Operating in the Post Piper Alpha environment
- An Operator’s Perspective

Ian Grant, Chief Operating Officer, Quadrant Energy Australia Limited
Presentation to the Society for Underwater Technology
13th June 2018
Agenda

- Post Piper Alpha, Summary of Findings
- The Safety Case
- Inherent Safety through Design and Case Study
- Process Safety
- Human Factors and HSE Culture
- The Case for Change, Safety Collaboration in Australia
The Main Cullen findings [1]:

- New legislation requiring safety cases;
- Goal-setting legislation;
- A single regulator;
- Offshore safety reps and safety committees;
- Revision of permits to work;
- Process control;
- Mandatory incident reporting;
- Hydrocarbon inventory;
- Fire and gas detection and emergency shutdown;
- Fire and explosion protection;
- Emergency centres and system;
- Pipeline emergency procedures;
- Evacuation, escape and rescue plans and equipment;
- Standby vessels;
- Command in emergencies;
- Regular drills and Emergency training

106 recommendations:

- 57 overseen by Health and Safety Executive
- 40 executed by Operators
- 8 for the entire industry to progress
- 1 for Standby Ship Owner’s Association

All accepted in the UK

[1] Allen, Becky. Piper Alpha: condolences are not enough
https://www.healthandsafetyatwork.com/piper-alpha-lessons
The Safety Case
- A Key Finding from Lord Cullen

Identifies the hazards and risks, how they are controlled and SMS

Question - Non Prescriptive, why important?
Asset Integrity Management in a Safety Case Regime

- Safety Case is accepted (or not) & compliance routinely audited by regulator
- Identification of Major Accident Events* (MAE)
- Identification of Safety Critical Elements (SCE i.e. barriers)
- Setting of associated SCE Performance Standards (PS i.e. testing & inspection requirements)

Safety Case

SCE Performance Standards

Assurance Plans

Maintenance Management System

Feedback loop to Assurance Plans to ensure actual performance is utilised
Inherent Safety through Design
- Why is Inherent Safety design so important?

• Because we’re human.....

“human factors either caused the incident or made it worse. These human factors included.... confusing procedures,.... insufficient training, ineffective coordination and communication, lack of a reporting and learning culture, confusing low personal injury rates as indicators of process safety performance,.... lack of awareness of risk factors and normalizing signs of danger”

Lord Cullen at IOGP in 2017
“An inherently safer design is one that avoids hazards instead of controlling them, particularly by reducing the amount of hazardous material and the number of hazardous operations in the plant.” [2]

“Good plant layout should provide a healthy, safe environment for operations and maintenance while ensuring commercial risk levels are acceptable.”

– Devil Creek Layout Philosophy

The main design principles included:

- Confinement of leaks or spills
- Automated Safety Systems
- Reduced Inventories
- Less People
- Separation of Hazards
- Provision of Access and Egress
“Process safety is a disciplined framework for managing the integrity of operating systems and processes that handle hazardous substances. It relies on good design principles, engineering and operating and maintenance practices. It deals with the prevention and control of events that have the potential to release hazardous materials and energy.” [4]

Example barriers vs human

[4] International Association of Oil & Gas Producers (IOGP)
• **Leading Metrics**

  • Requires identification and understanding of all barriers
    • Understand demand on the system
    • Understand level of barrier performance
  • Inspection / testing of barriers
  • Monitoring / Auditing to ensure barriers are providing required protection
  • Probing / investigating to ensure barriers aren’t being compromised

• **Leading Metrics require deep understanding of barriers before an incident and review post incidents**

  • Review of barrier requirements so correctly specified / identified
  • Monitored / reviewed barriers have a high likelihood of being effective when called upon
Process Safety Insights

- “You don’t improve what you don’t measure”. [5]
- “A key to prevention is effective Process Safety Management” [A]

My View:

- Industry needs a common language to improve process safety understanding
- Process Safety methodology has yet to fully penetrate the workforce
- We need to stay current with the way we communicate and educate

[A] Chris Flint, HSE UK’s Director of Energy Division at Safer30 Conference, June 2018
Safety Literature Tells Us...

Human Error: 80%
Equipment Failure: 20%

“We all make errors irrespective of how much training and experience we possess or how motivated we are to do it right.”

(Source: HSE HSG48 pg10)

Source: U.S. DOE 2009a (Vol 1; DOE-HDBK-1028-2009)
"Human factors refer to environmental, organisational and job factors, and human and individual characteristics, which influence behaviour at work in a way which can affect health and safety."

<table>
<thead>
<tr>
<th>Five Golden Principles of Human Performance:</th>
<th>[8]</th>
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<tbody>
<tr>
<td>1. People are fallible, and even the best people make mistakes</td>
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<td>2. Error-likely situations are predictable, manageable and preventable</td>
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<td>3. Individual behaviour is influenced by organisational processes and values</td>
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<td>4. People achieve high level of performance because of the encouragement and reinforcement received from leaders, peers and subordinates</td>
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<td>5. Events can be avoided through an understanding of the reasons mistakes occur, and the application of the lessons learned from past events</td>
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Human factors **API RP75** designed to remove the need for human intervention (simplification message) both during operations and when things go wrong.

# Embedding the Culture

**Our HSE Culture**

*it’s what we do that matters*

<table>
<thead>
<tr>
<th>STANDARDS</th>
<th>COMMUNICATION</th>
<th>RISK MANAGEMENT</th>
<th>INVOLVEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers, Directors &amp; Executive Officers</td>
<td>Set high standards</td>
<td>Communicate openly</td>
<td>Confront risk</td>
</tr>
<tr>
<td>Supervisors</td>
<td>Ensure compliance</td>
<td>Encourage the team</td>
<td>Promote risk awareness</td>
</tr>
<tr>
<td>Everyone</td>
<td>Follow rules</td>
<td>Speak up</td>
<td>Be mindful</td>
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</tbody>
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**What is Quadrant’s HSE culture?**

Quadrant’s HSE culture framework describes positive behaviours that support a strong HSE culture. We should all model ourselves against the *Everyone* set of behaviours. People in supervision and management should also model themselves against the *Supervisors* or *Managers, Directors and Executive Officers* behaviours.
• Conference held in Aberdeen 6\textsuperscript{th} to 8\textsuperscript{th} June 2018, organised by OGUK in association with International Regulators Forum

• Learn from the Past
  • Consider the Present
  • Commit to the Future

#Safety30
The Case for Change
– a New Model of Safety Collaboration

Safer Together
Western Australia / Northern Territory
Oil & Gas E&P Industry Safety Forum

Get involved!
for more information > safertogether-wa-nt.com.au

https://vimeo.com/259587886
Closing Points  
- Securing a Safer Future

Please,

• **Keep things simple!** *(procedures, systems etc.)*

• **Promote Effective Process Safety Management**

• **Increase mitigation of Human Factors by:**
  
  • Inherent Safety in design
  
  • Transfer lessons learned and educate the workforce *(linking events to current procedures and systems)*
  
  • Consider the audience and how they learn

• **Sharing Best Practice** *(overseas, other industries, Safer Together etc.)*
“.... individuals will only learn the lessons of previous incidents if the organisations that they belong to understand the need for such individual learning and create the conditions under which the learning can occur. It is organisations that need to foster the kinds of storytelling from which everyone can learn.”

Andrew Hopkins, Disastrous Decisions Book 2012, pp. 121