
Teddington
UK



New York

28th September 2007

Claims in General – A broad look

1) PERSONAL INJURY
2) CARGO
3) LIABILITY such as P & I
4) HULL & MACHINERY
5) DEFENCE (Legal fees)

Today we will look at the generality of Hull & Machinery claims and examine some recent issues with the container trades.

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OLD HAZARDS DIE HARD

What are we looking at?

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1981 RO-RO CARGO / Main Engine

Nos. 3A & 3B liners are broken

Estimate: $ 2,000,000 (Case Report: 1550)

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1979 GAS CARRIER (LPG) / Propeller

Estimate: $ 750,000 (Case Report: 1445)

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TANKER CO (DH) / Grounding

Estimate: $ 2,700,000 (Case Report: 1487)

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TANKER CO (DH) / Grounding

Estimate: $ 2,700,000 (Case Report: 1487)

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GENERAL CARGO / Explosion in Hold

Estimate: $ tba (Case Report: 1485)

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1987 TANKER / Explosion & Fire

Estimate: $ SUBSTANTIAL (Case Report: 1597)

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A view from the Wheelhouse!

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1990 TANKER Chem/Oil / Grounding






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Estimate: $ Very High (Case Report 1786)

1987 TANKER / Explosion & Fire

Estimate: $ SUBSTANTIAL (Case Report: 1597)

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1981 LPG CARRIER / Explosion & Fire

Estimate: $ 1,710,000 (Case Report: 1598)

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1996 CONTAINER 5551 TEU / Fire / Explosion

Estimate: $ HIGH (Case Report: 1532)

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1996 CONTAINER 5551 TEU / Fire / Explosion

Estimate: $ HIGH (Case Report: 1532)

BMT Group

1996 CONTAINER 5551 TEU / Fire / Explosion

Estimate: $ HIGH (Case Report: 1532)

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1996 CONTAINER 5551 TEU / Fire / Explosion

Estimate: $ HIGH (Case Report: 1532)

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1996 CONTAINER 5551 TEU / Fire / Explosion

Estimate: $ HIGH (Case Report: 1532)

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2002 CRUISE SHIP / Fire (Accommodation)

Estimate: $ TBA (Case Report: 1529)

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2002 CRUISE SHIP / Fire (Accommodation)

Estimate: $ TBA (Case Report: 1529)

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1969 CRUISE SHIP / Fire (ER)

Estimate: $ 3,600,000 (Case Report: 1569)

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1969 CRUISE SHIP / Fire (ER)

Estimate: $ 3,600,000 (Case Report: 1569)

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1969 CRUISE SHIP / Fire (ER)

Estimate: $ 3,600,000 (Case Report: 1569)

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1996 CONTAINER 4434 TEU / Aux Engine

Estimate: $ 250,000 (Case Report: 1543)

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2003 CRUISE SHIP / Aux Engine

Estimate: $ 650,000 (Case Report: 1519)

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2006 PASSENGER FERRY (New Build) / Fire

Estimate: $ 3,500,000 (Case Report: 1458)

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CONTAINER >10000TEU (New Build) / Fire

Estimate: $ HIGH

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2001 BULKER (OS) / Grounding

Estimate: $ tba (Case Report: 1570)

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2001 BULKER (OS) / Grounding

Estimate: $ tba (Case Report: 1570)

1993 REEFER / Heavy Weather

Estimate: $ 258,000 (Case Report: 1605)

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EXPENSIVE KIT – EXPENSIVE CONSEQUENCES

2002 LNG CARRIER / Turbo Generator

Engine room's turbo-generator area.
Damaged No.1 turbo-generator on right hand side

Estimate: $ 258,000
(Case Report: 1605)

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2002 LNG CARRIER / Turbo Generator

Damaged turbine casing, lower half

Estimate: $ 2,000,000 (Case Report: 1552)

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2002 LNG CARRIER / Turbo Generator

Damaged big pinion gear that drove the alternator remains in gearbox

Estimate: $ 2,000,000
(Case Report: 1552)

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2002 LNG CARRIER / Turbo Generator

Smashed up steam turbine rotor assembly

Estimate: $ 2,000,000
(Case Report: 1552)

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2002 CRUISE 1080pax / POD Damages

Thrust Bearing

Fatigue spots noted in the starboard bearing raceway

Estimate: $ 1,700,000 (Case Report: 1479)

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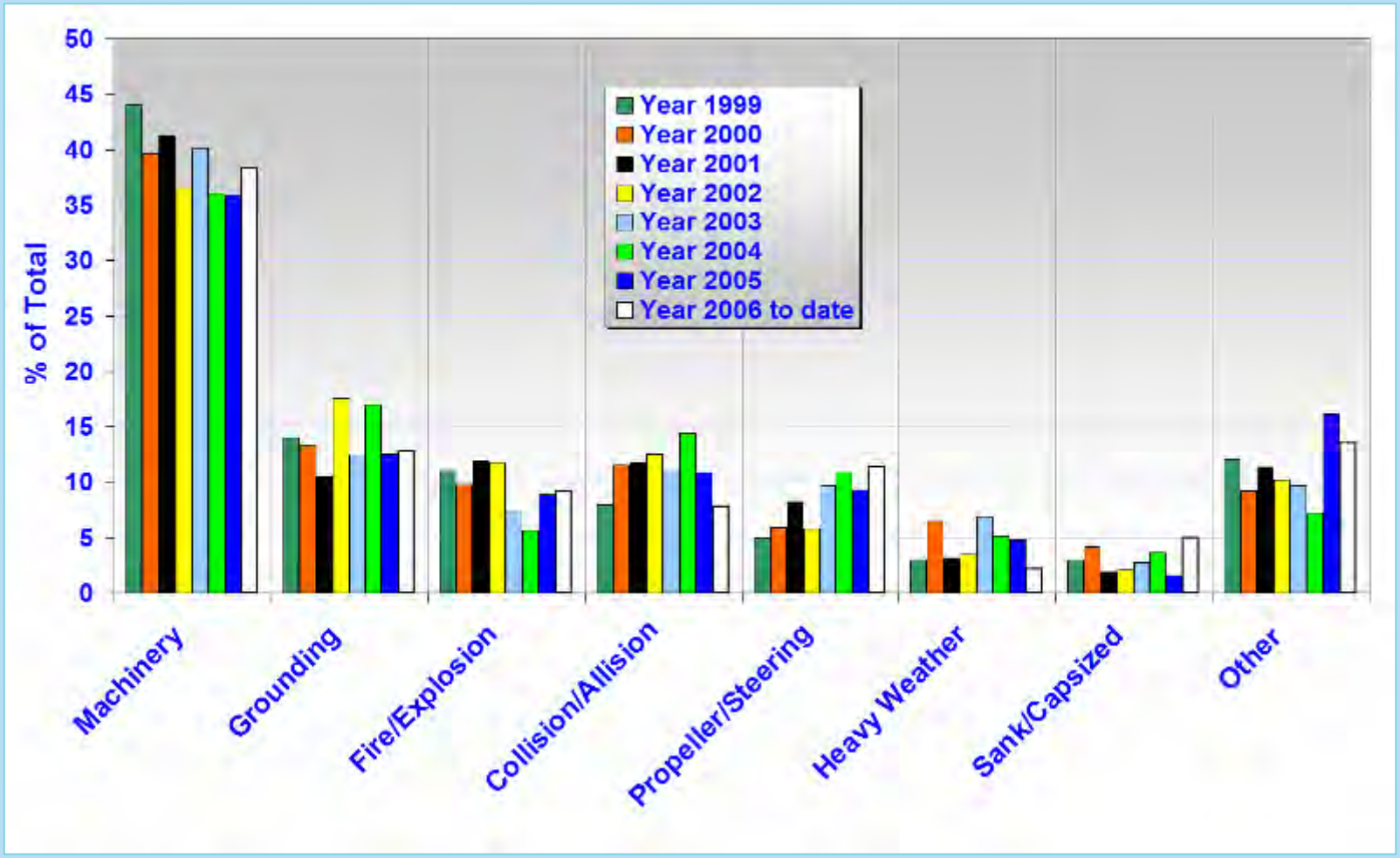
IT IS THE SAME OLD STORY

LITTLE NEW

SLOPPY WORK AND INADEQUATE SYSTEMS

HIGH COST CASUALTIES (By Number) (Repair Costs > $250,000)



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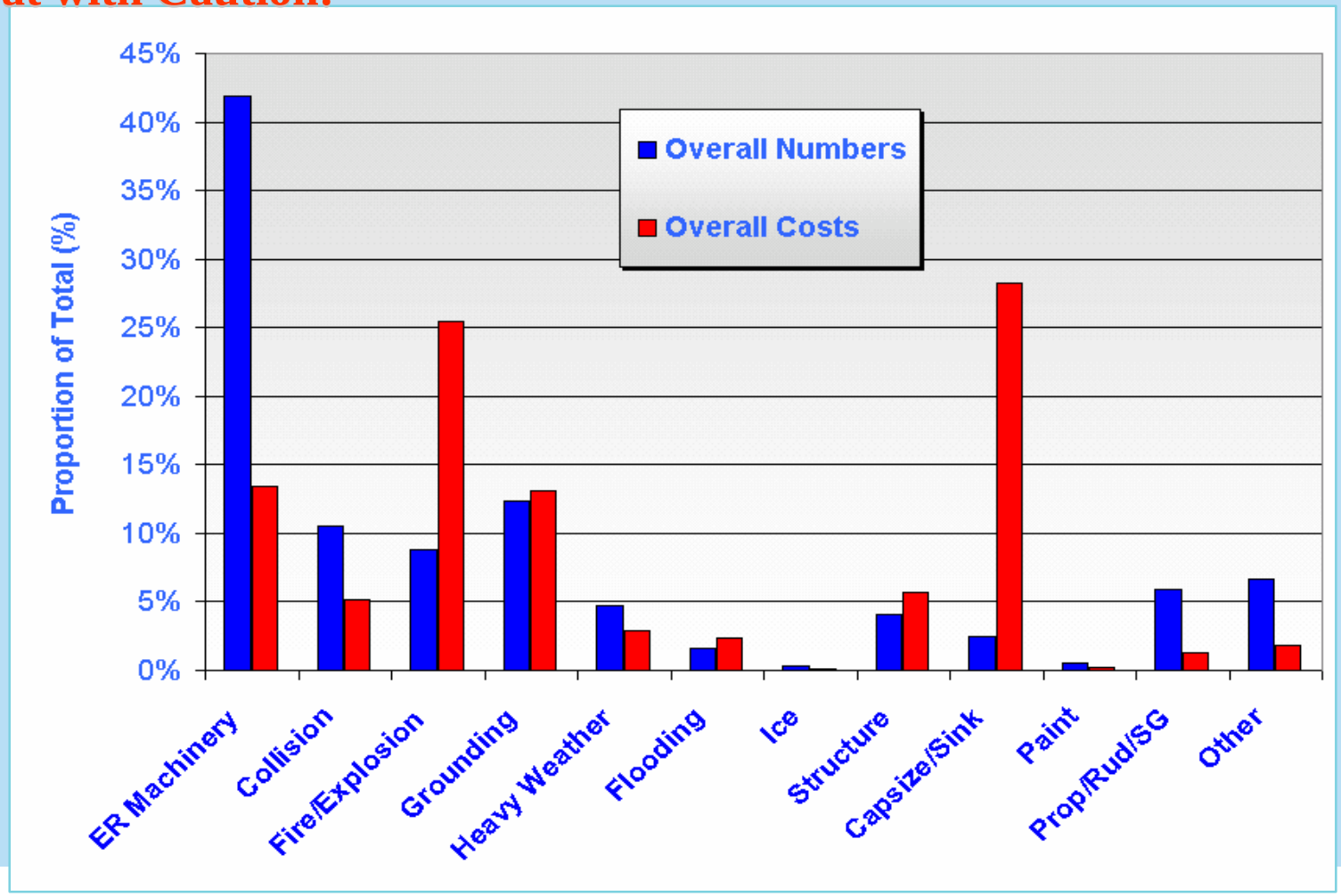
Numbers Versus Costs

Treat with Caution!



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Let us not forget the human cost

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SECTION 2 CONTAINERS

- Statistics
- Principle of forces in a container stow
- Causes of container collapse
- Lashing / securing of containers
- Stowage aspects
- Stability
- Heavy (parametric) rolling
- Container weights

RECENT DIFFICULTIES WITH CONTAINERS

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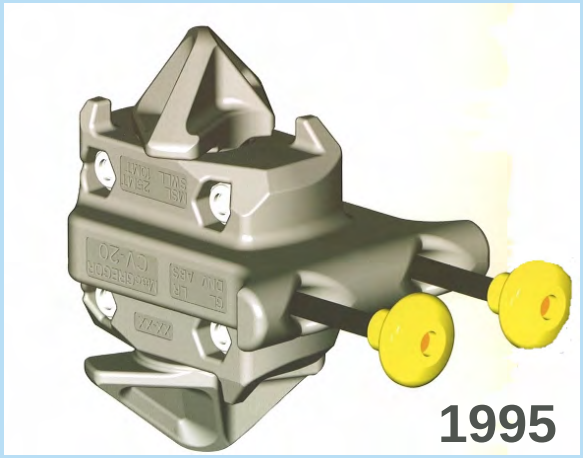
Lashing equipment (Evolution of Twistlocks)



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Lashing System (Unilock) Failure

December 2003: Far East > USA. New vessel, 4.500 teu

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Media

CMA CGM VERDI (Bahamas)

London, Feb 19 -- Following received from Coastguard Solent MRSC, timed 1635, UTC: C.c. *CMA CGM Verdi* (65427 gt, built 2004) arrived at Southampton earlier today and reported losing 80 40 foot containers on Feb 18, in the vicinity of Cape Finis... a result of ba... containers "hanging ... stern and ... ered. The v... depart later ... surveyors ha... will be two-th... the vessel can ...

London, Feb 1... received from Ca... lent MRSC, ... UTC: C.c. *CMA* ... was visited at ... Southampton by ... surveyor. The vessel ... containers, each 40 ... length, over the side ... groups were lost in ... 22.3N, long 09 39.1W at ... UTC, Feb 18. A third ... was lost in lat 45 25.1N, ... 08 11.4W at 0745 hrs, Feb ... The vessel still has two ... tainers hanging over t... stern, which require reco... ery. The vessel was sched... uled to depart Southampton at 2100, UTC, today. However, because of the two containers and others that need attention, the surveyor did not think that the vessel would be able to leave Southampton until Feb 21/22. There are no plans for the recovery of the missing boxes by the vessel or the Company at this time.

Twistlocks 'not to blame' for box losses

By Janet Porter

FAULTY twistlocks were not to blame for a spate of container losses this winter, an investigation by Germanischer Lloyd has concluded.

The German classification society has given a clean bill of health to the manufacturers of both semi-automatic and fully-automatic twistlocks and is turning its attention to other possible causes.

More than 200 40 ft containers fell overboard when stacks collapsed in four well-publicised incidents in European waters last February, but numerous similar mishaps are thought to have occurred.

Initially, investigators focused on the twistlocks. But after extensive tests under various conditions, the theory of defective twistlocks has been ruled out by GL.

Ship design is one area that will now be examined, since the containers that fell overboard were all loaded in the rear section of the vessel.

Two ships that lost containers in the Bay of Biscay had a flat stern shape, an optimum design for maximum cargo capacity.

When stern slamming occurred, it may have triggered a vertical acceleration that eventually caused the container fittings to come loose.

The organisation's initial findings were presented to shipowners at a seminar last week, with the class society telling its clients to make sure they are following all the rules when loading cargo.

They were reminded to check the Cargo Securing Manual and ensure heavy containers are not at the top of the stack and that containers are correctly lashed.

The age of containers and the size of corner fittings are other areas that will be addressed during the next round of investigations.

Lutz Müller, head of GL's ship technology department, said that investigations had centred particularly on lost containers from a ship in the Bay of Biscay in moderate to poor weather with force eight to nine winds and 10 m high waves. That is thought to be one of two CMA CGM ships that lost boxes overboard in that area at about the same time.

Investigators wanted to know which piece of equipment failed first and triggered ensuing damage in the container-securing equipment that eventually resulted in damage to the container or in its loss.

The goal was to reconstruct exactly errors which occurred so as to formulate suggestions for improvement in ship operations.

Mr Müller explained the approval procedure for twistlocks and fully automatic locks, with GL then carrying out extensive testing on the functions of fully automatic locks in combination with their durability at its own test facility.

The results of these tests under various laboratory conditions showed that all the fully automated locks tested passed the load threshold value and the simultaneous material load, said GL's Jan-Olaf Probst.

In the next round of tests, GL will undertake measurements on an 8,400 teu vessel that will continue through the coming winter.

Although the reported incidents happened on post-panamaxes, investigators warned shipowners that cargo losses can occur on ships of any size, from the smallest to the biggest.

...rt of Le Havre on Sunday. Four dozen containers were lost overboard from the ship in the ... involving the P&O Nedlloyd Mondriaan. Comment — Page 7

Eric Houri

EDLLOYD RIAAN (Liberia)

..., Feb 20 – More than ...zen containers were ...rboard from c.c. *P&O ...d Mondriaan* in the Biscay late last week ...s after a similar inci... the Dutch coast. The ...n charter to Maersk ...as heading back to ...feeders' Blue Star, ...anagee the vessel on ...f German KG in... is investigating and ...to have a clearer idea ...ause in the next few ... Weather conditions ...id to be bad, with re... ...hat containers from ...other vessels in the ...I also been washed ... However, initial ...o suggested faulty ...might be to blame ...an for Blue Star ...wistlocks could be ...sons for the less ...ossible causes ...examined. No ...the fleet expe... ...g similar. In ...dent the ves... ...lost 50 con... ...ers, most of ...es being re... ...ers. Only four or ...tained cargo. A week ...50 loaded containers ...n washed into the sea ... vessel headed from ...ham to Hamburg, ...many more were badly ...ed. The *P&O Nedlloyd ...nann* was inspected ...t arrived in Hamburg ...final conclusions have ...known about why so ...containers were swept ...that were described as ...but not stormy condi... (See issue of Feb 15.)

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History of some recent incidents involving Fully Automatic Twislocks FAT(confirmed)

Vessel	Ship size	Month	Nos.lost
ship 1	8750 teu, built '05	Aug.'05	85
ship 2	4500 teu, built '05	Dec.'05	60
ship 3	800 teu	Dec. '05	25
ship 4	4500 teu, maiden voy.	Jan.'06	appr. 60
ship 5	8500 teu, built '04	Feb. '06	58
ship 6	8500 teu, built '04	Feb. '06	50
ship 7	8500 teu, built '05	Feb. 06	46
ship 8	8500 teu, built '05	Feb. '06	85

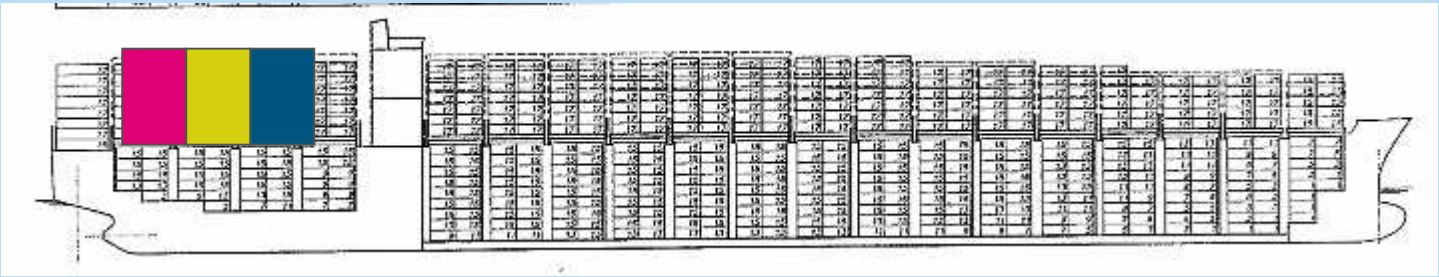
Equipment on board : T-4 / T-5

- Total lost over 6 months: approx. 450 containers.
- Excl. approx. 250 damaged.
- Total estimated loss of cargo / containers : USD 30-40 million
- Excl.damage to ship / lost schedules / stevedore exp. Etc.

Incident Description, Location of Loss

Ship 1, August ’05.

8750 teu. Pacific



Total lost:

Bay 66: 32 containers

Bay 70: 15 containers

Bay 74: 38 containers

Tot.: 85 containers (approx. 50 others heavily damaged)

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Incident Description, Location of Loss

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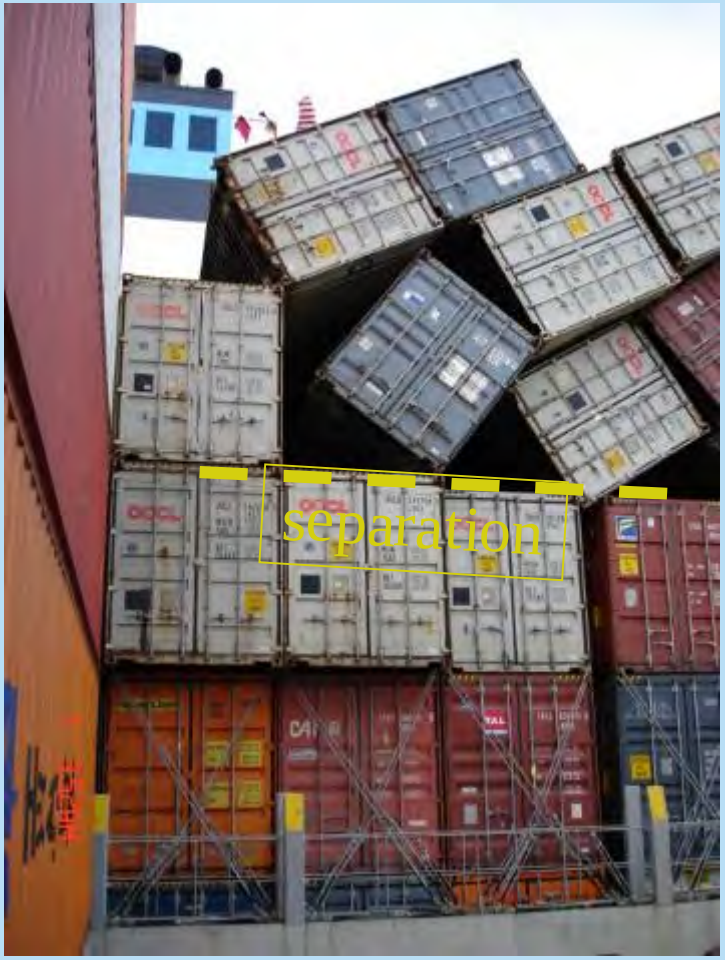
Incident Description, Location of Loss



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Incident Description, Location of Loss

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Separation Level

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Separation

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Separation

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Dislocation of Stacks

Dislocation of Stacks

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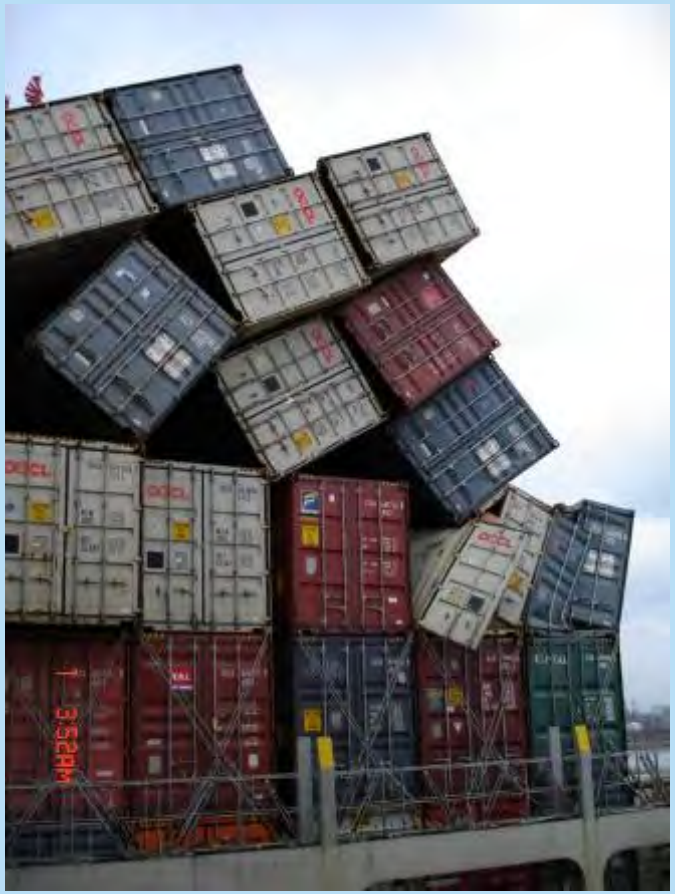
Difference between “fat” and “sat” loss

Fully automatic locks



Semi automatic locks

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Difference between “fat” and “sat” loss

 S	 F	
Revolving cones	Fixed steel body	F: Locking / damage to corners. -/-/-
Symmetrical shape	Assymetrical shape	F: Fails if applied wrong -/-/-
Requires manipulation o.b.	No manipulation o.b.	F: saves money and time +/+/+
Individual lock at 4 corners	Operates in pairs	F: Reduced locking redundancy -/-/-
Locks in every direction	No locking in vertical direction	F: Less security -/-/-
Surface contact	Linear contact	F: Damage to corner castings / less grip -/-/-
ISO: O.K.	ISO: not O.K	F: application /locking failure

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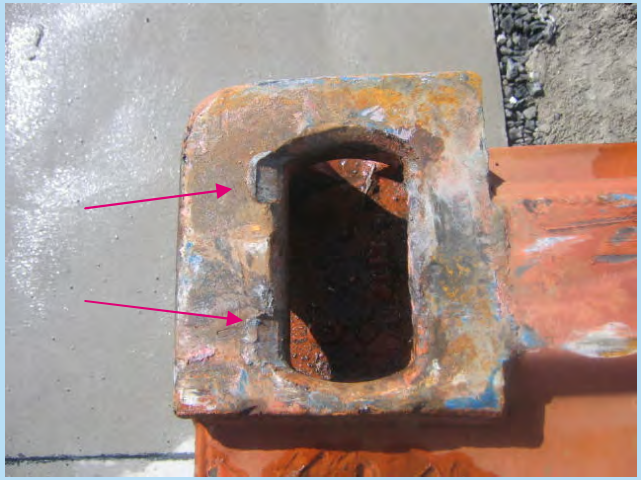

Locks breaking out of corner castings

Vertical accelerations

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Vertical accelerations (?)

Sister vessel, after replacement of FAL’s to SAT’s

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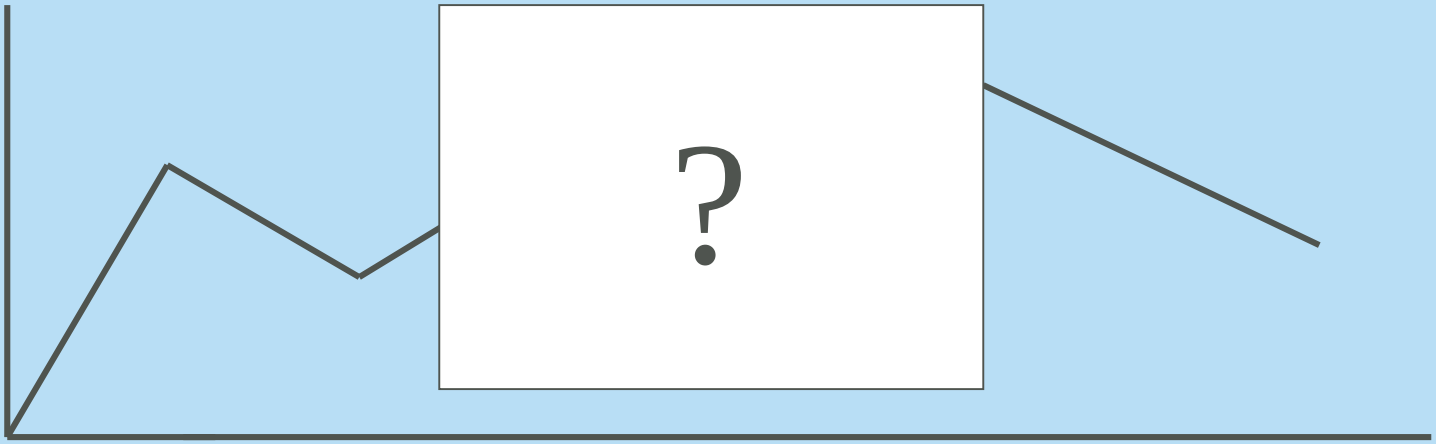
Some Statistics



No centralized statistics available.
P & I Clubs, shipowners and operators are not prepared to disclose their records.

Estimates on Container Loss

P&I Club figures:

- UK Club: 15% of major claims (>USD100.000,=) due to container loss. Average cost per incident : USD 475.000,=
- Gard: approx. 50 containers lost every year
- NoE: 50-100 containers, last year

Estimates on Container Loss

Surveyor figures:

BMT De Beer:

- Approx. 25-30 cases a year
- Our estimate: 10.000 containers per year, involved in container collapse, of which 25% lost overboard
  - **Approx. 0.02% of total movement**

Collapse Under Deck / On Deck

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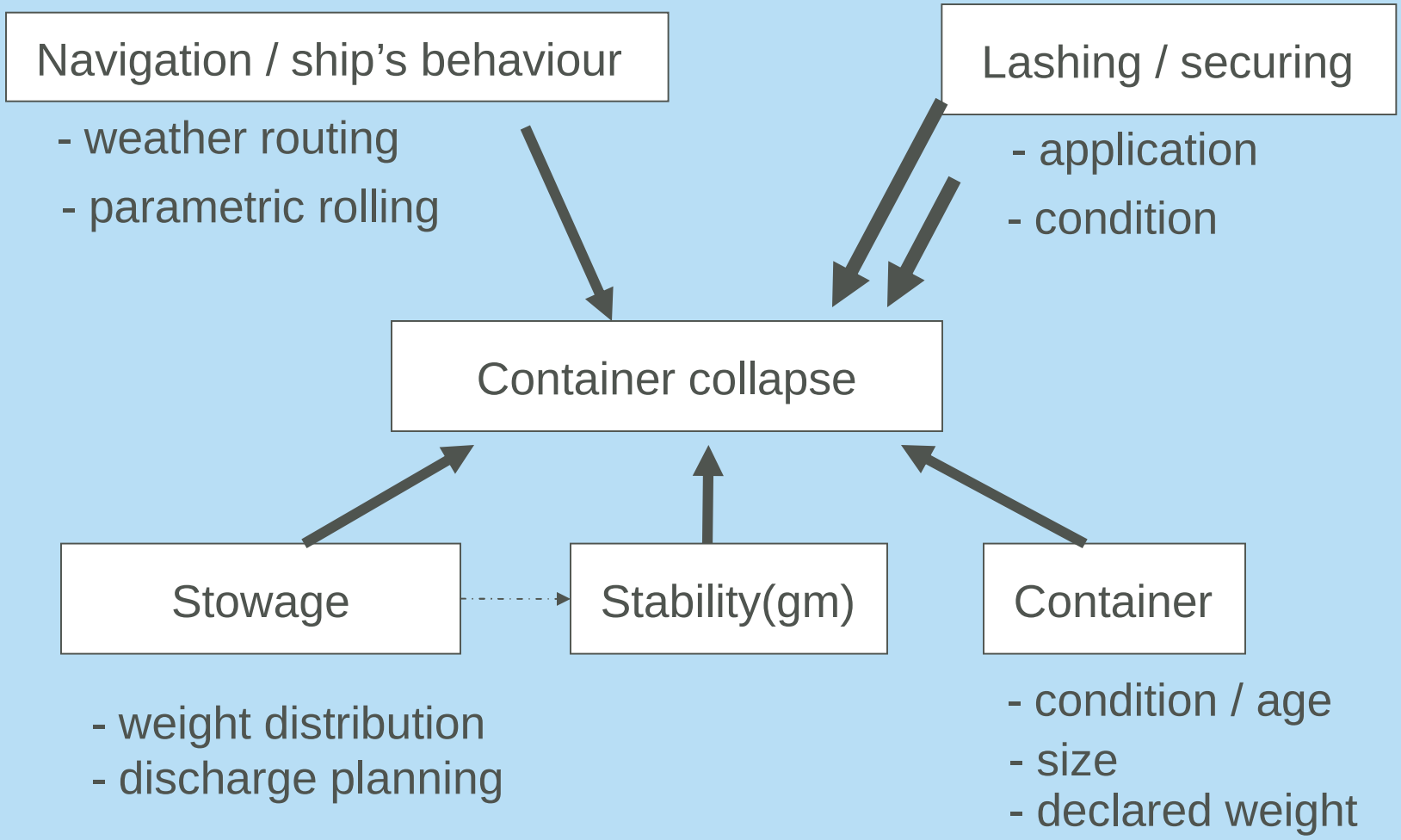
Estimates on Container Loss ($)

Value involved: 500 million USD (cargo and equipment)

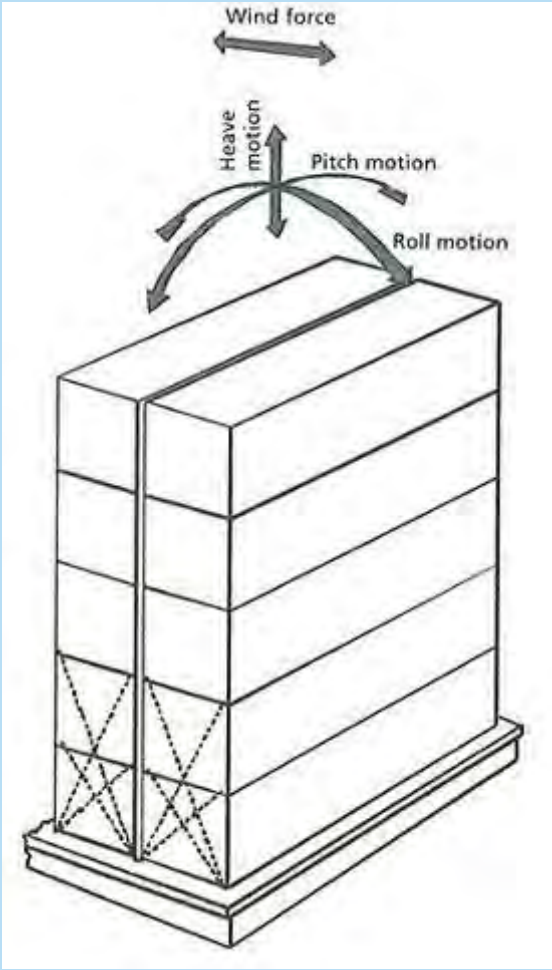
Excluding costs for:

- Clean-up of water / beaches (eg. “Sherbo” 1993)
- Stevedoring
- Disruption of vessel’s operations / schedule
- Damage to ship
- Chemical contamination

Causes of Container Collapse



Accelerations Acting on a Container in a Seaway



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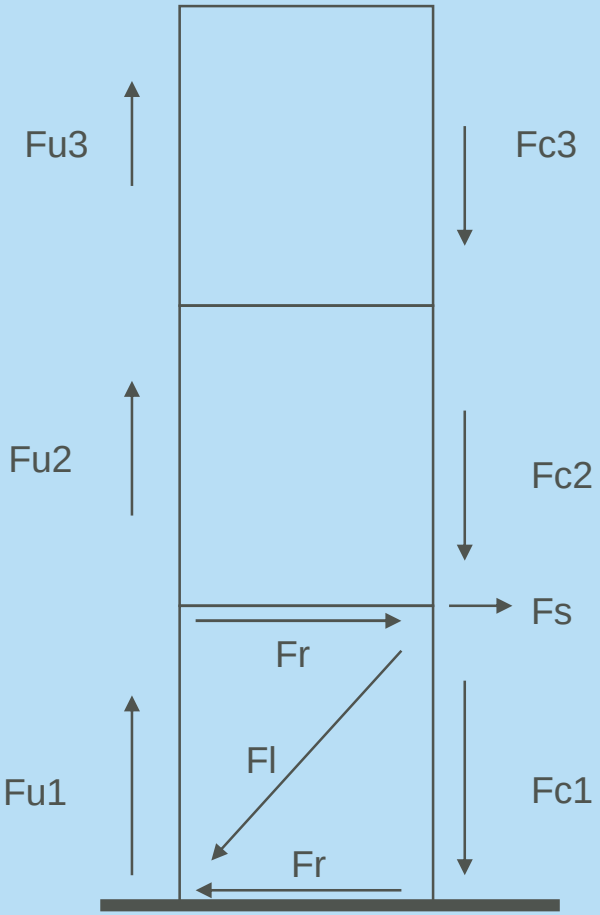
Forces in a Container Stow



Fu = Uplift force (20 t. / 25 t.)

Fc = Compression force (83 t. at bottom)

Fr = Racking force 15 t.)

Fs = shear force (15 t.)

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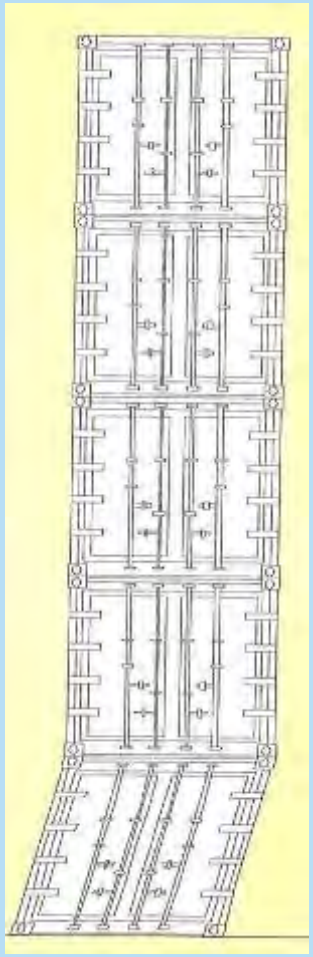
Examples (Too High Racking Force)



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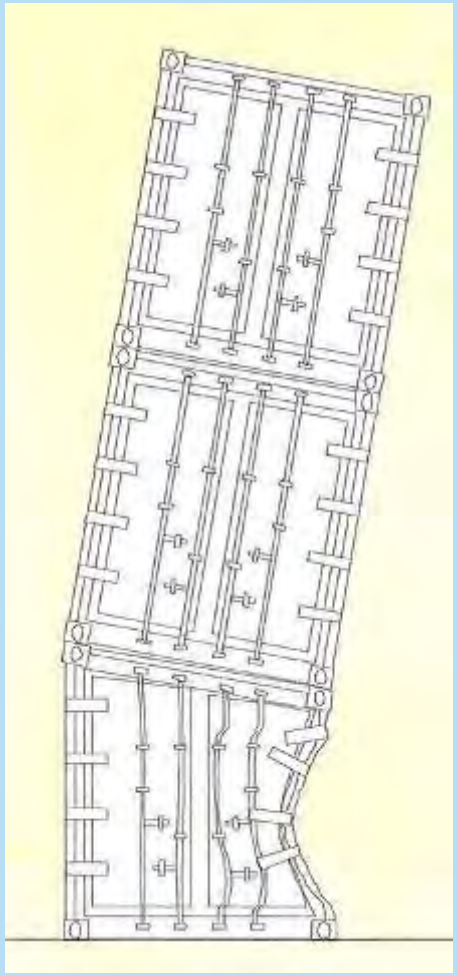
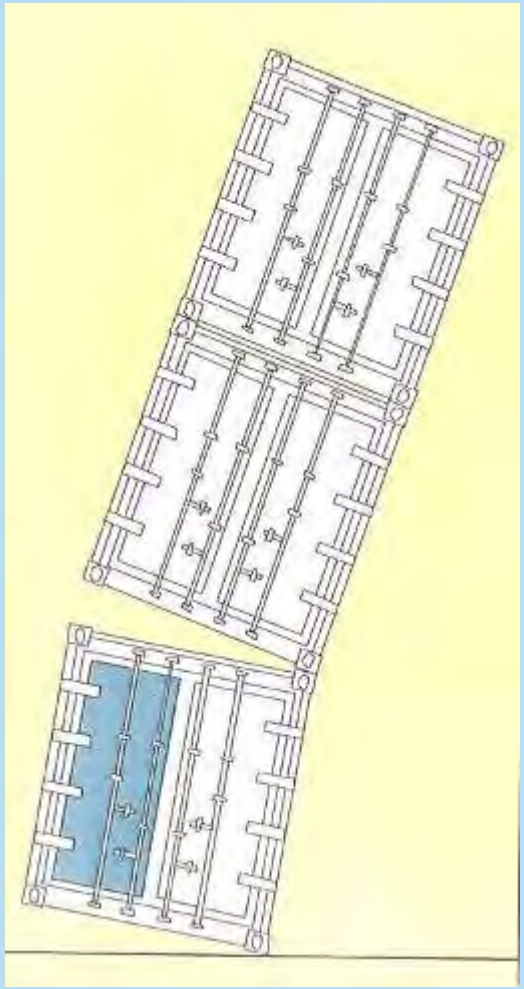
Examples (Too High Compression Force)



Examples (Too High Compression Force)

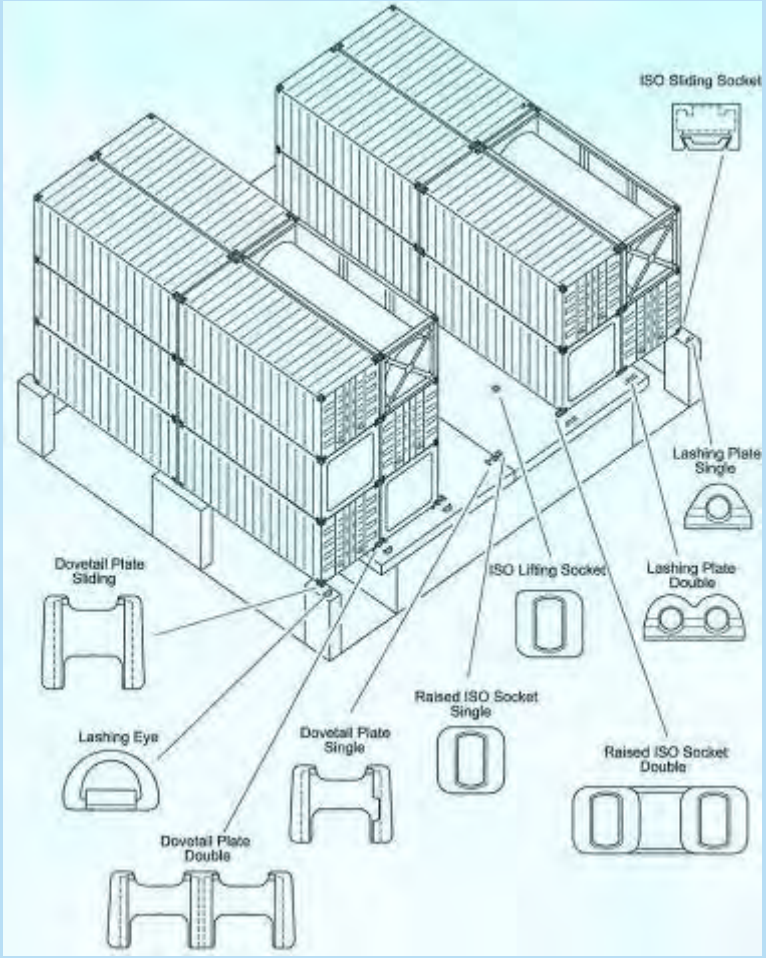
Examples (Too High Uplift Force)



Lashing Equipment

Fixed arrangements, belonging to the vessel's structure:

- Deck sockets, foundations
- Lashing rings



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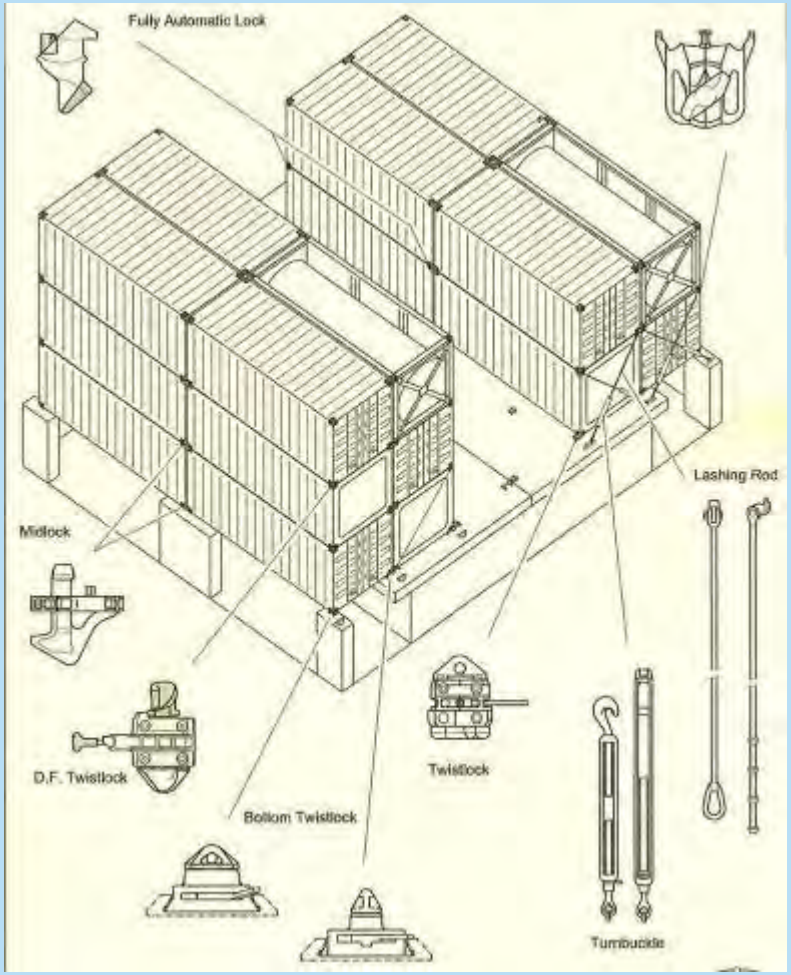
Lashing Equipment

Loose equipment, supplied by either the owners or the time charterers of the vessel:

- Lashing bars + turnbuckles
- Bottom twistlocks
- Twistlocks between the tiers



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Lashing Equipment, Main Failures

- Wear and tear, damage, lack of maintenance / condition monitoring
- Mixing of different systems
- Wrong application
- Incompatible components in one system

Lashing Equipment

Poor condition of twistlocks, bottom foundations

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Lashing Equipment

Poor condition of twistlocks, bottom foundations

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Lashing System Failure

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Arrival L.A.

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Unilock, System Failure

Operation of Unilock (OSHA)

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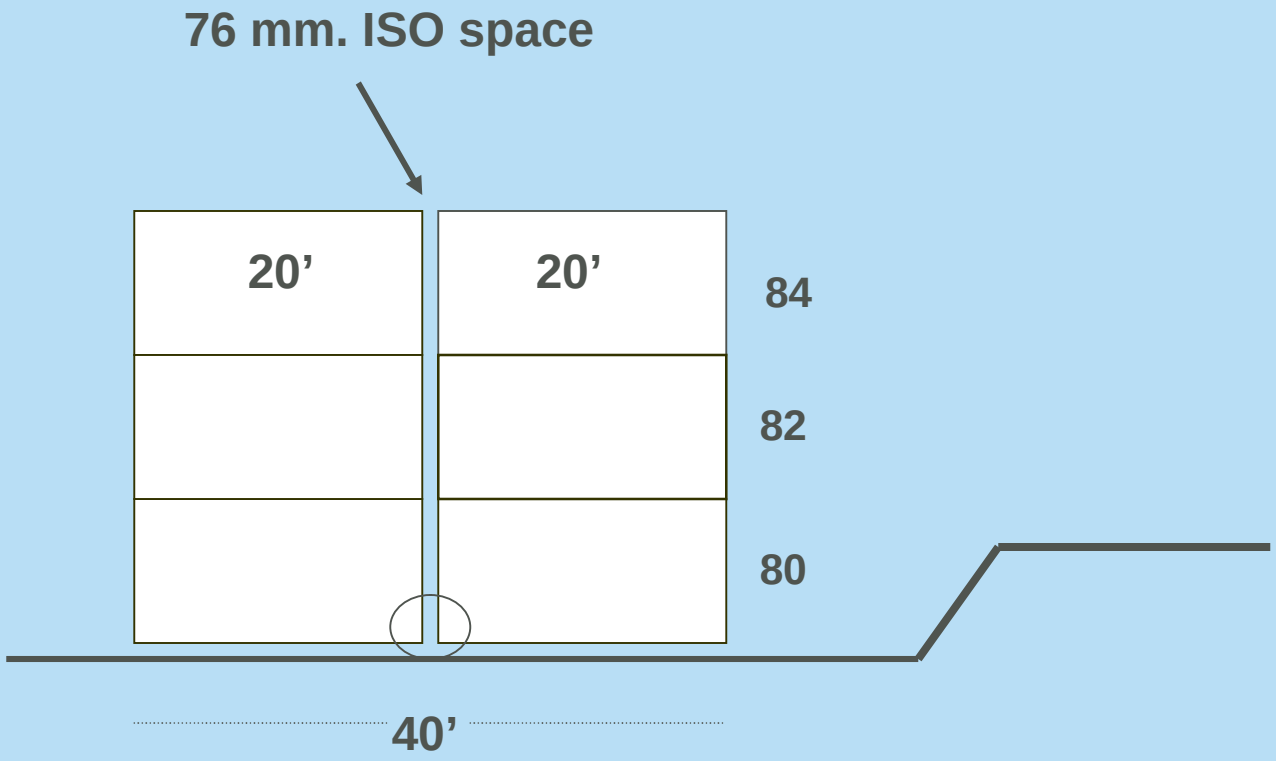
Stowage Aspects

Failure to lock bottom twistlocks in 76 mm. ISO space



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Stowage Aspects

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Stowage Aspects

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Stowage also applies to contents!

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Oops!

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Who is in charge of stowing this?

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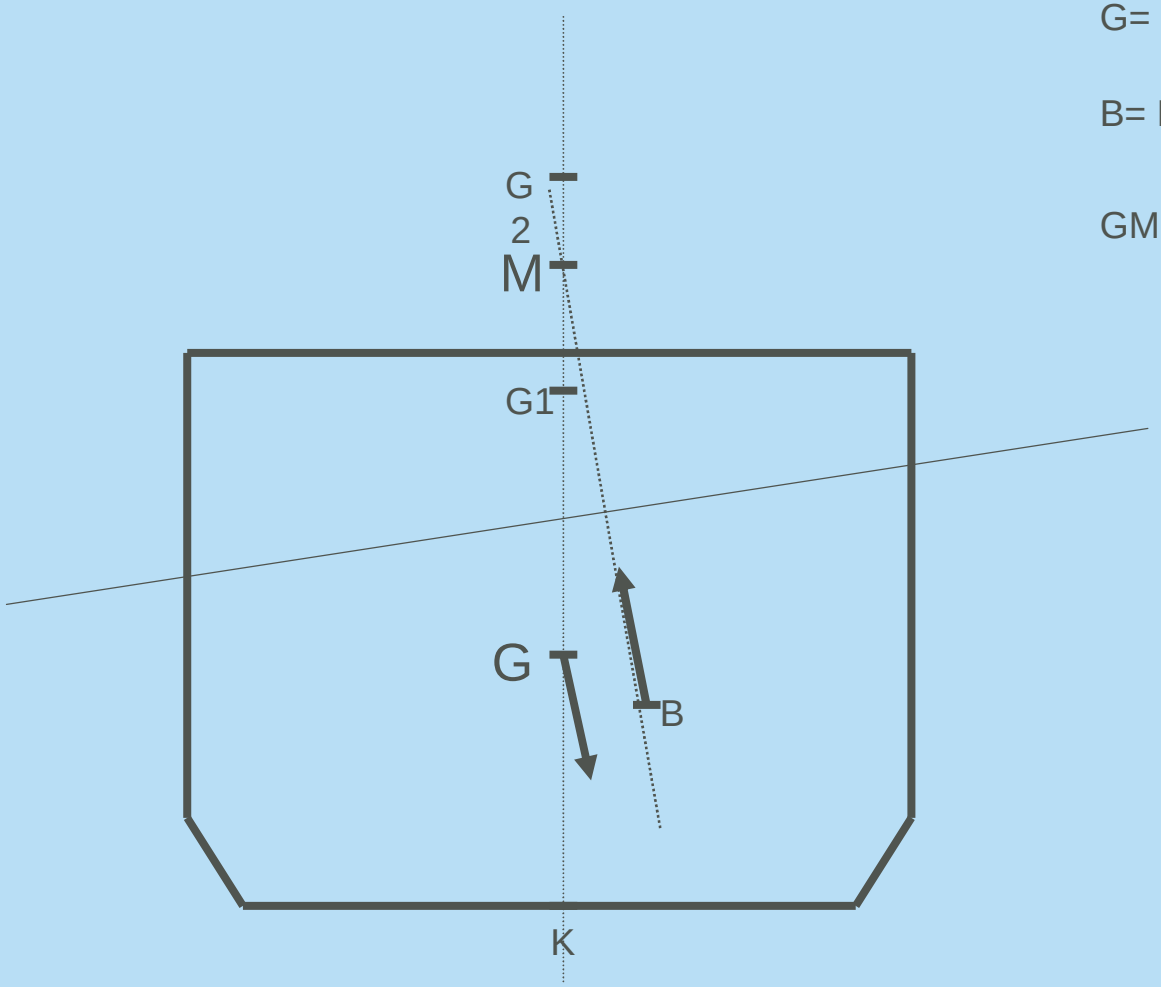
Stability, Rolling Effects

G= Gravity point

B= Buoyancy point

GM = Stability



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Stability, or rather lack of it!

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Stability

IMO sets criteria for minimum GM (= 0,15m)

There are no criteria for maximum GM, except for:

CONTAINER SHIPS!!

Major Incidents (APL, China), 1998

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Effect of Heavy Rolling on Containers

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Major Incidents (“OOCL America”)

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Major Incidents (“OOCL America”)

Cause : Heavy rolling (45 degr.)

Parametric rolling ??

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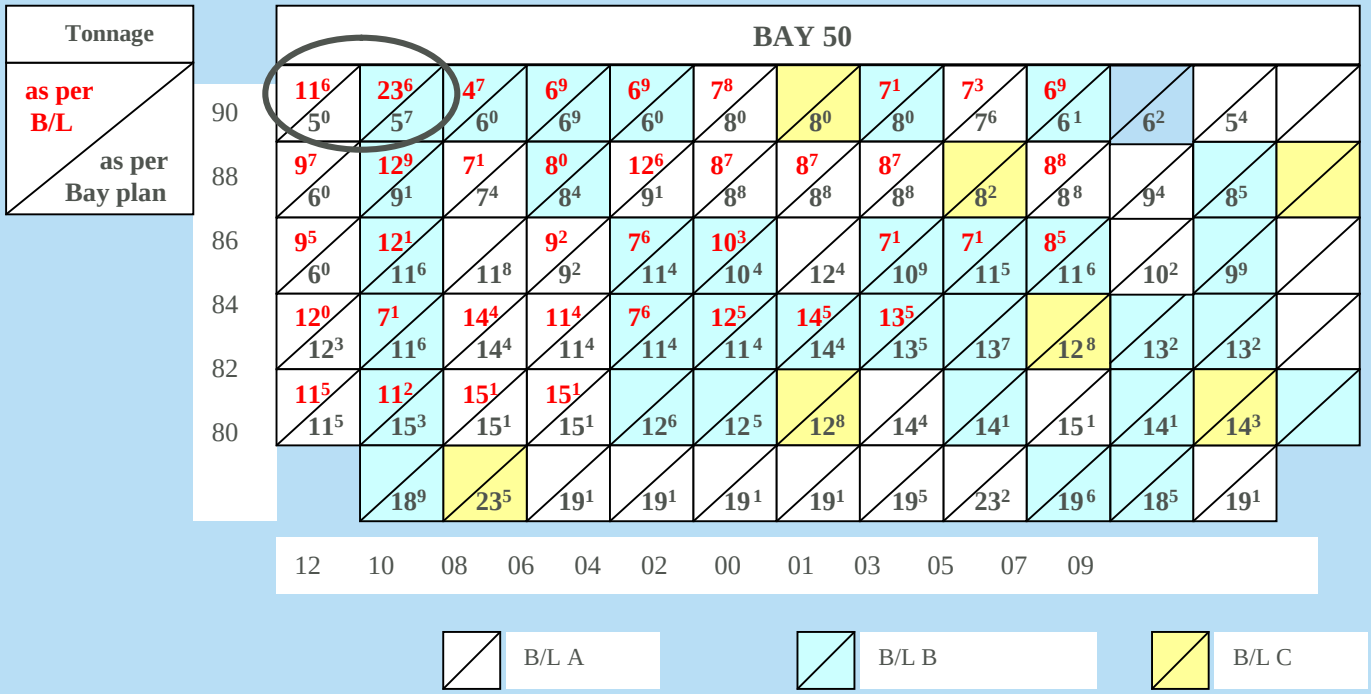
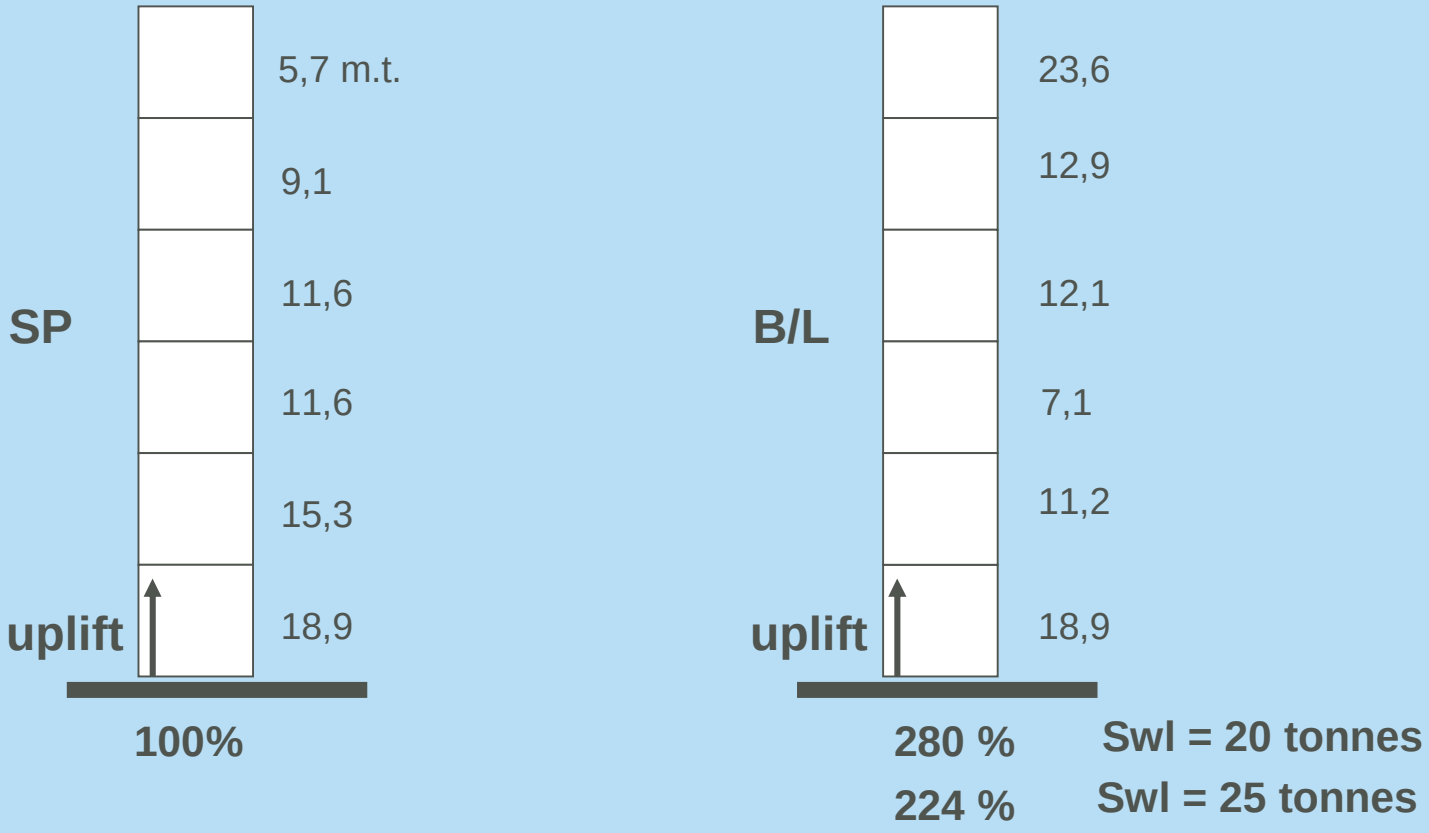
Misdeclaration of Container Weight

Weight differences



Misdeclaration of Container Weight

Weight differences (impact on the lashing forces acc. Lloyds)



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Lessons To Be Learnt:

- Read and strictly adhere to the Container Lashing Manual (training ship's crew).
- Look after stability of the ship (often too high, without corrections beIng made)
- Container weights are often in excess of shipper's declarations
- Avoid try-outs of unproven new lashing systems.
- Be careful with container lashing software eg. weak containers / low roll angle.
- Regular check of the lashing equipment (company audits)

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A Current Issue – FLEXTANKS

A loaded tank stowed in container – looks OK?

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Not Really!

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The well rounded container.

(Look for the latest “Carefully to Carry”)

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QUESTIONS
COMMENTS
DISCUSSION

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THANK YOU!

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