From NOPSA to NOPSEMA

MarineSafe Forum

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NOPSEMA
21 February 2012
Accident history – still learning!
Occidental
Piper Alpha, UK
July 1988
167 fatalities
ONGC
Mumbai High, India
July 2005
22 fatalities
Immediate Cause: Primary cementing integrity failure

Root Cause:
Systemic failure of management systems, non-compliance with operating procedures
BP, Macondo, 2010

Immediate Cause:
Primary cementing integrity failure and BOP

Root Cause:
Systemic failure of management systems, failure to interpret test, no operating procedures
• NOPSEMA’s functions
• Legislative Change
• Health and Safety Regime
• Safety cases
• Activities in connection with vessels
## OPGGSA s646: NOPSEMA’s functions

<table>
<thead>
<tr>
<th>Monitor &amp; Enforce</th>
<th>Investigate</th>
<th>• Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promote</td>
<td>Advise</td>
<td>• Improvement</td>
</tr>
<tr>
<td>Co-operate</td>
<td>Report</td>
<td>• Governance</td>
</tr>
</tbody>
</table>
NOPSEMA’s coverage

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

• **Scope**
  – Occupational health and safety at facilities
  – Structural integrity of facilities and wells
  – Environmental management of petroleum activities
• A ‘General Duties’ regime
• Performance-based, but with prescriptive elements
• An independent Safety and Environmental Management Authority
• A duty holder’s management plan, accepted by government is used as a permissioning document:
  - Safety case, well operations management plan, environment plan are required in order to undertake activities
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
• Offshore petroleum operations:
  – Under the Commonwealth OPGGSA 2006 in Commonwealth waters
  – Conferred on it by the Victorian OPGGSA 2010 in relation to offshore petroleum operations in Victorian designated coastal waters
  – Conferred on it by some other State/Territory PSLAs (Tas & SA) in relation to offshore petroleum operations in the designated coastal waters of that State/Territory
  – Recent changes include removal of health and safety conferral for WA coastal waters
1. OPGGSA

**PETROLEUM ACTS**

2. WA - Petroleum Submerged Lands Act 1982
3. WA - Petroleum & Geothermal Energy Resources Act 1997
4. WA - Petroleum Act 1936
National Regulator Amendments
• NOPSA’s functions (s646) expanded to include environment protection, general administration, and monitoring and enforcement to ensure compliance under the OPGGSA
• Continued in existence as the National Offshore Petroleum Safety and Environmental Authority (NOPSEMA)
• Direction-giving powers under s574 (general) and s586 (remedial) to NOPSEMA and recently passed amendment: significant incident directions under s576B
• Creation of National Offshore Petroleum Titles Administrator (NOPTA) replaced the Designated Authorities in Commonwealth waters
• Joint Authority (JA) retained as decision-maker for petroleum title decisions
• NOPTA is a branch within RET, administer titles and petroleum data and advise the JA
Petroleum Safety Zones – s616

• Purpose: to protect petroleum wells, structures or any equipment in an offshore area by prohibiting vessels or classes of vessel from entering or being present in a specified area (petroleum safety zone) and to ensure the safety of navigation.
• Arrangements are set out in Part 6.6 of the OPGGSA
• The prohibition of vessels from entering or being present in a petroleum safety zone surrounding the petroleum well, structure or equipment, via a notice published in the Gazette by NOPSEMA
• A petroleum safety zone may extend to 500m around the well, structure or equipment
• Petroleum safety zones will be established by NOPSEMA based on assessment of applications by the titleholder or operator for wells, structures or equipment in their title area, or by NOPSEMA directly
• NOPSEMA also assesses applications for:
  – Consent for vessels to enter and be present in a petroleum safety zone; and
  – Authorisation for a vessel to enter and be present in “the area to be avoided” (a large defined area in the Bass Straight detailed in schedule 2 to the OPGGSA)
Petroleum Safety Zones

• Key features of NOPSEMA’s approach to administration include:
  – Only considering safety zones for petroleum wells, structures or items of equipment as provided for in Section 616 of the OPGGSA;
  – Formal processes incorporating decision making criteria and timeframes;
  – A requirement for applicants to demonstrate effective consultation with parties which may be directly impacted;
  – A mechanism for interested parties to be informed of notices being gazetted.
• NOPSEMA does not have a legislated role regarding alleged infringements of petroleum safety zones.
• NOPSEMA provides a reporting template to enable titleholders and facility operators to provide information to “authorised persons” (Australian Federal Police, State or Territory Police, Defence Force, or Customs). This information may assist authorised persons in exercising their powers under Division 5 of Part 6.6 of the OPGGSA.
• Where an alleged infringement of a petroleum safety zone requires the facility emergency response plan to be implemented the operator must notify and report the event to NOPSEMA as a dangerous occurrence in accordance with clause 82 of schedule 3 to the OPGGSA.
## NOPSEMA regime

<table>
<thead>
<tr>
<th>Functions</th>
<th>Safety</th>
<th>Wells</th>
<th>General Administration</th>
<th>Environment</th>
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</thead>
<tbody>
<tr>
<td><strong>Aspects</strong></td>
<td><strong>People at facilities</strong></td>
<td><strong>Well integrity</strong></td>
<td><strong>Titles compliance</strong></td>
<td><strong>Activity</strong></td>
</tr>
<tr>
<td><strong>Scope</strong></td>
<td><strong>Operator</strong></td>
<td><strong>Titleholder</strong></td>
<td><strong>Titleholder</strong></td>
<td><strong>Titleholder</strong></td>
</tr>
<tr>
<td><strong>Dutyholder</strong></td>
<td><strong>Safety Case</strong></td>
<td><strong>WOMP</strong></td>
<td><strong>Title conditions</strong></td>
<td><strong>Environment Plan</strong></td>
</tr>
<tr>
<td><strong>Permissioning document</strong></td>
<td><strong>OHS inspectors</strong></td>
<td><strong>OHS inspectors</strong></td>
<td><strong>Petroleum Project Inspectors</strong></td>
<td><strong>Petroleum Project Inspectors</strong></td>
</tr>
<tr>
<td><strong>Compliance assurance</strong></td>
<td><strong>OHS related entry, seizure, Notices</strong></td>
<td><strong>OHS related entry, seizure, Notices</strong></td>
<td><strong>Entry, Directions, Significant Incident Directions, Safety Zones</strong></td>
<td><strong>Entry Remedial Directions, SID</strong></td>
</tr>
<tr>
<td><strong>Powers</strong></td>
<td><strong>Safety Levy</strong></td>
<td><strong>Well Levy</strong></td>
<td><strong>Reimbursement from NOPTA</strong></td>
<td><strong>Environment Levy</strong></td>
</tr>
<tr>
<td><strong>Money</strong></td>
<td></td>
<td></td>
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</tbody>
</table>
HEALTH AND SAFETY REGIME
What does the regulator do?

Challenge 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

• Respect for “due process”
  - Timely and competent decisions based on criteria set out in the regulations
  - Processes outside the regulatory requirements are not created
  - Requirements and interventions by the regulator are not arbitrary

• Certainty for industry and a reduction in regulatory burden

• Ongoing dialogue

• Independent and Professional
  - Transparent, coherent policies and processes, shared with industry and consistent with the requirements of the regulations, administered by a critical mass of skilled professionals that focus on ensuring dutyholders, and the regulator, comply with their obligations specified in law
2011 Activities

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

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
Schedule 3 to the OPGGSA

1. Facility definition
2. General duties (from employers to Operators)
3. Workplace arrangements (DWGs, HSRs) at a facility
4. OHS inspections
5. Accident and Dangerous Occurrence reporting
Facility – a broad definition

• Facility: as defined by OPGGSA, Schedule 3, Clause 3 and includes:
  – a facility being constructed or installed
  – an associated offshore place

• Associated offshore place:
  – any offshore place near the facility where activities (including diving activities) relating to construction, operation, maintenance or decommissioning of the facility take place
Vessels and structures undertaking activities

- Clause 4: Vessels/structures being used/prepared for use
- Categories of activities:
  - recovery, processing, storage and offloading of petroleum and injection, storage, compression, processing, pre-injection storage, offloading, monitoring of storage of greenhouse gas
    - Includes any wells, associated plant, equipment used, and any pipes, or secondary lines connected to the facility
  - accommodation, drilling or servicing a well, laying pipes, erection/dismantling
  - licensed pipelines
- Ceases when returned to a navigable form or can be towed
Vessels and structures that are not facilities

- Off-take tankers
- Tugboats
- Anchor handlers
- Vessels supplying a facility
- Those excluded by OPGGS (Safety) Regulation 1.6
  - supporting ROVs;
  - supporting diving operations;
  - laying an umbilical or cable;
  - Laying clump weights or rock dumping;
  - Placing support structures; and
  - Undertaking pipe trenching, etc
**Facilities**

<table>
<thead>
<tr>
<th>Facility Group</th>
<th>Based on Current (2011) data *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platforms</td>
<td>58</td>
</tr>
<tr>
<td>FPSOs</td>
<td>14</td>
</tr>
<tr>
<td>MODUs</td>
<td>15</td>
</tr>
<tr>
<td>Vessels</td>
<td>13</td>
</tr>
<tr>
<td>Pipelines</td>
<td>109</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>209</strong></td>
</tr>
</tbody>
</table>

* Numbers fluctuate slightly as facilities enter and leave the regime e.g. mobile facilities and inactive facilities
Clause 9 (1) of Schedule 3

- the operator of a facility must take all reasonably practicable steps to ensure that:
  - the facility is safe and without risk to the health of any person at or near the facility
  - all work and other activities are carried out in a safe manner and without risk to the health of any person at or near the facility
Activities in connection with vessels

Supply Vessel/AHT related activities at a facility may include: loading and unloading, bunkering, personnel transfer, preparations for towing and anchor handling.

The facility operator has a duty to take all reasonably practicable steps to ensure that these activities are conducted safely. Clause 9 (1) of Schedule 3

The facility safety case must provide for the activities in connection with vessels. OPGGS(S) Regulation 2.22
What is a safety case?
• Facility (including licensed pipelines) must have a registered operator

• A safety case must be in force (accepted by NOPSEMA) to conduct activities

• Work at a facility must not be contrary to the safety case in force for the facility
Operators of offshore facilities make a ‘case for safety’ which includes:

- facility description
- detailed description of Formal Safety Assessment
- detailed description of Safety Management System

Operators must demonstrate that they have taken all the steps necessary to reduce risks ALARP
Most vessels do not “handle or process hydrocarbons” however the operators of these facilities often propose to conduct activities that may present a hydrocarbon hazard to people at or near the vessel

- working close to a petroleum facility
- servicing a well (well intervention)
- work on an existing pipe
Hydrocarbon hazards – vessels

• A vessel may cause a hydrocarbon release due to vessel impact e.g. drive-off, loss of DP

• Manoeuvring the vessel away can pose risk – parts of vessel can be a potential ignition source to a hydrocarbon vapour cloud
  – Montara
  – Macondo (engine air intakes)
  – Mumbai Hai North
Vessels that are facilities
Lifeboats – Capacity and Redundancy

- It is generally considered good practice for a vessel facility operator to provide lifeboats with an appropriate level of redundancy for 100% of the personnel on board (POB).

- Where there are credible events, e.g. loss of stability, fire, etc which could lead to lifeboats being inaccessible or unable to be launched, good practice is provision of 100% POB capacity on each side of the vessel.
Vessels that are facilities –  
Is compliance with Class ALARP?

• Compliance with Class requirements often forms part of a safety case, but rarely fully addresses all of the hazards associated with working in a hydrocarbon hazard environment

• It should not be assumed that risk control measures which may be considered suitable for a vessel will necessarily meet the ALARP requirements under the OPGGSA and associated regulations for a facility
Activities in connection with vessels
The safety case must describe a system that ensures, as far as reasonably practicable, the safe performance of vessel operations. This includes supply vessels, off loading tankers & construction/DSV.

The system for vessel operations must be described in the facility’s SMS and meet the emergency response requirements of the FSA.

Equipment and procedures for ensuring safe vessel operations must be fit for purpose.
Standards and the NWEA Guidelines

- Standards applied must be listed in the safety case [OPGGS(S) 2.7] and the operator must comply with these standards [OPGGS(S) 2.45]

- The **NWEA Guidelines** are standards of performance that have been developed to reduce risks during offshore supply or rig move operations

- In adopting these guidelines, or an equivalent, the facility operator will assure itself of the desired outcome - safe offshore support vessel operations
• Facility operators must ensure that a support vessel’s safety management system adopts arrangements that enable safe interaction with the offshore petroleum facility.
Vessel activities

Some findings from investigations in 2011:

• The supply vessel used was inadequate for the purpose of offshore material transfers
• No systems for auditing of support vessels
• Inadequate risk controls for visiting crew vessels that approach unmanned production facilities.
• Alternate methods of personnel transfer not considered; personnel basket transfers poorly planned.
• FPSO Terminal procedures not communicated to the off take support vessel master.
• Facility (vessel) incidents are reported by the operator:
  – An incident on a ‘vessel that is a facility’
    • e.g. pipelay barges, accommodation vessels, construction vessels etc.. doing petroleum work as defined in the legislation.
  – An incident at or near a facility where another vessel was involved
    • e.g. supply vessels, AHT etc... not doing petroleum work as defined in the legislation.
## Incidents reported by vessels that are facilities
### 2010 and 2011

<table>
<thead>
<tr>
<th>Incident Type (from vessels in jurisdiction only)</th>
<th>Multi Service Vessel Facility</th>
<th>Pipelay/Accom/Construction Vessel</th>
<th>Production Platform with no drilling</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collision marine vessel and facility</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Could have caused Death or Serious Injury</td>
<td>1</td>
<td>8</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Could have caused incapacitation &gt;= 3 days LTI</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Damage to Safety-Critical Equipment</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Death or Serious Injury</td>
<td>1</td>
<td>3</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Fire or Explosion</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Incapacitation &gt;= 3 days LTI</td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Other kind needing Immediate Investigation</td>
<td>1</td>
<td>2</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Unplanned Event - Implement Emergency Response Plan</td>
<td>1</td>
<td>4</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6</strong></td>
<td><strong>42</strong></td>
<td><strong>1</strong></td>
<td><strong>49</strong></td>
</tr>
</tbody>
</table>

**Injuries and potential injuries** are the most commonly reported incidents on vessels that are facilities, at 27% and 39% respectively.

Further subtyping of these incidents reveals:

- 11% involved lifting operations
- 8% were electrical in nature
- 7% included dropped objects
Incident Root causes of vessels that are facilities incidents

<table>
<thead>
<tr>
<th>Vessel Facility Incidents - Root Causes</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPD - TRAINING</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>HPD - PROCEDURES</td>
<td>9%</td>
<td>11%</td>
</tr>
<tr>
<td>ED - DESIGN</td>
<td>6%</td>
<td>9%</td>
</tr>
<tr>
<td>HPD - WORK DIRECTION</td>
<td></td>
<td>6%</td>
</tr>
<tr>
<td>HPD - HUMAN ENGINEERING</td>
<td></td>
<td>6%</td>
</tr>
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</table>
### Incidents involving other vessels 2005-2011

#### Other Vessel Types involved in incident

<table>
<thead>
<tr>
<th>Incident Type</th>
<th>AHSTV</th>
<th>Fishing</th>
<th>Seismic</th>
<th>Supply</th>
<th>Support</th>
<th>Tanker</th>
<th>Unknow</th>
<th>Workboats</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collision marine vessel and facility</td>
<td>3</td>
<td>21</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Could have caused Death or Serious Injury</td>
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<td></td>
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<td>3</td>
</tr>
<tr>
<td>Could have caused incapacitation &gt;= 3 days LTI</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Damage to Safety-Critical Equipment</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
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<tr>
<td>Fire or Explosion</td>
<td>3</td>
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<td></td>
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<td></td>
<td>3</td>
</tr>
<tr>
<td>Incapacitation &gt;= 3 days LTI</td>
<td>3</td>
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<td></td>
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<tr>
<td>Other kind needing Immediate Investigation</td>
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<td>1</td>
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<td></td>
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<td>6</td>
</tr>
<tr>
<td>Uncontrolled HC release &gt;1 - 300 kg</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
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<tr>
<td>Uncontrolled HC release &gt;300 kg</td>
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<td>1</td>
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<tr>
<td>Unplanned Event - Implement Emergency Response Plan</td>
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<td>Complaint</td>
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<tr>
<td>Not reportable incidents</td>
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<td>3</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>2</td>
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<td><strong>Total</strong></td>
<td>15</td>
<td>3</td>
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<td>33</td>
<td>25</td>
<td>3</td>
<td>8</td>
<td>4</td>
<td>91</td>
</tr>
</tbody>
</table>

**% Total**: 16% AHSTV, 3% Fishing, 0% Seismic, 36% Supply, 27% Support, 3% Tanker, 9% Unknow, 4% Workboats, 100% Total

Further subtyping of these incidents reveals:

- 13% involved lifting operations
- 11% involved mooring / anchor-handling activities
# Root causes of incidents involving other vessels

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th></th>
<th>2011</th>
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</tr>
</thead>
<tbody>
<tr>
<td>HPD - COMMS</td>
<td>11%</td>
<td></td>
<td>HPD - WORK DIRECTION</td>
<td>12%</td>
</tr>
<tr>
<td>HPD - MGMT SYS</td>
<td>7%</td>
<td></td>
<td>HPD - MGMT SYS</td>
<td>12%</td>
</tr>
<tr>
<td>ED - DESIGN</td>
<td>7%</td>
<td></td>
<td>ED - DESIGN</td>
<td>6%</td>
</tr>
<tr>
<td>HPD - PROCEDURES</td>
<td>7%</td>
<td></td>
<td>HPD - PROCEDURES</td>
<td>6%</td>
</tr>
<tr>
<td>Other</td>
<td>7%</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Accidents are still occurring...

Shell announces worst oil spill in a decade. Up to 40,000 barrels of crude oil was spilled on Wednesday while it was transferred from a floating oil platform to a tanker 75 miles off the coast of the Niger delta....

22 Dec 2011
The Bonga field. Spill ~ 70 km long.

17 Jan 2012
The KS Endeavor jack-up rig on fire at the Funiwa field in Nigeria. 2 people missing. Photograph: Chevron
THANK YOU