



# **Complexity – Is a Safety Management System still manageable?**

**David Cotterell – Director OCIMF.**



## Complexity of the Industry

Complex – Yes and here to stay

- Complexity is embedded in almost every industry – the shipping industry is no different from many others in this respect.
- A gauge of the long term nature of complexity can be the number of academic's and respected institutions who write guidance, training and offer solutions .....



# Harvard Business Review

hbr.org

SEPTEMBER 2011  
REPRINT #1109C

SPOTLIGHT ON MANAGING COMPLEX ORGANIZATIONS

## Learning to With Com

How to make sense of the unpredictable and undefinable in today's hyperconnected business world by Gökçe Sargut and Rita Gunther Mc

THE HUMBLE APPROACH INITIATIVE

A symposium sponsored by the  
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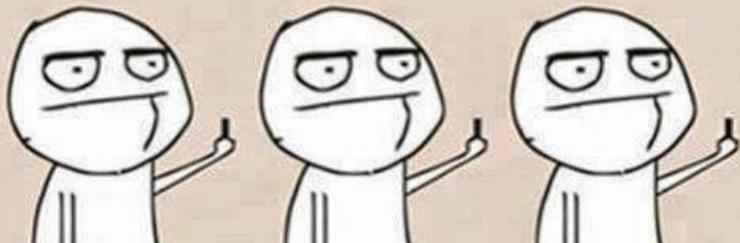
## Is There a General Principle of Increasing Complexity?

BEYOND: Center for Fundamental Concepts in Science  
Arizona State University • 10, 11, and 12 December 2010

Complexity is part of all our working lives

Computer Password Policies

**"Sorry, your password must contain a capital letter, two numbers, a symbol, an inspiring message, a spell, a gang sign, a hieroglyph and the blood of a virgin"**



Is anyone else driven to distraction by the complex rules imposed by companies on access codes and passwords to computers?

I understand the need for tight security but sometimes making over complicated password policies defeats the object by making people write them down as they cannot easily be recalled.

## **So is the SMS still manageable?**

**I would argue that the SMS is entirely valid, a SOLAS requirement, and vital component of good safety management.**

**But to be effective it has to be used and reflect the way of working in the company both on ship and on shore.**

**It has to be a living system**

**It should not be unnecessarily complex.**

**It should be easier to use the system than pretend to use the system**

**In most companies there is a need to have IT based systems, linking ship and shore with all responsible and involved in the marine operations using the same system and seeing the same data.**



# Changing International Regulation

## Politically more Complex

- **Not so many years ago the International Conventions largely addressed very real, safety issues affecting the design and operation of ships.**
- **Today much has changed and many of the conventions are being focused on global phenomena that the world fleet contribute to.**
  - Ballast Water Convention
  - GHG emission and climate change
  - Emissions to Air, Sox, Nox, Particulate Matter and black carbon
  - HNS Convention
  - Bunker Convention
  - Polar Code

Are amongst them.
- **They are very, very complex issues and they have proved very hard to draft and are equally hard to ratify**
- **Personally I have no doubt they will be equally complex when it comes to implementation and compliance.**



# The Oil and Gas Transport Sector is Complex – but also uncertain

Looking to the future .....

- **Global Energy consumption is expected to rise by over 40% by 2035**
- **Primary energy consumption growth is expected to fall from 2.2% today to 1.1% by 2035 with that slow down being initiated in China and India.**
- **In 2035 Oil, Gas and Coal will still be sharing 90% of energy consumption**
- **We are already seeing regional energy imbalance which are likely to cause significant changes in trading and shipping patterns in the same period**
  - North America from a net importer of energy to a net exporter of energy
  - By 2035 Asia is predicted to account for 70% of all net energy imports
  - The Middle East is expected to remain the largest regional net energy exporter
  - Russia will become the largest exporting country
- **In the same period carbon emissions are likely to grow at 1% per annum**
- **This is all set against a back drop of an oil market in sustained backwardation and volatility of oil prices at the lowest level on record.**
- **In hydrocarbon shipping supply exceeds demand and many are building new ships**

# What can OCIMF Members do to reduce Complexity in the Industry?

## Understanding the Background

- Today over 80% of OCIMF members rely to a greater or lesser extent on chartering third party tonnage to carry their oils, gasses and chemicals.
- In order to do this all Charterers carry out risk management and due diligence before chartering a vessel.
- This is unlikely to change whilst:-
  - Charterers carry by far the highest costs if the cargo is spilt
  - Deep pockets and brands attract litigation and compensation claims
  - Even a small incident can tarnish a large brand to the extent that access to future business opportunities are threatened.
- Charterers have choice and will reject ships that are assessed to represent and unacceptable risk



## What Can OCIMF do to reduce complexity?

The forum has always proactively promoted continuous improvement of standards of design and operation.

It also promotes transparency by

- Producing best practice guidance that serves as technical benchmarks and clearly articulate expectations
- Providing our members with standardised systems and setting the expectation they will be used in a standardised way.
- Producing data in a way it can be shared.
- Proactively identify emerging issues in shipping and terminal operations and act to address them either at the regulators table or through best practice

It is not the whole solution of course but it does make a positive contribution.

## Positive Indicators

Subtitle here if needed

- Earlier speakers illustrated the positive trend of falling tanker incidents and falling pollution from tankers, sustained over many years
- The claims lodged with the IOPC funds are at a very low level

But .....

We must not be complacent as not all indicators are good



## Negative Indicators

### An Increasing Trend of Tanker Fires and Explosions

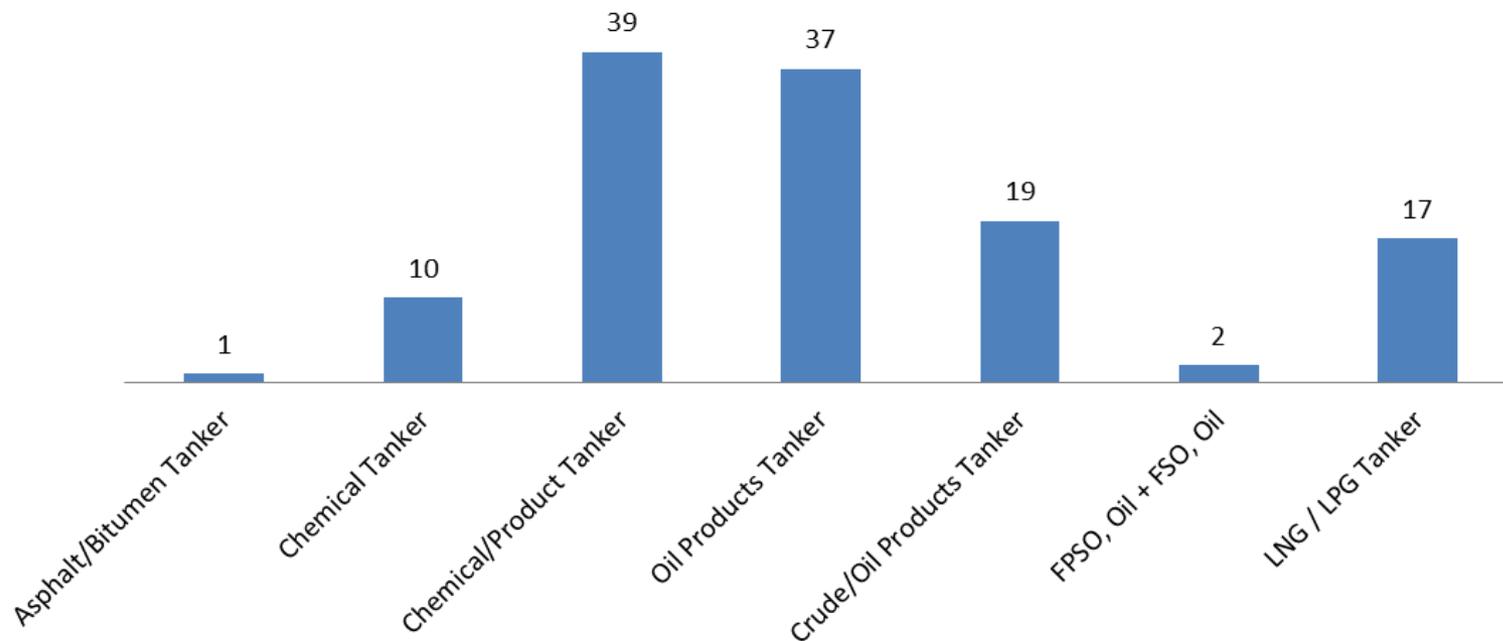
- **OCIMF carried out a study .....** The results were surprising

- Between 2005 and 2012
- The total number of was 129
- The total number of fatalities was 41

- **Between January 2012 and today**

- 5 more tanker explosions – 17 more fatalities.

**Number of 'Fire/explosion' incidents 2005 - 2011**



## A Combination of Factors

Work on this continues with urgency

### Early Indications

- A lack of experience in key positions contributed in many cases
- Technical Complexity. The trend of introducing increasingly complex controls and equipment increases at a faster pace than the growth of competency to use them
- There is an over reliance upon procedures to control complex operations (inherent weakness)
- Checklists for everything – the culture of thinking before acting and understanding the potential consequences is diminishing.



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