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In relentless pursuit of offshore safety:
A Privileged Perspective

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NOPSEMA - National Offshore Petroleum Safety and Environmental Management Authority
Australia’s offshore energy regulator

Society of Petroleum Engineers
Distinguished Lecturer Program
www.spe.org/dl
Outline

• Major offshore safety events remain a global concern
• Quality information is key to risk management
• Offshore safety regulators have industry-wide perspectives on risks – and effective controls
• Examples of risks highlighted and shared
• Opportunities for a safer offshore industry
Re-thinking offshore safety

“If I had an hour to solve a problem I’d spend 55 minutes thinking about the problem and 5 minutes thinking about the solution”
- Albert Einstein

How do we **sustainably** improve offshore safety?
Is offshore safety improving?

**Major Gas Releases**

- 2010: 10
- 2011: 5
- 2012: 10
- 2013: 15
- 2014: 20
- 2015: 25
- 2016: 10
- 2017: 15
- 2018: 20

**Fatalities**

- 2010: 5
- 2011: 10
- 2012: 15
- 2013: 20
- 2014: 25
- 2015: 30
- 2016: 15
- 2017: 10
- 2018: 5


IRF members 2018: Australia, Brazil, Canada, Denmark, Ireland, Mexico, The Netherlands, New Zealand, Norway, UK, USA

How do we change this pattern of offshore safety incidents?
Risk basics

**Risk:** The chance of something happening that will have a negative effect. The level of risk reflects the likelihood and potential consequences.

**Controls:** Measures used to decrease the likelihood and consequences from an unwanted event.

ISO Guide 73: 2009 (Risk Management Vocabulary)
Good information is key

With better information about the **risk** - likelihood and consequence

better information on the **controls** – practicable mitigation measures

**better choices** to reduce risk

Are we working with the **right** information?
Limitations of industry information

• Good sources:

• But there are challenges:
  – incident focus, inconsistent reporting, administration effort, analysis, legal, commercial, reputation

• Limited public information (e.g. compared to the US National Transportation Safety Bureau)

This leads to inputs to help define the problem …..
The offshore safety problem?

- Bad-outcome incidents vs ‘weak signals’
- Personal safety vs process safety
- Data quality and quantity
- Learn faster from other industries?
- Leadership’s role

**Challenge**

Accessing useful data and supporting its application to offshore safety
Introducing **Privileged Perspectives**

- We all look at information in different ways and for various reasons.
- Organisations develop a unique **Privileged Perspective** using qualitative and quantitative analysis.
- Creates a competitive advantage.

Safety insights form part of this **Privileged Perspective**.
Enter an offshore safety regulator

• Legal rights to gain in-depth knowledge of operator safety systems and performance

• Compare to identify good …. and less good Nationally – and globally

• Creates a regulator’s Privileged Perspective

How can this be applied to benefit offshore safety?
Regulatory profile and effectiveness

• Core roles: oversee activities and enforce the law

.... and from a Privileged Perspective:

• Influence operators to best manage their risks, using insights obtained from industry: national & global

So what might an effective offshore safety regulator look like?

Influence - Oversee - Enforce
Australia’s regulatory approach to offshore safety:

Building and applying a Privileged Perspective
Representative of global industry

Around 165 facilities (1967 - 2019):
- World’s largest LNG exporter
- Oil and gas platforms
- FPSOs & Floating LNG
- Semis and JU rigs
- Vessels
- Pipelines

17 million hours in 2018, (46% of 2017 US GoM CoS reported hours)
An approach to global challenges

Past
• Stopping old incidents

Present
• Find One, Fix many

Future
• Respond to evolving trends

Major accident events
Loss of well control
Incident/Spills
Asset Stewardship
Global challenges & local market trends

- Ageing assets and operator change
- Increasing complexity of offshore industry
- Changing workforce and workforce engagement

Common across the international environment
Ageing assets

Sale of late life assets to smaller companies

• capability and financial capacity

Equipment and systems

• maintenance

• decommissioning

• regulatory actions
Increasing complexity

Commissioning challenges
• equipment & installation quality
• contractors and permit to work systems

Community expectations & media scrutiny
• the workforce has a voice
• Freedom of Information disclosures
Changing workforce and engagement

Workforce risks

• loss of experience since 2014
• Covid-19 effects

Valuable contribution

• identifying safety issues
• front-line risk assessment due to their understanding of operations
• early stage procedural development
A Regulator’s Privileged Perspective

A “competitive advantage”

• access to operator information; comparisons
• local issues magnified in a global context

Communication of risks and practical measures

• knowledge of where risks might lie; Big Data?
• opportunities to control risks

Communicate to industry -
The basis of a “Find One, Fix Many” strategy
Applying an offshore regulator’s Privileged Perspective:

Find One
Fix Many

Practical examples developed through international collaboration and sharing
Dynamic Positioning Risks

- Dive vessel dynamic positioning switched off by dropped notebook… undetected by crew
- Diver raised the alarm as he was dragged by umbilical – recovered unharmed
- Isolated incident – or a “weak signal”? 

![Dive vessel and divers](image-url)
Or a big data prevention opportunity?

- Australia Incident
- US Incident
- UK Incident

Industry global data sources covering multiple countries e.g. IMCA

Data searching and sharing

18 years of data

19 Loss of position events
Unintentional button-press
5 with notebook

Global industry is now aware of the risk and opportunities to control the risk
Well testing – international implications

• Untested well test package sent to rig to test HP gas well
• Multiple system failures: an industry-wide problem?
• Held open-door industry workshop; engaged internationally. Improvements underway.
Trends and predictions in wells

- Australian study* of 500+ production wells mapped well barrier failures (1967 – 2018)
- Multiple operators
- International industry risk assessment and response practices shared through workshop

* Inspired by a Norwegian study from 2008
Fragmented well data

500+ wells

Well Barrier Incident Classification (Varies) Reporting to Regulator (Varies)

Fragmented, poor quality feedback
Global opportunity to reduce risks

Global industry

Well Barrier Incident Consistent Classification Consistent reporting

Global platform

Reliable quality data

Focused interpretation

Risk Reduction Opportunities

* ISO 16530-1:2017 Annex Q: Petroleum and natural gas industries — Well integrity — Life cycle governance
Information drives opportunity

Increasing performance

Leveraging:
Global Guidelines, Standards and Big Data

Other industries

Aspiration: Find One, Fix All?

World Class Aspirations

Hearts & Minds
Continual Improvement

International Standards and Regulators
Global databases?

Goal setting
National Standards

Local

National

International

Global

Information reach
Take-aways – Understanding Risks

• Major offshore safety events remain a global concern

• Information is key to risk identification and reduction
  – data analytics reliant on the “right” data
  – “weak signals” can be highly significant

• Opportunities from increased data availability and analysis

• Global issues - international collaboration vital
Take-aways – Pursue risk reduction

• Regulators have a **Privileged Perspective** on safety risks from their ability to access, and compare operator qualitative and quantitative information

• Sharing these **Privileged Perspectives** can help reduce risk

• Industry has a collective interest in data sharing and access to reliable, quality information: global databases?

**Information sharing will reduce offshore safety risk**

**Leadership commitment required to overcome barriers**
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Thank you.... Any questions?

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