



MARITIME


SHARING OPERATIONAL EXPERIENCE – TANKERS

Tanker Operator conference, Hamburg, 18.10.2016

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AGENDA

- 
- The DNV GL way to gather and analyse operational experience
 - Operational experience (tankers): Class and PSC
 - Cases:
 - Design features / CSR
 - Fire safety
 - Anchor

DNV GL has accumulated knowledge for 150 years...



DNV GL has supported the maritime industry for more than

150 years



More than

5,000
maritime staff
worldwide

100 countries

300 offices



Significant experience in all segments

23%
market share of the world's **classed ships and mobile offshore** units

In service experience with more than

13,000 ships



Knowledge is accumulated, analysed, and used for continuous improvement of our customers' performance

Plus, we use our industry comparative (big) data to identify improvement opportunities for the industry



DNV GL NPS

World Port State
Inspections

IHS Fairplay
Ship parameters

IHS Fairplay
Ship Incidents

Annual key figures*

- **14,000** ships
- **26,000** periodical surveys
- **22,000** non conformities
- **90,000** findings

Annual key figures

- **88,000** inspections

Key figures

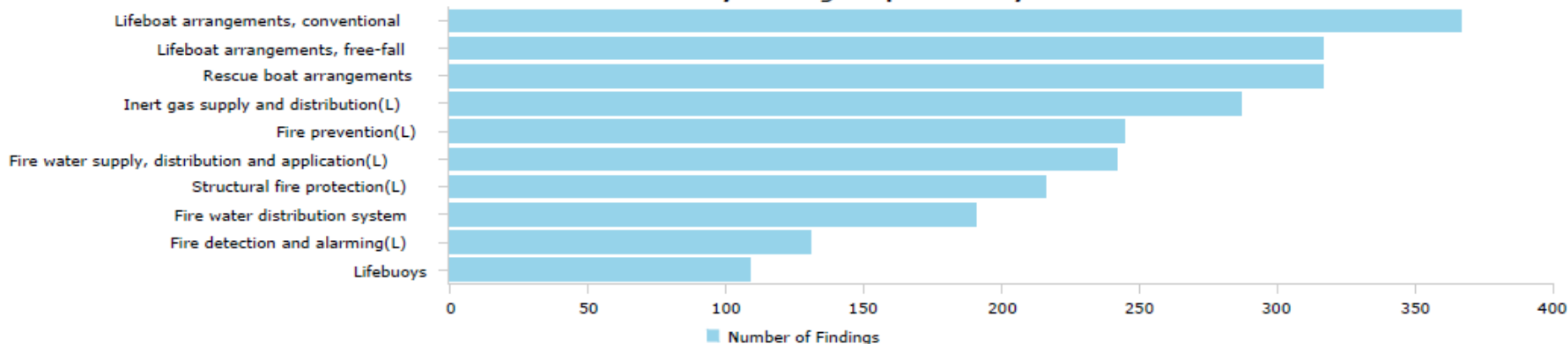
- **80,000** ships

Annual key figures

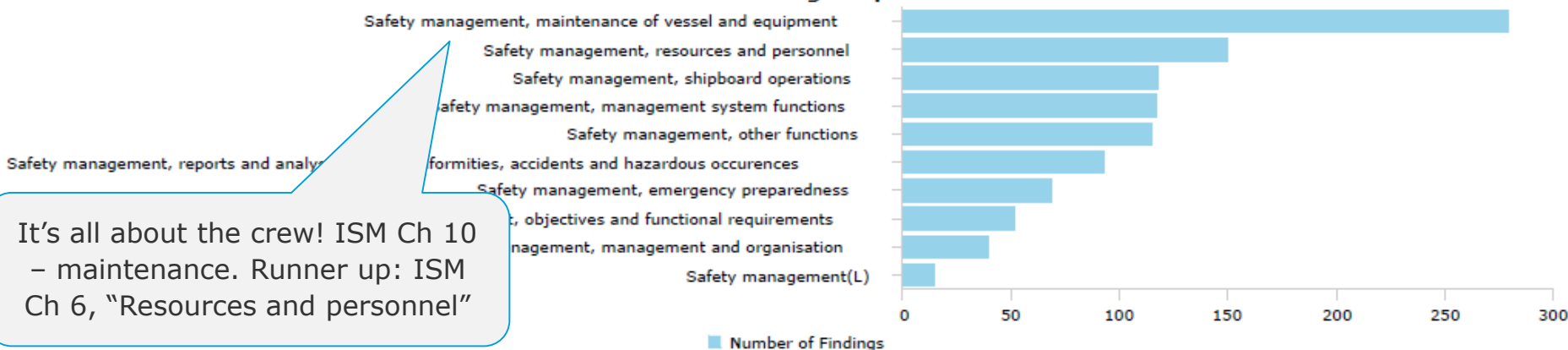
- **1,700** serious incidents

It is “easy” to identify focus areas for improvement with “big data” – here Class and Statutory findings/safety on tankers

Class Survey Findings Top 10 Safety

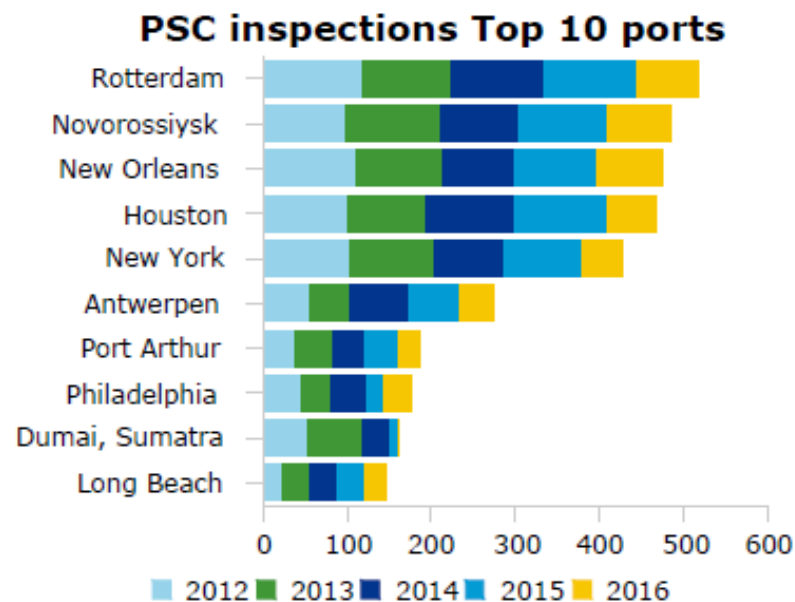
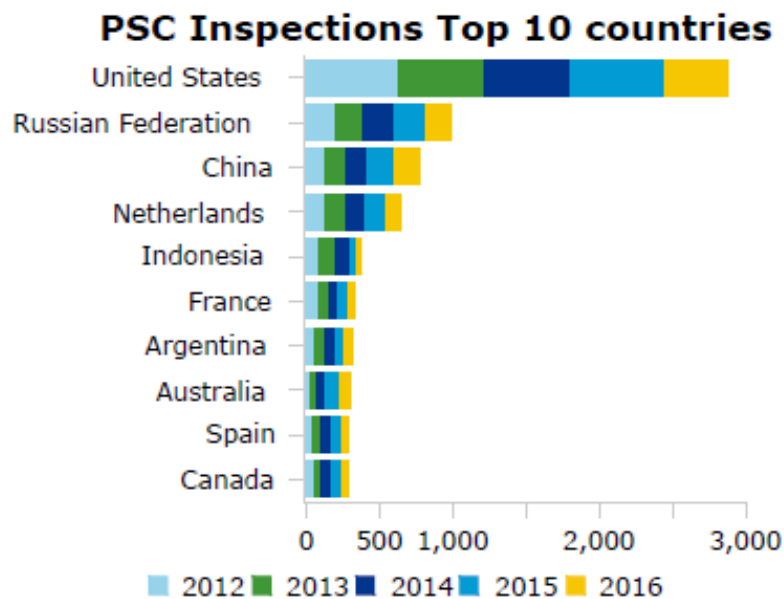


Audit Findings Top 10 ISM



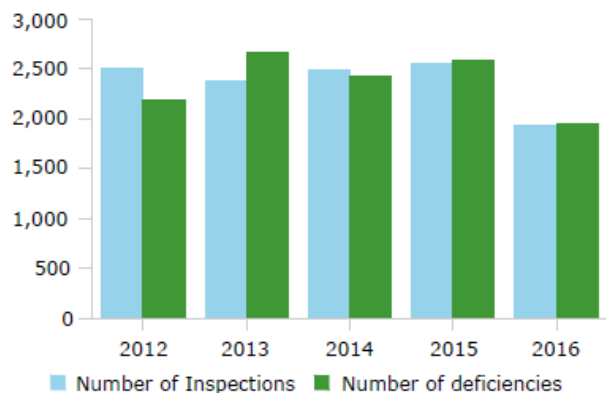
It's all about the crew! ISM Ch 10 – maintenance. Runner up: ISM Ch 6, “Resources and personnel”

We know where the inspections are...

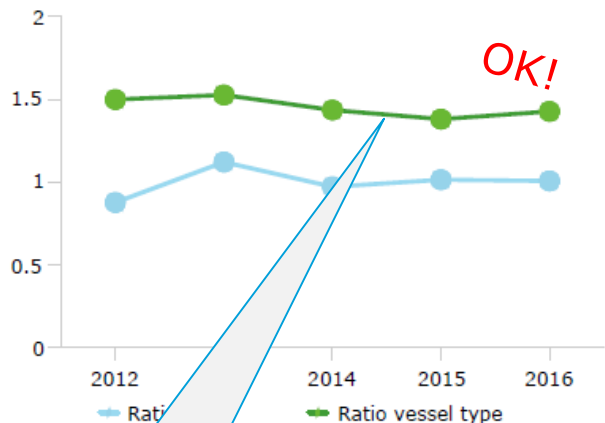


...and the performance. Here: DNV GL vs worldwide tanker fleet, 2010–2016

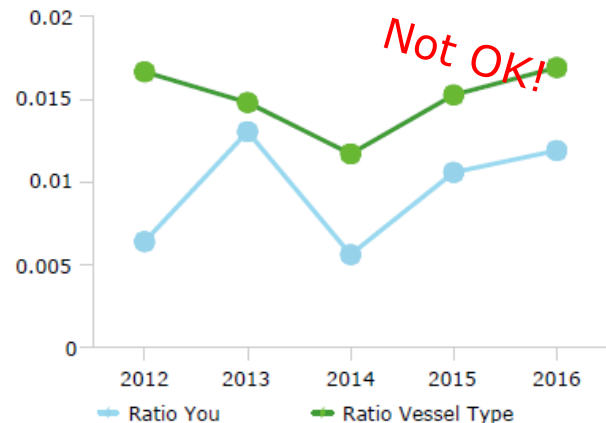
Port state inspections and deficiencies



Deficiency ratio trend and benchmark



Detention ratio trend and benchmark



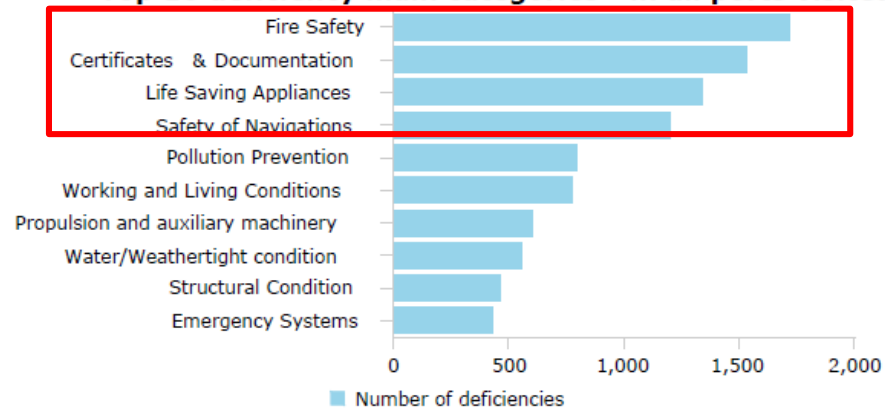
Where are you!?
Average, above/below?

■ worldwide tanker fleet (abt 12000 vsls)
■ DNV GL tanker fleet

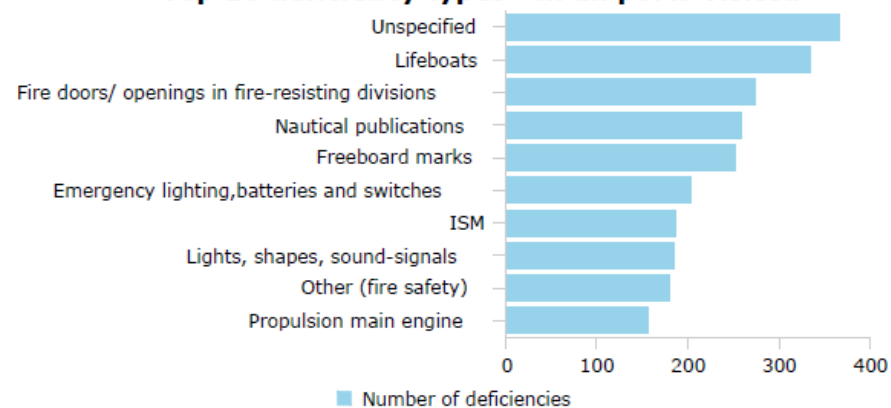
PSC findings on DNV GL tankers, 2012–2016

Focus on these, the top 10...!

Top 10 deficiency main categories - in all ports visited

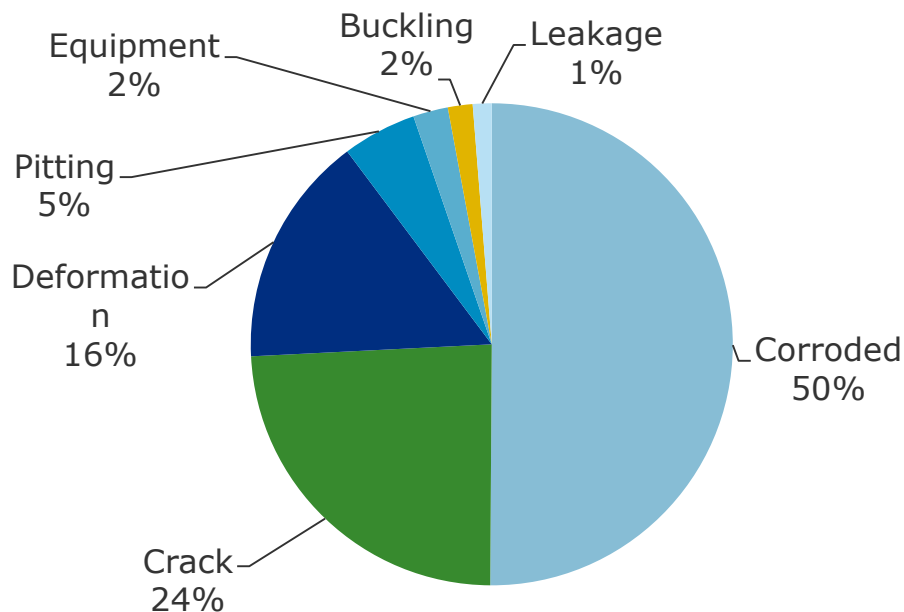


Top 10 deficiency types - in all ports visited



Distribution of hull damages, DNV GL Tankers 2006-2016

- 50% of the hull findings are corrosion related
- Cracks account for about 25%
- Indents – deformation third most frequent damage cause

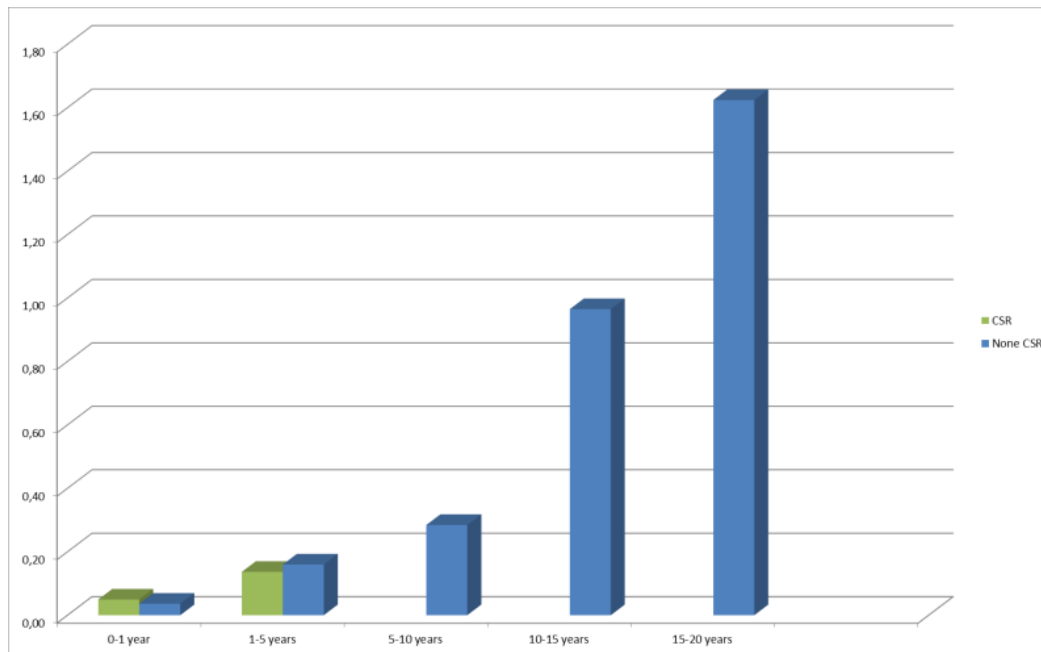


Finding Type	Number of Findings
Corroded	16906
Crack	8133
Deformation	5249
Pitting	1677
Equipment	791
Buckling	560
Leakage	427

With CSR - did we solve the fatigue crack challenge for tankers permanently?

Did we solve the fatigue damage with CSR? Still to be seen, but positive trends... :

- Increased design standard with 25 years North Atlantic trade as basis
- The first CSR tankers are now 8 years old
- ..and a total of 135 cracks are found



Crack frequency per ship year, CSR vs. non-CSR Tankers

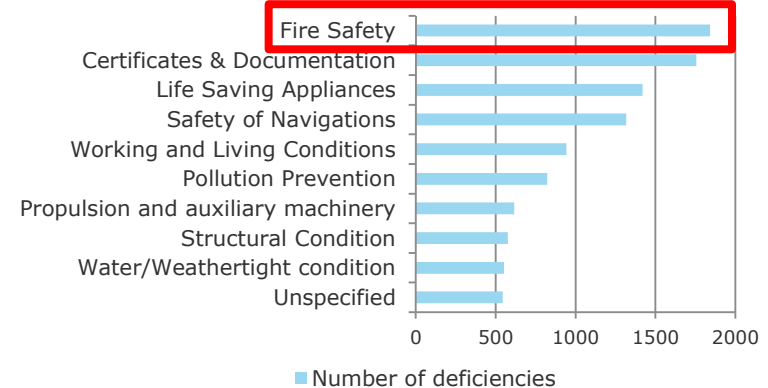
What type of cracks did we find?

- Production related cracks
- Vibration related cracks (not CSR scope)
- Design related cracks (not CSR scope)
- Cracks covered by CSR scope and approved according to the CSR standard

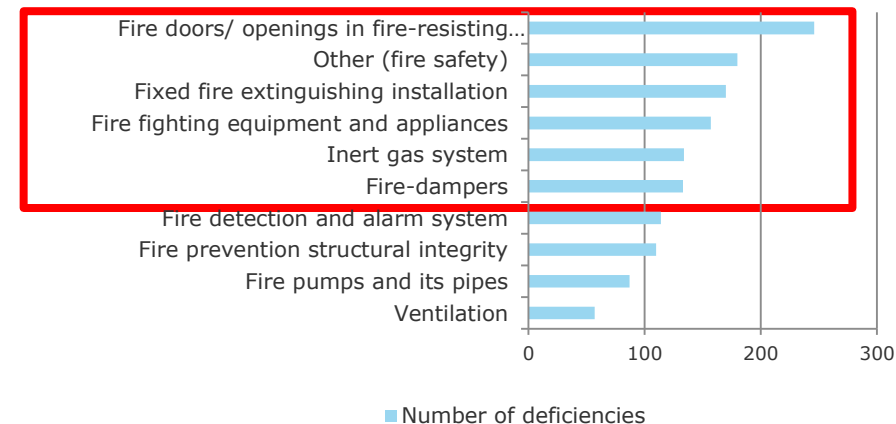
Fire Safety – PSC Deficiencies 2010-2015, DNV GL Tankers

- On DNV GL's tanker fleet deficiencies related to **fire safety** is the most common finding type
- Within the Fire Safety the most frequent findings are related to:
 - Fire doors and openings in fire divisions
 - Fixed fire extinguishing systems
 - 6 detainable deficiencies
 - 30 code 17
 - Fire fighting equipment
 - Inert gas system
 - Fire dampers
 - 9 detainable deficiencies
 - 30 deficiencies code 17

**Port State Control
Top 10 deficiency main categories**



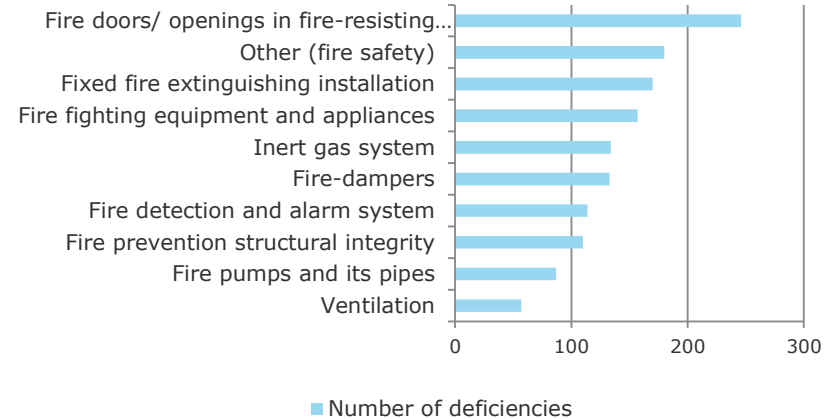
**Top 10 fire safety deficiency types
DNV GL tankers**



Fire Safety - How to improve?

- Most of the deficiencies in this category are typical **maintenance** related issues
- Regular **maintenance routines** need to be reviewed to give practical guidance in problem areas
- **Implementation** of same needs to be verified on a regular basis at all levels
- Ensure that **ship specific challenges** are properly addressed in the planned PMS.
- Identify company and shipboard **most frequent and high risk findings** and run focused campaigns to improve
- Focus on same during the **shipboard audits**

**Top 10 fire safety deficiency types
DNV GL tankers**

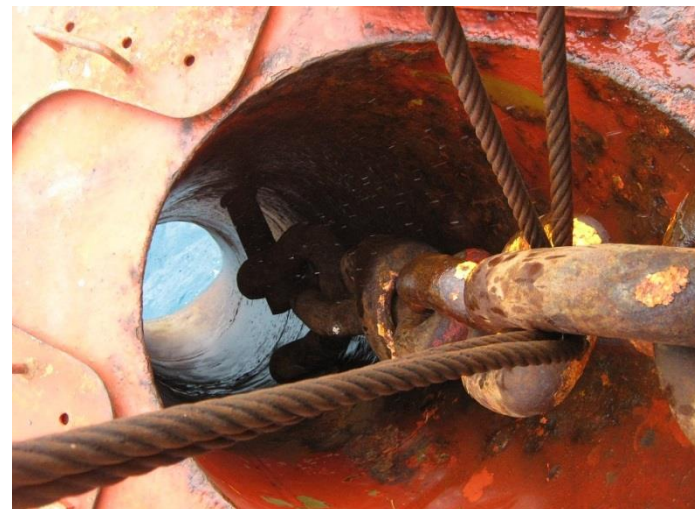
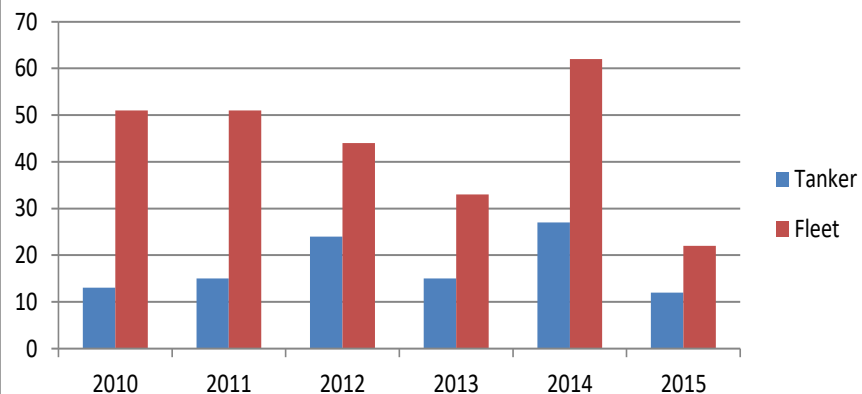


DNV GL's PSC Toolkit

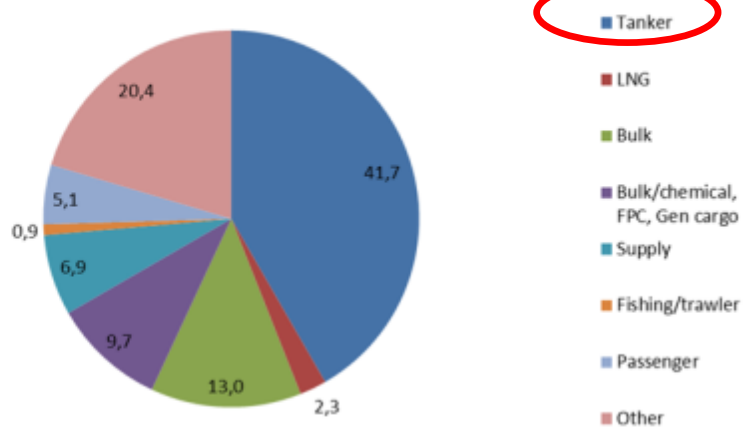
Anchor losses – another “operational challenge...”

Tanker Fleet vs Total DNV GL fleet

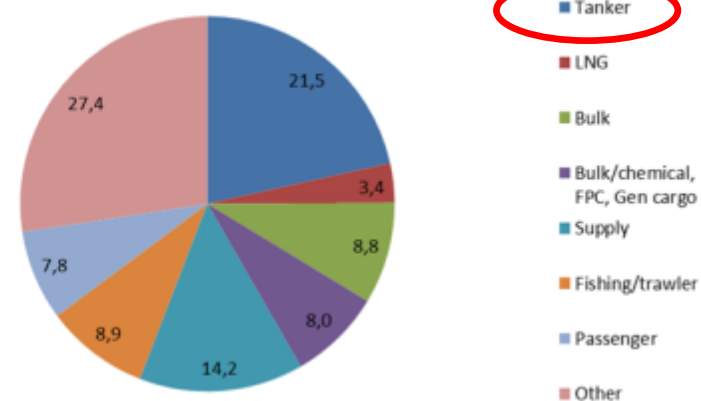
Anchor lost - Tankers



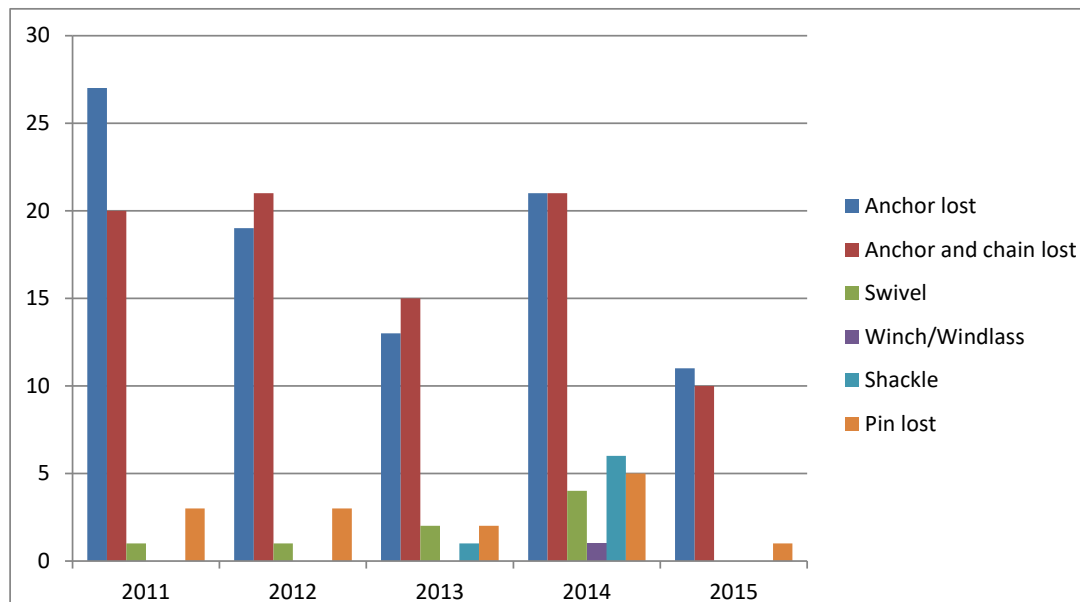
Lost anchor % share



Ship type % of fleet

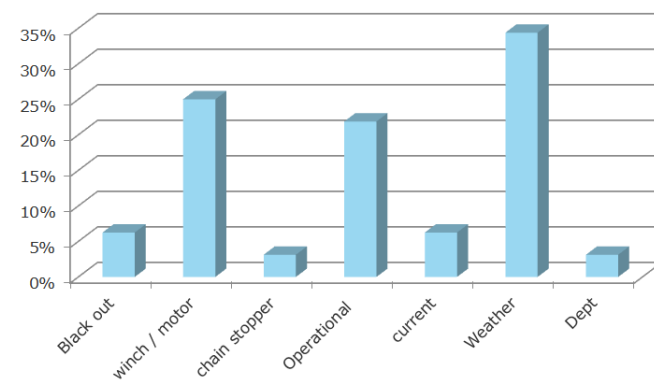


Anchor losses - which components has failed?

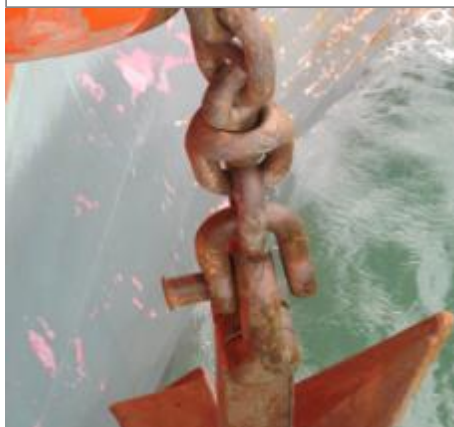


Most common causes:

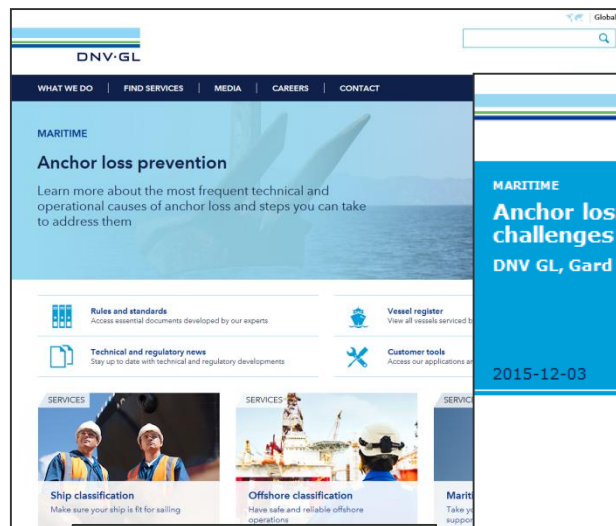
- Equipment failure (securing of pin), winch failure
- Operational issues
- Heavy weather / current



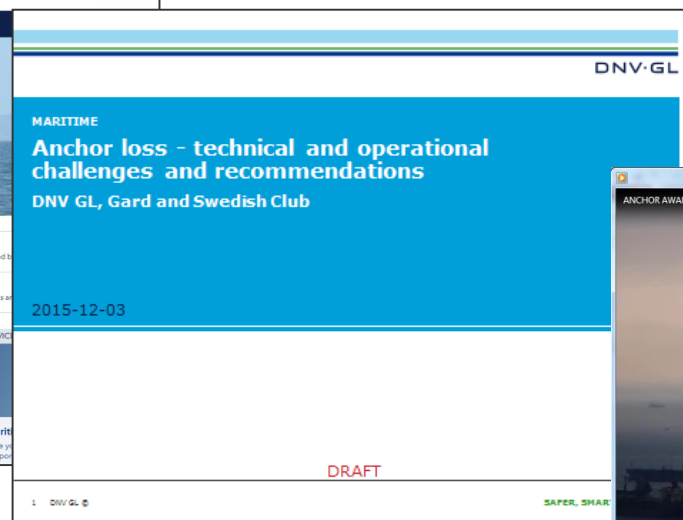
Based on input from Swedish Club



Anchor losses – increasing the awareness, together



Press - release



45 min Presentation



Video





Thank you for attention!

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