Australian Offshore Petroleum Industry Safety Regulation

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Introduction to NOPSEMA
NOPSEMA’s coverage

• **Operations**
  – Offshore petroleum operations
  – Offshore greenhouse gas storage operations

• **Scope**
  – Occupational health and safety
  – Structural integrity of facilities and wells
  – Environmental management of petroleum activities
NOPSEMA’s Jurisdiction

Relevant State/NT Minister
or
NOPSEMA where powers conferred
Legislation administered by NOPSEMA

- Schedule 3 to Cth OPGGSA
- OPGGS (Safety) Regulations 2009
- Part 5 of the OPGGS (Resource Management and Administration) Regulations 2011 [Wells regulations]
- OPGGS (Environment) Regulations 2009

Commonwealth Attorney-General’s website: comlaw.gov.au
2011 Activities

**INDUSTRY**
- 35 Operators
- 209 Facilities
- 447 Assessments submitted
- 340 Incidents Notified
- 310 Dangerous Occurrences
- 30 Accidents

**NOPSEMA**
- 48.2 FTE Regulatory Staff
- 23.3 FTE Support staff
- 382 Assessments Notified
- 157 Facilities Inspections
- 0 Major Investigations
- 11 Minor Investigations
- 329 Incident reviews
- 100 Enforcement actions

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Regulatory focus

• Challenging the operator
  – Assessments – rigorous & targeted
  – Inspections – thorough & sampled
  – Incident Investigation - depending on severity
  – Enforcement - verbal / written and prosecutions
  – Provide a level of assurance that facility health, safety, integrity and environmental risks are properly controlled through securing compliance with the OPGGSA
Approach to Decisions

• Independent and Professional

• Respect for “due process”

• Certainty for industry and a reduction in regulatory burden

• Ongoing dialogue
Process safety: Where are we now? (NOPSEMA experience)
Process Safety

“The protection of people and property from episodic and catastrophic incidents that may result from unplanned or unexpected deviations in process conditions”

AIChE/CCPS (1985)
Process Safety Culture Survey

- Based on Baker Report survey
- Perceptions of safety culture
- Uses industry benchmarks
- Confidential
- Small number respondents
  - 9 Operators, 14 reports (from 21 Facilities)
  - results indicative only
### Safety Culture Survey

<table>
<thead>
<tr>
<th>TOPIC Area</th>
<th>No. Operators/Facilities BELOW benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisory Involvement</td>
<td>3</td>
</tr>
<tr>
<td>Worker Professionalism/Empowerment</td>
<td>2</td>
</tr>
<tr>
<td>Reporting</td>
<td>4</td>
</tr>
<tr>
<td>Safety Values/Commitment</td>
<td>3</td>
</tr>
<tr>
<td>Procedures and Equipment</td>
<td>3</td>
</tr>
<tr>
<td>Training</td>
<td>8</td>
</tr>
</tbody>
</table>

\( n = 14 \)
<table>
<thead>
<tr>
<th>Safety Culture Survey TOPIC Area</th>
<th>Areas of concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Values / Commitment</td>
<td>Pressure to work overtime - loyalty to their own work unit</td>
</tr>
<tr>
<td></td>
<td>Process safety programmes don't have adequate funding</td>
</tr>
<tr>
<td>Reporting</td>
<td>Hazard identification, control and reporting training not adequate</td>
</tr>
<tr>
<td>Training</td>
<td>Contractors don't receive adequate training to do their job safely</td>
</tr>
<tr>
<td>Worker Professionalism / Empowerment</td>
<td>Workers don't actively participate in incident investigations</td>
</tr>
</tbody>
</table>
Process safety:
Integral to NOPSEMA's activities
Annual TRC (Total Injuries) Rate

per million hours

TRC = LTI + ADI + MTI
Potential large-scale harm

Hydrocarbon Release Rates
per 100 Production /Drilling Facilities per month

Rate

Total HC Gas Releases
Total HC Liquid Releases

2005 2006 2007 2008 2009 2010 2011

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## Incident Root causes 2011

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED- DESIGN – Design specs</td>
<td>12%</td>
</tr>
<tr>
<td>ED – PREVENTATIVE MAINTENACE</td>
<td>10%</td>
</tr>
<tr>
<td>ED – EQUIPMENT / PARTS DEFECT</td>
<td>8%</td>
</tr>
<tr>
<td>HPD – PROCEDURES</td>
<td>7%</td>
</tr>
</tbody>
</table>
International Comparison

**Gas Release Rates**
(per 100 million BOE)

Conservative estimate based on stable BOE 2010-11

**Injury Rates (ADI+LTI)**
(per million hours)

- **Australia**
- **IRF Countries**
<table>
<thead>
<tr>
<th>Activity Types</th>
<th>2011</th>
<th>2012 YTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessments</td>
<td>451</td>
<td>345</td>
</tr>
<tr>
<td>Inspections</td>
<td>95</td>
<td>52</td>
</tr>
<tr>
<td>Incidents</td>
<td>394</td>
<td>200</td>
</tr>
<tr>
<td>Enforcements</td>
<td>99</td>
<td>55</td>
</tr>
<tr>
<td>No.</td>
<td>Top 5 Assessment Scope Items</td>
<td>No.</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>149</td>
<td>Loss of containment</td>
<td>84</td>
</tr>
<tr>
<td>68</td>
<td>Diving System Failure</td>
<td>79</td>
</tr>
<tr>
<td>57</td>
<td>Emergency Management</td>
<td>77</td>
</tr>
<tr>
<td>42</td>
<td>Loss of well control</td>
<td>66</td>
</tr>
<tr>
<td>41</td>
<td>Vessel collision</td>
<td>56</td>
</tr>
</tbody>
</table>

Data set January 2010 to July 2012
<table>
<thead>
<tr>
<th>No.</th>
<th>Top 5 Inspection Scope Items</th>
<th>No.</th>
<th>Top 5 Recommendation topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>223</td>
<td>Meet with HSRs</td>
<td>580</td>
<td>Loss of containment</td>
</tr>
<tr>
<td>204</td>
<td>Recommendation follow-up</td>
<td>561</td>
<td>Inspect, maintain, Repair</td>
</tr>
<tr>
<td>104</td>
<td>Loss of containment</td>
<td>243</td>
<td>Integrity Management – Onshore</td>
</tr>
<tr>
<td>48</td>
<td>Emergency management</td>
<td>162</td>
<td>Emergency Management</td>
</tr>
<tr>
<td>32</td>
<td>Incident follow-up</td>
<td>134</td>
<td>Housekeeping</td>
</tr>
</tbody>
</table>

Data set January 2010 to July 2012
<table>
<thead>
<tr>
<th>No.</th>
<th>Top 5 Incident types</th>
</tr>
</thead>
<tbody>
<tr>
<td>211</td>
<td>Unplanned event – implement Emergency Response Plan</td>
</tr>
<tr>
<td>209</td>
<td>Damage to safety-critical equipment</td>
</tr>
<tr>
<td>131</td>
<td>Other kind needing immediate investigation</td>
</tr>
<tr>
<td>76</td>
<td>Could have caused incapacitation &gt;= 3 day LTI</td>
</tr>
<tr>
<td>71</td>
<td>Could have cause death or serious injury</td>
</tr>
</tbody>
</table>

Data set January 2010 to July 2012
<table>
<thead>
<tr>
<th>No.</th>
<th>Top 5 Enforcement Types</th>
<th>No.</th>
<th>Top 5 Enforcement topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Improvement Notices</td>
<td>24</td>
<td>Performance standards &amp; auditing</td>
</tr>
<tr>
<td>30</td>
<td>Written Warnings</td>
<td>21</td>
<td>Inspect, Maintain &amp; Repair</td>
</tr>
<tr>
<td>14</td>
<td>Prohibition Notices</td>
<td>16</td>
<td>Safety equipment / measures</td>
</tr>
<tr>
<td>1</td>
<td>Intent to withdraw SC acceptance</td>
<td>14</td>
<td>Electrical</td>
</tr>
<tr>
<td>1</td>
<td>Prosecution Brief</td>
<td>11</td>
<td>Emergency Response / mgt</td>
</tr>
</tbody>
</table>

Data set January 2010 to July 2012
On the horizon:
Assessing Fitness-to-operate
Fitness-to-operate

- Processes and routines
- HR systems
- Information systems

Organisational Capital

Human Capital
- Individual attributes
- Experience
- Skills and expertise
- Safety knowledge and awareness

Social Capital
- Safety Culture
- Teams
- Leadership

Dynamic & Operational Capabilities
Capabilities

**Operational**

**Monitoring:** Knowing what to look for.

**Critical**

**Actual**

**Responding:** Knowing what to do, being capable of doing it.

**Dynamic**

**Anticipating:** Finding out and knowing what to expect.

**Potential**

**Factual**

**Learning:** Knowing what has happened.
On the horizon: Earlier engagement
Inherent safety in design

Window of opportunity

Cost to change

Concept Selected

Concept Evaluation

Conceptual Design

FID

FEED

Detailed Design

Overseas Construction

Field activities

Field Construct & Install

Production

5 October 2012
Questions?