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the **REGULATOR**

National Offshore Petroleum Safety and Environmental Management Authority



NOPSEMA
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ABOUT NOPSEMA

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) is Australia's independent expert regulator for health and safety, environmental management and structural and well integrity for offshore petroleum facilities and activities in Commonwealth waters.

By law, offshore petroleum activities cannot commence before NOPSEMA has assessed and accepted detailed risk management plans that document and demonstrate how an organisation will manage the risks to health and safety to as low as reasonably practicable (ALARP) and the risk to the environment to ALARP and with acceptable environmental impacts.

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FEEDBACK

NOPSEMA welcomes feedback from our stakeholders. Please direct all enquiries about this publication to communications@nopsema.gov.au.

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Message from the Chief Executive

Over the course of the year, NOPSEMA continued to focus regulatory activities on four key strategic compliance improvement areas including preventing major accident events, preventing and managing a loss of well control, improving incident response and spill source control and improving oil spill response arrangements. Each of these focus areas were explored through three lenses: past (preventing old accidents), present (find one, fix many) and future (emerging trends). By analysing past incidents and high potential events, learning can be applied to our assessments and inspections to prevent past incidents from re-occurring. Through the 'find one fix many approach' learnings from current incidents and examples of best practice can be shared to influence behavioural change within the industry in support of improved health, safety and environmental management outcomes.



An example of where NOPSEMA has sought to drive improvements is through participation in the Oil Spill Cooperative Forum where representatives from industry and government are working together to progress cooperative risk management solutions in oil spill preparedness and response, other examples include NOPSEMA's leadership of a work program on the tolerance of dynamic positioning (DP) systems on human error and study into well integrity issues in Australia's offshore industry. NOPSEMA has also held workshops to share insights and facilitate the exchange of knowledge on these and other issues to encourage continuous improvement in industry safety, well integrity and environmental performance. In terms of looking at future trends, NOPSEMA is working closely with the Department of Industry, Innovation and Science and the National Offshore Petroleum Titles Administrator on developing guidance for a framework on late life assets. NOPSEMA has also contributed to an issues paper to explore legislative and policy solutions for the management of decommissioning offshore petroleum infrastructure in Commonwealth waters. There will be many opportunities in the coming year to exchange perspectives and assess performance and NOPSEMA looks forward to continuing this constructive exchange with its stakeholders.

We never take our licence to regulate for granted and appreciate that in order to be a successful regulator we must continue to build strong and meaningful relationships with our stakeholders. During 2017-18, we conducted over 770 meetings with representatives from the offshore industry, state, federal and international government agencies, non-government organisations, unions and affiliates and members of the community. NOPSEMA continues to strengthen its relationship with the offshore workforce and has increased its external engagement activities to foster more constructive dialogue on issues affecting the offshore petroleum regime.

Throughout 2018 we continued to progress transparency initiatives including the establishment of NOPSEMA's Community and Environment Reference Group. Following expressions of interest, eight members were appointed to the group from varying backgrounds including commercial and recreational fishing, conservation and advocacy, small business and tourism, and more. The group provides NOPSEMA with their perspectives on the regulation of offshore petroleum environmental management. Consultation on petroleum activities and management of longer-term, cumulative environmental impacts have already been noted by the group as areas of interest.

In reflecting on the past year, I also wish to acknowledge the support of our Ministers and their staff, the NOPSEMA Advisory Board, the professional and diligent efforts of NOPSEMA's staff and the considerable efforts of industry, the workforce and the community to ensure sound safety, well integrity and environmental outcomes. I am proud of our achievements to date and committed to ensuring that NOPSEMA continues to be well placed to respond to future challenges. I wish everyone a Merry Christmas and a happy and safe New Year.

A handwritten signature in black ink, appearing to read 'Stuart Smith'.

Stuart Smith, CEO

Improving cooperation between the seismic and seafood industries

NOPSEMA has been encouraging and supporting a range of initiatives with stakeholders to promote greater cooperation and constructive relationships between the seafood and seismic industries. Tension between seismic proponents and relevant seafood industry associations and fishing groups has been increasing. While attention is often directed at the regulatory process as the cause, it is important to recognise that without good relationships or proper consideration of genuine issues of substance or fact, it is unlikely that differences between the industries can be appropriately addressed by the petroleum regulator and regulations alone.

As part of our engagement with international petroleum environment regulators, NOPSEMA has been exploring the underlying causes of issues between the seismic and seafood industries. This engagement has shown that equal attention needs to be given to relationships, process and substance for issues to be truly addressed and resolved.

Constructive relationships are well recognised as being built on trust, honesty and respect. These aspects are not something that can be readily regulated, however NOPSEMA recognises the importance of maintaining positive working relationships with stakeholders including the ability to discuss issues in a productive manner.

Differences and misunderstandings can arise during consultation between the two industries and can often undermine efforts to build relationships. A vital step in building relationships is developing a common understanding of the differences between the nature, regulation, culture, terminology and history of the two industries. It is important to recognise that both industries have been given rights to exploit natural resources and neither industry has priority usage when operating in the marine environment.

In order for consultation to be effective, consultation processes need to be targeted, fair for all and conducted in a transparent manner. Unlike many other environmental approvals regimes, the Environment Regulations detail specific expectations regarding consultation processes that must be met by oil and gas companies before submitting an environment plan to NOPSEMA for approval.

A range of improvements are also currently being progressed to enhance consultation practices, processes and outcomes including introducing a mandated consultation method to ensure a consistent approach to consultation. In addition, the Department of Industry, Innovation and Science are also progressing amendments to the regulations to increase transparency and introduce a public comment period for environment plans for seismic and exploratory drilling activity.

NOPSEMA believes there is also an opportunity for the seismic and seafood industries to proactively share and exchange information about future activities via collaborative forums rather than during consultation activities specific to an individual environment plan. This cooperation would provide a more constructive means for addressing issues and the competing needs of the industries.

Different views or interpretation of facts during consultation have the potential to create conflict, in particular if differences remain unresolved. While seismic surveys are managed and regulated in a way that prevents unacceptable impacts and reduces impacts to levels that are as low as reasonably practicable, there are effects from seismic surveys that result in physiological or behavioural harm to some parts of the marine environment. These impacts should be recognised during consultation processes with an objective of attaining a common understanding of how these impacts may be mitigated.

NOPSEMA encourages all parties engaged in consultation to recognise the importance of having a common understanding and knowledge of the facts and evidence relevant to environment plans. Through engagement with the two industries NOPSEMA has identified a number of common issues that can impact negatively on the consultation process. These include a failure to recognise that perception of impact or risk differs depending on the party, a failure to ensure that all relevant science and research is applied in the impact evaluation studies that support consultation and environmental approvals and, a failure to apply the precautionary principle where appropriate to treat gaps in knowledge by either conducting further study or by applying additional controls to reduce the risk of unacceptable impacts.

In addition to setting standardised consultation processes required under the regulations, NOPSEMA is promoting a range of initiatives that are seeking to improve cooperation between the seismic and fishing industries including the promotion of regional forums to identify and proactively resolve issues, cooperative environment plans for seismic surveys and identification of research priorities for consideration by research funders.

A series of regional forums on seismic and seafood industry cooperation are planned by the respective industry representative bodies. The first of these forums was recently held in Victoria and demonstrated the value of more in-depth examination of issues experienced by both sectors. Interested parties can contact Seafood Industry Australia at jane@seafoodindustryaustralia.com.au or the Australian Petroleum Production Exploration Association (APPEA) at kknudsen@appea.com.au for more information on future forum dates and locations.

A cooperative approach to developing an environment plan for seismic survey activity offers a way to address many of the issues between the seismic and seafood industries. Working together, companies will be able to apply greater resources and better account for all relevant facts and evidence to support demonstrating the environmental acceptability of seismic surveys. National Energy Resources Australia (NERA) is progressing a pilot for regional seismic survey environment plans, starting with the Browse Basin, offshore of the Kimberley region. This approach should also significantly improve the efficiency of consultation for relevant persons. Stakeholders interested in this initiative should contact NERA at matt.smith@nera.org.au.

NOPSEMA has identified priorities for further research which could assist in addressing issues with seismic, such as increasing the understanding and management of seismic impacts on fisheries and the environment. For more information see Environmental management priorities in [Issue 3: 2018 of the Regulator](#). Further research could be considered as study proposals to support good standing agreements as they will support improved access for exploration to geological basins. NOPSEMA encourages titleholders to engage with both NOPSEMA and fisheries stakeholders to ensure that other issues are understood before scoping and progressing research projects. For more information on study scopes contact NOPSEMA at environment@nopsema.gov.au.

NOPSEMA believes that each of these initiatives will assist in creating a more constructive coexistence between the industries and encourages all parties to contribute and recognise their own individual responsibilities in sharing the ocean.

NOPSEMA participates in industry and fisheries regional forum

NOPSEMA was pleased to participate in a regional forum supported by Seafood Industry Australia and the Australian Petroleum Production and Exploration Association (APPEA) in November, held to improve cooperation between the petroleum exploration industry and commercial fishers off Victoria and Tasmania.

The forum was attended by the Assistant Minister for Agriculture and Water Resources, Senator the Hon Richard Colbeck, government policy makers and regulators, as well as a large number of representatives of both industries, with the aim to share information, raise awareness of issues and identify cooperative solutions to improve the way the industries share the Commonwealth marine area.

National Energy Resources Australia (NERA) facilitated the forum which identified a number of areas for further development and consideration by the groups. This includes the consideration of further regional forums in other areas, consideration of consultation approaches and approaches to science and risk.

Tension between these two industries has been apparent and increasing over the last few years, reflected in lengthy and complex consultation processes during development of environment plans, complaints during seismic surveys and even enforcement action by NOPSEMA. While improvements in process for environment plans and consultation will assist in addressing issues, improving the relationship between both industries is also a key ingredient necessary to resolving these conflicts, see the [Cooperation between the seismic and seafood industries article on page 5](#). NOPSEMA is a willing contributor to these shared industry and government solutions that will reduce burden, improve outcomes and increase certainty for both industries. For further information on the workshop please contact kknudsen@appea.com.au.



Contingency measures for subsea drilling operations

Preventing the escape of petroleum is paramount and continues to be of the utmost importance for the oil and gas industry and NOPSEMA. Following well blowout incidents such as *Macondo*, community and stakeholder interest in offshore petroleum activities, incident prevention and contingency measures for drilling operations has increased including discussion and debate regarding the use of blowout preventers and capping stacks. The following information seeks to clarify the differences between the role of blowout preventers and capping stacks.

What is a blowout?

A blowout is a very rare event that occurs when all of the means to control the well have failed resulting in an uncontrolled and unintended release of hydrocarbons from the well.

How is this pressure controlled?

When drilling for oil and gas the wellbore opens up the naturally confined spaces where the hydrocarbons are located and creates a potential pathway for them to migrate to the surface. Maintaining control of the well is an integral part of all well drilling operations. The principle means of maintaining control of well pressure is to take advantage of the hydrostatic pressure provided by the drilling mud. Drilling mud is a mixture of fluids and solids which is used downhole in the drilling process. The weight and friction of the drilling mud in the well provides equalising pressure in the well as drilling proceeds. Where there is a balance between the hydrostatic pressure of the drilling mud and the formation pressure in the surrounding rocks sand and shale, no oil and gas will be able to enter the well. If, however, the well's hydrostatic pressure falls below the formation pressure a 'kick' can occur; this is when formation fluids (including gas, oil, and water) enter the well. This initial influx, if allowed to escalate, would then result in a blowout if it were not for the blowout preventer.

What is a blowout preventer?

A blowout preventer (BOP) is an assembly of specialised safety valves put in place in the early stages of drilling (before drilling into any reservoir zones) to be used in the case of an emergency to control well pressure and prevent a blowout. It is installed between the wellhead system and the drill floor. On floating offshore drill rigs the BOP is placed on the well at the sea bed. Once installed, all further drilling is conducted through the BOP.

In an emergency the BOP can be operated by a variety of means including through the use of a remotely operated vehicle (ROV). When activated, the powerful hydraulic ram and annular preventers inside the BOP can cut through drill pipe, seal, control and monitor oil and gas wells to prevent blowouts. There can be between six to eight individual blow out preventers installed in a single assembly to make up the BOP.



Example of a capping stack. Rapidcap has been reproduced with permission from Halliburton Boots and Coots.

BOPs were first developed for oil and gas drilling in the 1920s and have been subject to continuous improvement ever since; this was accelerated following the *Macondo* incident in the Gulf of Mexico in 2010. Since BOPs are critically important to the safety of the crew, the rig and the well itself there are now more stringent industry standards as well as regulatory oversight for the operation and maintenance of BOPs.

Can a blowout preventer fail?

While failure of BOPs is very rare the blowout of the *Deepwater Horizon* drilling rig is an example of where a BOP was installed and failed to contain the escape of petroleum. Since this incident the design and use of BOPs has received increased oversight from industry and regulators around the world. There are now more stringent industry standards for design operations and maintenance of BOPs, as well as greater regulatory oversight of equipment and processes. Advancements in testing and maintenance of BOPs have made drilling for oil and gas safer.

International standards for BOPs require that in the event one component of the BOP fails, the failure will not affect the overall ability of the BOP to shut in a well. Subsea BOPs have a system that, when armed, automatically 'shuts-in' the well in the event of a total loss of hydraulic supply. These are some examples of the updated measures that increase the reliability of BOPs for offshore drilling activities.



Example of a blowout preventer

The potential use of capping stacks if the BOP fails

In the unlikely event that the BOP fails to prevent a blowout, a further response option available for drilling operations is the use of a capping stack. Where the BOP is located on the seafloor and is in sufficiently deep water, a subsea capping stack can be lowered onto the BOP or wellhead. Once the capping stack is firmly installed over the existing BOP or wellhead, the flow of hydrocarbons will be diverted through the capping stack and valves will be slowly shut in order to contain the flow of oil. In the best case, the capping stack can close off or 'shut in' the well entirely, to stop the release of oil while a relief well is drilled at a safe distance to intercept and 'kill' the well from below as was the case during the *Macondo* incident. Capping stack systems may also be used to reduce and potentially redirect flow.

What is NOPSEMA's role?

NOPSEMA has functions and powers conferred on it under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGs Act) and relevant regulations and provides regulatory oversight on safety, well integrity and environmental management matters. Prior to any drilling activity occurring in Australian Commonwealth waters, oil and gas companies must submit a safety case for the facility, a well operations management plan and an environment plan to NOPSEMA for approval.

What is the difference between a subsea blowout preventer and a capping stack?

Similarities:

- Both blowout preventers (BOPs) and capping stacks contain valve sets that can 'shut in' a well.
- Both BOPs and capping stacks can be hydraulically powered and operated remotely for example by a remotely operated underwater vehicle
- Both BOPs and capping stacks can be used offshore and onshore.

Differences:

- BOP's are very large pieces of equipment and can be up to five storeys high and weigh up to 400 tonnes. Capping stacks are smaller with less valves allowing for easier transport and can range from 80-180 tonnes.
- BOPs are used to prevent blowouts; they are to be closed when formation fluids begin to flow into the well. BOPs can cut through pipe. Capping stacks are used to respond to flowing blowouts; they are not used to prevent them. Capping stacks cannot cut through pipe but can be operated on flowing wells.
- A BOP is a standard piece of drilling safety equipment that is used on all wells. Every offshore drilling rig carries one or more on board when it is deployed to start a new drilling operation. The term capping stack is used to describe additional blow out control capabilities contained within a highly specialised piece of emergency response equipment that is only brought to site once a blowout has occurred. There are 15-20 capping stacks available worldwide strategically positioned to service the oil and gas industry.
- Subsea capping stacks cannot be used in shallow waters or on fixed platforms where the wellhead is at or above the sea surface because there is no physical way of safely manoeuvring the capping stack onto the wellhead.
- Capping stacks can be partially closed, for example, if the blowout pressure is too high for surviving well infrastructure or surrounding formation geology.
- Capping stacks can be used to divert the flow of oil rather than simply shutting the flow of oil off. This requires associated processing and safety equipment to receive, process, and store recovered oil.

Complying with Financial Assurance requirements

The Australian Petroleum Production and Exploration Association (APPEA) has recently updated its Method for Estimating Levels of Financial Assurance. The revised method has been independently validated by Lloyd's Register and has also been submitted to NOPSEMA for consideration as an acceptable means of demonstrating financial assurance as a pre-condition to acceptance of an environment plan.

NOPSEMA has clarified transitional arrangements for titleholders to implement internal processes to ensure they continue to maintain sufficient financial assurance to meet obligations under the OPGGS Act. Further information is available at nopsema.gov.au/environmental-management/assessment-process/environment-plans/financial-assurance.

Parks Australia launches interactive Science Atlas

Parks Australia recently launched the Australian Marine Parks Science Atlas. This specialised online platform was developed in collaboration with the Australian Institute of Marine Science and features interactive maps, videos, images and literature on our 58 Australian Marine Parks. Lying in Commonwealth (offshore) waters, these marine parks form the world's largest representative network of marine protected areas.

The Science Atlas is designed to communicate information to interested stakeholders about the science underpinning the development of the marine parks, as well as providing information about new and ongoing scientific research. It also provides spatial information about the natural values of each marine park, such as biologically important areas and key ecological features.

The platform will continue to be updated as further scientific research and new datasets are made available. Parks Australia invites current and prospective researchers to contribute their work to the Science Atlas, noting research is allowed in all Australian Marine Parks with appropriate authorisation. For more information or to access the Science Atlas visit atlas.parksaustralia.gov.au.





Improvement in vessel design in a hydrocarbon environment

Since 2009, NOPSEMA has progressively increased its assessment focus on how vessel facilities address external hydrocarbon hazards in their safety cases. While there have been some noticeable improvements in safety cases over time, there remains a range of areas that continue to form the basis for NOPSEMA either requesting further information or rejecting safety cases.

In 2017, NOPSEMA published a guidance note on vessel facilities subject to external hydrocarbon hazards (GN1733). This guidance note was developed to assist vessel facility operators to effectively document in their safety cases how they will address external hydrocarbon hazards and reduce the associated risks to a level that is ALARP. To read the guidance note visit: nopsema.gov.au/safety/safety-resources/.

Recently, NOPSEMA inspected a vessel facility that had incorporated a 'new design' approach for maintaining propulsion and power to critical saturation diving systems in the event the facility needs to isolate all other propulsion and generation systems.

During the inspection, NOPSEMA inspectors observed that the facility is arranged with an auxiliary combustion air supply, which provides a self-contained compressed air source to the auxiliary generator combustion air intake. This design enables continued operation of selected propulsion systems and power to critical saturation diving systems if all other propulsion and generation systems are isolated.

The system has sufficient capacity to operate the auxiliary generator at full output to drive a thruster, while providing critical dive support systems, so that the facility can depart the immediate area in the event of a hydrocarbon risk.

NOPSEMA reminds vessel facility operators that any external hydrocarbon hazards associated with undertaking activities in close proximity to production facilities (which includes any associated wells, plant and equipment and pipes) must be identified, assessed and with necessary controls established to demonstrate risks are reduced to a level that is ALARP.

Opportunities for improvement in well integrity management

NOPSEMA recently identified an opportunity for greater collaboration and information sharing among international oil and gas companies on the management of well integrity during the production phase. With a view to facilitating the exchange of knowledge, NOPSEMA led a study on well integrity issues in Australia's offshore industry, and convened an industry workshop to share insights.

The workshop was supported by the Australian Petroleum Production and Exploration Association's Drilling Industry Steering Committee (APPEA DISC) and was attended by 50 industry specialists representing Australian and international oil and gas companies.

At the workshop NOPSEMA presented key observations from its study, including the key finding that the most common well integrity issues were concerned with barrier failures relating to tubing, subsurface safety valves, casing and Christmas tree equipment. Three companies then presented their respective well integrity management systems to provide examples of the systems currently in use in industry as a catalyst for discussion in the workshop.

NOPSEMA highlighted the importance of having robust risk assessment processes in place to manage well integrity issues. An example of a good approach is a well failure model that identifies potential well failure modes with pre-determined action plans and response periods (ISO 16530). Further, well integrity issues should be reduced through measures such as proper well design and construction, technological advancements and early detection of well barrier anomalies.

International standards for well integrity state that wells should have at least two barriers against unintentional flow along any potential leak path, where practicable. The primary well barrier is the first chain of well barrier elements (such as tubing and production packer as a primary barrier to the reservoir), and the secondary barrier (such as production casing) prevents further unintentional flow in the event of a leak through the primary barrier.

Workshop participants identified the need for common terminology, performance indicators and reporting categories to be applied by industry. A similar shortcoming in reporting was previously identified by the APPEA DISC leading to the establishment of a Process Safety Workgroup which was charged with developing process safety reporting recommendations for wells. As part of this remit, the workgroup reviewed the well-related aspects of the Stand Together For Safety document 'Process Safety Who's Responsible – A Good Practice Guide – 2016', which will be updated in 2019 to incorporate findings from the review.

Participants also noted the importance of sharing knowledge about well integrity issues, including near-misses. This knowledge sharing enables titleholders to make more informed and consistent judgements of what is an acceptable level of risk. If organisations wish to remain anonymous, NOPSEMA will facilitate the sharing of lessons learnt through this publication. NOPSEMA intends to hold future industry workshops related to other phases of the well life cycle. To stay up-to-date, subscribe to well integrity news and the Regulator at nopsema.gov.au/subscribe.

Ensuring representation for short-term members of the workforce

The *Offshore Petroleum and Greenhouse Gas Storage Act 2006* provides for workplace arrangements including the establishment of designated work groups (DWGs), selection of health and safety representatives (HSRs), and establishment of health and safety committees. Once established, such arrangements are an effective means to ensure continued workforce involvement in health and safety matters, particularly for ‘core crew’ members who attend the facility as part of a regular roster.

However, established ongoing arrangements may not provide representation for short-term members of the workforce, such as those engaged for specific or specialised work campaigns. Examples of such campaigns include well interventions, campaign maintenance, emergency maintenance, project work, inspection and testing campaigns, for example rope-access work and shutdowns.

In establishing DWGs, the operator must ensure so far as is practicable that each member of the workforce is in a DWG, that the DWGs are established in a way that best and most conveniently enables their members interests to be represented and safeguarded and, that the HSR for each DWG will be accessible to each member of that DWG.

Given these requirements, facility operators should consider how best to ensure representation for short-term members of the workforce and plan for this in advance of mobilisation. The approach taken may vary depending on the nature of the work being carried out, and the configuration of different work groups.

If individuals are allocated to existing work groups, then informing them of their DWG and HSR may be sufficient. However, if specialist crew are being mobilised from a particular supplier or contractor, then it may be more appropriate that the specialist crew are established as a separate DWG. With sufficient forward planning, such a crew could mobilise to the facility with their HSR already selected and trained. This would streamline the process and ensure that all members of the workforce are appropriately represented through an accessible HSR.



Engaging with HSRs during environmental management and well integrity inspections

NOPSEMA inspectors visit offshore petroleum facilities and activities to monitor compliance with health and safety, environmental management and well integrity requirements. NOPSEMA inspectors are either dedicated health and safety specialists, environmental management specialists or well integrity specialists. While all NOPSEMA inspectors have access to the same powers, the type of inspections a NOPSEMA inspector conducts align with their area of speciality. For example, a NOPSEMA inspector who is a health and safety specialist will conduct health and safety focused inspections.

NOPSEMA inspectors always engage with Health and Safety Representatives (HSRs) during health and safety inspections. In 2017, NOPSEMA inspectors met with HSRs at each of the 80 health and safety inspections conducted on offshore facilities. However, NOPSEMA recognises that, while not required by the legislation, it can enhance engagement with the offshore workforce by also meeting with HSRs during environmental management and well integrity inspections conducted at offshore facilities.

To implement this enhanced engagement, it is now NOPSEMA policy that inspectors conducting environmental management or well integrity inspections meet with facility HSRs at every planned offshore inspection. These meetings will provide HSRs with an overview of the purpose and scope of the environmental management or well integrity inspection. As always, HSRs wishing to seek NOPSEMA feedback on any occupational health and safety matters are able to directly contact their focal point NOPSEMA health and safety specialist to receive expert advice and assistance. NOPSEMA is confident that this approach will alleviate any concerns that some NOPSEMA inspections may have been conducted at a facility without the NOPSEMA inspectors meeting the facility HSRs.

NOPSEMA inspectors conducting environmental management and well integrity inspections have a broad range of technical knowledge and industry experience. They are pleased to meet and engage with members of the workforce, including HSRs, during environmental management or well integrity inspections. Any personnel involved in a NOPSEMA inspection of an offshore facility are reminded they may submit feedback on the inspection to NOPSEMA at feedback.inspection@nopsema.gov.au.

More information for HSRs is available on NOPSEMA's website at nopsema.gov.au/safety/health-and-safety-representatives/.



Best practice for managing impaired pipeline subsea isolation valves

The Public Inquiry into the Piper Alpha Disaster concluded that subsea isolation valves (SSIVs) can make a major contribution to improving the safety of personnel on an offshore facility, and since that time, SSIVs have been installed on many production facilities worldwide.

NOPSEMA recently identified that a number of pipeline SSIVs in Australian Commonwealth waters had become impaired and were no longer capable of functioning appropriately despite being specified as safety critical equipment. SSIVs are typically designed to protect personnel on an offshore facility should there be loss of containment from the inboard subsea pipeline, riser or topsides. The SSIV closes on detection of a loss of pressure, gas release or fire and significantly reduces the quantity of hydrocarbon available to feed a fire or hydrocarbon release.

SSIVs are, by nature of their location, difficult to maintain, test and repair. However, if SSIVs are identified as control measures for major accident events within the safety case for the facility, they must be maintained to achieve the requirements of the associated performance standard for the duration of hydrocarbon production. Any impairment or failure of safety-critical equipment such as SSIVs, may lead to a facility being shut-down. If appropriate contingency measures have not already been established within the accepted safety case, a robust operational risk assessment should be conducted to determine whether additional control measures can be put in place to re-start or continue production.

Typically, an operational risk assessment would include consideration of threats that could lead to the requirement for the SSIV to function, for example whether existing topsides/riser loss of containment major accident event control measures are implemented, functional and maintained, and whether any additional measures can be put in place to reduce the risk to as low as reasonably practicable. Consideration should also be given to restricting high risk activities, such as those requiring breaking into hydrocarbon containment, lifting over live plant, hot work, and restriction of non-essential activities at the facility. This might include a review of the condition of the hydrocarbon containing equipment (vessels, pipework, risers and subsea pipelines) and the effectiveness of gas detection and shutdown/pressure relief systems, ignition control measures and escape and evacuation arrangements. High priority must be given to restoring impaired SSIV to full functionality within a timely manner.

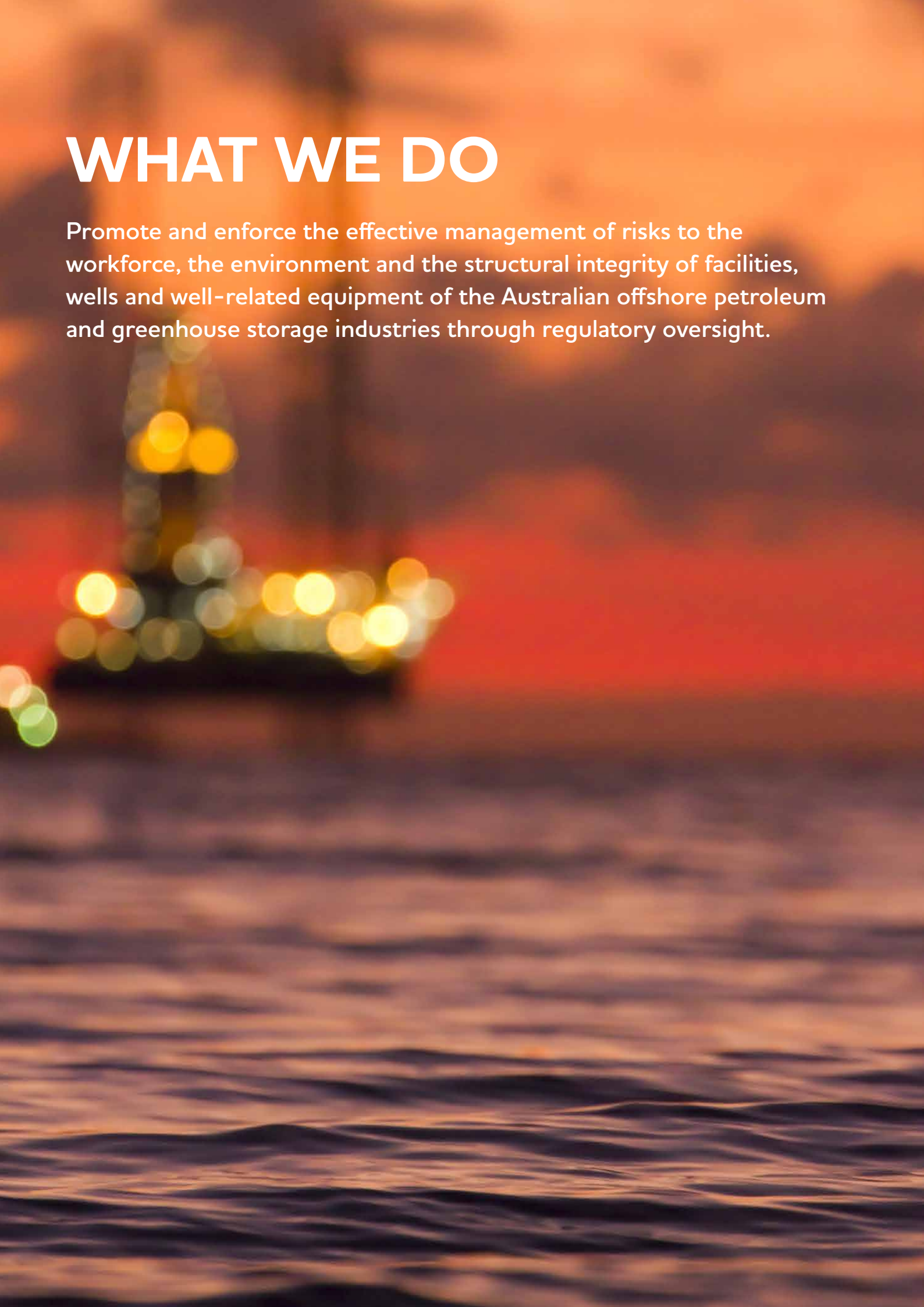
Operators are reminded that under the Safety Regulations, it is a criminal offence to fail to notify NOPSEMA of dangerous occurrences, which includes damage to safety critical equipment.

NOPSEMA has observed that, where the accepted safety case describes the SSIV as being safety-critical, some operators have used their management of change (MoC) processes to try and de-classify SSIVs, for example as non-safety-critical. However, without an accepted safety case revision which justifies this declassification, NOPSEMA considers the safety case in force to apply. As such, any failure or damage to a SSIV where the safety case in force describes it as being safety-critical will require notification and reporting to NOPSEMA of the dangerous occurrence.

NOPSEMA is currently developing guidance on operational risk assessments ([see the article 'Opportunity to input into operational risk assessment guidance' on page 20](#)). NOPSEMA recommends facility operators with responsibility for SSIVs think about, and pre-plan, how they will deal with both the operational risk assessment and the restorative work on the impaired SSIV in advance of such an eventuality. As restoration of SSIV functionality could involve saturation diving, which may not be provided for in the safety case(s) for relevant facilities, there may be regulatory submissions required. Consideration of the management of failed safety critical equipment within the revision of a safety case in advance of the event occurring is likely to lead to identification of more appropriate control measures and quicker re-instatement of safety critical equipment functionality than commencing this work when the failure is identified.

WHAT WE DO

Promote and enforce the effective management of risks to the workforce, the environment and the structural integrity of facilities, wells and well-related equipment of the Australian offshore petroleum and greenhouse storage industries through regulatory oversight.



HOW WE DO IT



In 2017–18 this included:

771 engagements	176 assessments	155 inspections 1325 inspection recommendations	184 investigations	19 enforcement actions
<p>To provide stakeholders with advice, and promote continuous improvement, NOPSEMA hosts liaison meetings, workshops and information sessions, delivers presentations, participates in conferences and forums, publishes regulatory guidance and information on our website and in publications such as <i>the Regulator</i> and <i>Annual offshore performance report</i>.</p>	<p>Dedicated assessment teams, comprised of highly qualified and experienced technical experts, assess risk management plans against strict criteria as set out in the OPGGS Act and its regulations. To be approved, a plan must clearly demonstrate how a company plans to undertake an offshore petroleum activities while protecting the health and safety of the workforce and the environment.</p>	<p>Compliance monitoring and inspections seek to ensure companies are undertaking their activities in compliance with the OPGGS Act, its regulations and the approved risk management plans. The findings, conclusions and recommendations of an inspection are issued in a report and actions taken to address its recommendations are verified via ongoing compliance monitoring and/or in subsequent inspections. Failure to address recommendations can result in escalation to enforcement where the breach warrants such action.</p>	<p>Potential breaches of the OPGGS Act, its regulations or an approved risk management plan are investigated to determine what happened, how it happened and which course of corrective action is warranted. If NOPSEMA verifies a breach has occurred then it may provide advice, issue recommendations or take enforcement action against the responsible parties.</p>	<p>When a company breaches the OPGGS Act, its regulations, or one of its accepted risk management plans then NOPSEMA may take enforcement action to rectify the breach, hold the responsible parties to account, and/or provide deterrence to the industry. There are a range of enforcement actions available to NOPSEMA enabling it to select an appropriately proportionate, targeted and effective measure to pursue.</p>

Opportunity to input into operational risk assessment guidance

NOPSEMA is currently developing guidance on conducting operational risk assessments. The guidance aims to help facility operators develop, implement and maintain robust operational risk assessment procedures where degradation of safety-critical equipment or some other abnormal operational situation may potentially compromise safety and increase the risk of major accident events. Further, the guidance seeks to clarify NOPSEMA's expectations for how a reasonable operator should manage periods where safety-critical equipment cannot meet its specified performance standards.

If safety-critical equipment is found to have failed to meet its safety function as specified in a performance standard, operators should have a system in place to assess the hazards and risks associated with the failure, and implement the necessary temporary changes to procedures or technical controls until functionality of safety critical equipment is restored. This should also include consideration of suspending operations until either the safety critical equipment can be restored or sufficient temporary controls can be implemented.

NOPSEMA has observed recent examples where the degraded performance of safety-critical equipment has resulted in an increase in risk which was not provided for in the facility safety case, such as subsea isolation valves with degraded seals. In some of these circumstances NOPSEMA requested a revision to the safety case to ensure that additional preventative and mitigation controls are in place to maintain risks to as low as reasonably practicable (ALARP) until the safety-critical equipment is restored to full functionality. This has cost, resource and schedule implications for the operator.

Where failure of safety-critical equipment can be reasonably foreseen, for example, loss of a firewater pump, subsea isolation valves, totally enclosed motor propelled survival craft (TEMPSC), fast rescue craft or deluge system operators are encouraged to include consideration of these types of failures, and the temporary controls to be implemented, as part of their facility safety cases. This would reduce the regulatory burden on both the operator and NOPSEMA.

As part of consultation process, NOPSEMA will conduct an industry workshop in early 2019 to seek feedback on the guidance and promote use of the operational risk assessment process including presenting examples of where the process should be applied. For more information or to register your interest in attending the workshop email communications@nopsema.gov.au.

Training for Health and Safety Representatives

Health and Safety Representatives (HSRs) are employees within the offshore oil and gas industry and have been elected, or volunteered, to represent a designated work group. HSRs play a valuable role in building safety awareness and help to reduce the risks to workers offshore. Under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006*, elected HSRs must undertake training to ensure they can fulfil their responsibilities confidently and effectively.

Comprehensive competency-based training is provided by NOPSEMA accredited Registered Training Organisations covering five key modules including the legislation, hazard identification and risk management, safety management systems and safety case, incident investigations and communications.

A list of accredited training providers is published on NOPSEMA's website at: nopsema.gov.au/safety/health-and-safety-representatives. To supplement HSR training, NOPSEMA has also developed a [HSR Handbook](#), which provides guidance to new and experienced HSRs.

HSRs perform an important role in the facilitation of occupational health and safety offshore and the reduction of injuries in the workplace. Central to this pivotal role is representing workers during communication with supervisors and managers. For HSRs to perform their role effectively and efficiently, facility management require a sound understanding of the functions and powers of the HSR. Within this context NOPSEMA strongly encourages the attendance of offshore supervisors and managers at HSR training to assist them in better understanding and supporting the important role HSRs perform offshore. A HSR Forum is being organised for the first half of 2019 and further details about the forum will be available in due course.



THE LEGISLATION

- Role of HSRs, regulator and employer
- HSR responsibilities and authority
- Role of NOPSEMA
- Research skills



HAZARD IDENTIFICATION AND RISK MANAGEMENT

- Identify and control hazards
- Risk assessment methodologies
- Risk management tools
- Hierarchy of controls



SAFETY MANAGEMENT SYSTEMS (SMS) AND SAFETY CASE

- SMS and safety case structure
- Concepts and terminology
- Formal safety assessment process and tools
- Audit requirements and processes



INCIDENT INVESTIGATION

- Incident reporting
- Root cause analysis methodologies
- Recognising a 'good' investigation
- Incident data



COMMUNICATIONS

- Communication and presentation skills
- Negotiation skills
- Running effective meetings
- Conflict/issue resolution
- Time management

Protecting people who speak up for safety

A crucial element to the safe operation of offshore petroleum facilities is the willingness of individuals to speak up when they believe a situation is unsafe. The critical role of individuals is recognised within the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGGS Act), which requires that persons on a facility must not, through act or omission, create or increase a risk to health or safety. A decision not to speak up about an unsafe situation may constitute an omission. Examples of this type of omission may include:

- observing and walking past an uncontrolled hazard
- observing someone at risk and choosing not to intervene
- believing a task is unsafe and choosing not to question the instruction
- observing an uncontrolled loss of containment and choosing not to initiate emergency shut down.

The importance of this duty cannot be overstated. However, NOPSEMA is aware there may be situations where members of the workforce are hesitant to speak up for fear of reprisals from their employer, including loss of employment. These fears, when present and genuine, represent a significant barrier to safe operation. Operators and employers must create an environment where all members of their offshore workforce are able to speak up about safety without fear of reprisal.

Operators and employers should note that the OPGGS Act provides protections for members of the workforce who choose to speak up. In accordance with the OPGGS Act, an employer must not dismiss an employee or otherwise damage or prejudicially alter an employee's position, or threaten to do so, because that employee has acted to protect the health or safety of persons on the facility. Examples of damage or prejudicial alteration of an employee's position include:

- formal or informal disciplinary action
- informal demotion through work allocation
- removal of privileges such as access to training and professional development
- employee not being required back for next swing
- notes on employee performance records
- formal or informal blacklisting
- threats to do any of the above.

These protections apply equally to all members of the workforce, regardless of their employer (operator, contractor, supplier etc.) or the nature of their employment contract (ongoing, fixed-term, labour-hire etc.).

Operators and employers should note that engaging in the type of conduct described above is an offence carrying a maximum individual penalty of \$630,000 for a body corporate. In the event of proceedings for this offence, the defendant has the onus of establishing that their action, such as dismissing the employee, was not related to the employee's action to protect health and safety.

While all members of the workforce are obliged to act in response to an unsafe situation, operators and employers are responsible for creating a working environment that encourages individuals for speaking up. Operators and employers should be vigilant for signs of reluctance or fear amongst members of the workforce, and should intervene where necessary to ensure that all members of the workforce are willing to speak up for safety.



Supporting members of the workforce to raise and resolve safety concerns

The continued safe operation of offshore petroleum facilities depends on the willingness of all members of the workforce to identify and report safety concerns, and for facility management to resolve those concerns. Offshore facilities should have processes in place to ensure that safety concerns are reported and resolved in a timely manner. This article provides information for members of the workforce on how to raise or escalate a safety concern.

What should I do if I have a safety concern?

In general, safety concerns should be promptly and constructively raised with your health and safety representative (HSR), your supervisor, or the health and safety committee. In our experience almost every safety concern can be resolved through the workplace arrangements on a facility – when those arrangements are working properly. However, if you are unsatisfied with the response you have received you can escalate the matter to NOPSEMA.

How can I contact NOPSEMA?

Our preference is for you to telephone us – this helps us to properly understand concerns and decide how to proceed. The contact number for our on-call inspector is **(08) 6461 7090**. If you are unable to access a telephone while offshore, and the safety concern is not urgent, you could telephone NOPSEMA during your off-swing.

If you are unable to telephone, the next best option is email. This allows a NOPSEMA representative to respond to you, gather more information about your concern and to update you on any outcomes. Our email address is information@nopsema.gov.au.

NOPSEMA has developed an online form which is being implemented on a trial basis. When filling out this form please provide as much detail as possible, including a way for a NOPSEMA representative to contact you for further information. You can also advise your preferred time to be contacted, for example by providing us with dates when you will be off-swing.

Will NOPSEMA protect my identity?

If you do not want NOPSEMA to disclose your identity, you can inform us of this during the telephone or email contact, or by selecting the check box on the online form. We will then make every effort to safeguard your identity.

We recognise that, in some situations, facility management may be able to guess the identity of an individual from the nature of the concern being raised. In these situations, we will speak with you to explore the range of possible responses and identify a preferable option. If you choose not to disclose your name or decline to provide any contact information to NOPSEMA, please be aware that this may significantly limit our ability to act in response to your concern. To escalate a concern to NOPSEMA using our online form visit nopsema.gov.au/safety/raising-and-resolving-safety-concerns-on-your-facility/.



Source Control Workshop

Examining source control technologies and arrangements for a timely response

Setting benchmark considerations for evaluating source control effectiveness, and prioritising areas for future work to improve source control preparedness.

NOPSEMA and the Australian Petroleum Production and Exploration Association (APPEA) in collaboration with the International Offshore Petroleum Environment Regulators' Forum (IOPER), invites service providers and representatives from industry and government to attend the premier global source control event to be held at the Spillcon conference in 2019.

Workshop sessions include a simulated response and panel discussion, focussing on the preparedness planning and deployment of subsea response toolkit and capping stack in the event of a loss of well control incident.

Date: Monday 20 May 2019

Time: Full day workshop

Location: Crown Conference Centre, Burswood, Perth

Catering provided

Delegate Fee applies

Registration Portal opens 4 February 2019

For more information email communications@nopsema.gov.au

Changes to levy amounts

During 2018, NOPSEMA undertook a review of its Cost recovery implementation statement (CRIS), including consultation with industry. This review has resulted in increases to the safety case, environment plan, annual well and well activity levies in the Offshore Petroleum and Greenhouse Gas Storage (Regulatory Levies) Regulations 2004. These increases are the first to the safety case and environment plan levies since 2014.

The increases will ensure NOPSEMA's regulatory operations continue to be adequately cost-recovered. NOPSEMA responded to the collapse of the oil price by taking actions to enhance its efficiency and reduce costs as necessary, such as not renewing contracts for non-ongoing staff. These measures are no longer sustainable as, since 2014, NOPSEMA has had to respond to inflationary impacts, an increase in industry activity and an increase in activities under its additional functions. These additional activities include greater stakeholder engagement and outreach programs to better inform the broader community of the functions of the regulatory regime. This engagement is particularly important for activities proposed in frontier areas like the Great Australian Bight. NOPSEMA has also established the Transparency Initiative to align cross jurisdictional efforts to improve the transparency of offshore petroleum environmental management.

Changes to levies:

Levy type	Levy item	Levy rates to 31 Dec 2018 value (\$000's)	Levy rates from 01 Jan 2019 value (\$000's)
Safety case	<i>Safety management system</i>	Mobile \$113K p/y Non-mobile \$170K p/y Pipeline \$56K one-off	Mobile \$124.3K p/y Non-mobile \$187K p/y Pipeline \$61.6K one-off
Safety case	<i>Facility</i>	Mobile \$35K p/y Non-mobile \$35K p/y Pipeline \$14K one-off	Mobile \$38.5K p/y Non-mobile \$38.5K p/y Pipeline \$15.4K one-off
Annual levy	-	Unit value \$4,125 p/y	Unit value \$4,540 p/y
Well activity	<i>Well operations management plans</i>	Unit value of \$35k	Unit value of \$38.5K
Environment plan	<i>Activity</i>	Unit value of \$3,600	Unit value of \$3,960
Environment plan	<i>Compliance</i>	Unit value of \$3,600	Unit value of \$3,960

For more information on the changes to levy rates and detail of the specific changes see the [Cost recovery implementation statement 2018-19](#) available at nopsema.gov.au/about/cost-recovery-and-levies/. The revised levy amounts will apply from 1 January 2019.

Quarterly performance dataset – Q3:2018

INDUSTRY ACTIVITY AND PERFORMANCE

Submissions		
Category	Type of assessment	Number
Safety	Safety cases	25
	Diving safety management systems	4
	Diving project plans	0
	Scopes of validation	9
	Diving start-up notices	3
Well integrity	Well activity applications	0
	Well operations management plans	5
	Final abandonment reports	3
	Request to undertake a well activity in a specified manner	1
Environment	Environment plans	9
	Environment plan summaries	8
	End of an environment plan (Reg 25A)	20
	Offshore project proposals	1
Other	Area to be avoided access applications	0
	Petroleum safety zone applications	0
	Petroleum safety zone access applications	0
	NOPTA request for title related compliance information	3
Total		91

Incidents		
Category	Type of incident	Number
People safety	Accidents (immediate reporting) and Injuries (monthly reporting)	
	Fatalities	0
	Major injury	0
	Incapacitation / lost time injury >= 3 days	3
	Lost time injury <3 days	0
	Medical treatment injury	5
	Alternative duties injury	6
	Total accident and injuries	14
	Dangerous occurrences	
	Could have caused death or serious injury	4
	Could have caused incapacitation >= 3 days lost time injury	1
	Total dangerous occurrences (people safety)	5

Incidents		
Category	Type of incident	Number
Process safety	Dangerous occurrences	
	Collision marine vessel and facility	0
	Damage to safety-critical equipment	27
	Fire or explosion	5
	Other kind needing immediate investigation	10
	Pipeline – kind needing immediate investigation	0
	Pipeline – likely to have resulted in significant damage	0
	Pipeline – significant damage	0
	Uncontrolled hydrocarbon release >1–300 kg	10
	Uncontrolled hydrocarbon release >300 kg	1
	Uncontrolled petroleum liquid release >80–12 500 L	0
	Unplanned event – implement emergency response plan (including false alarms)	35
	Well kick >50 barrels	0
	Total dangerous occurrences (process safety)	89
	Total dangerous occurrences (people and process safety)	94
Well integrity	Well integrity incidents	
	Loss of integrity – >1 kg gas released	1
	Failure of hydrostatic pressure – blowout preventer closure and positive well pressure	0
	Loss of integrity – well-related equipment damage or failure	2
	Potential loss of integrity – well-related equipment damage/failure	8
	Any other unplanned occurrence to regain control of the well	1
	Total well integrity incidents	12
Environment	Reportable environmental incidents	
	Hydrocarbon vapour/petroleum liquid release	2
	Chemical release	0
	Drilling fluid/mud release	0
	Fauna incident	0
	Matter protected under Part 3 of the <i>Environment Protection and Biodiversity Conservation Act 1999</i>	0
	Other	0
	Total reportable environmental incidents	3

Note: Uncontrolled hydrocarbon releases/spills may have been reported as an OHS incident and as an environmental incident. Injuries may have been reported as a total recordable case and as an accident.

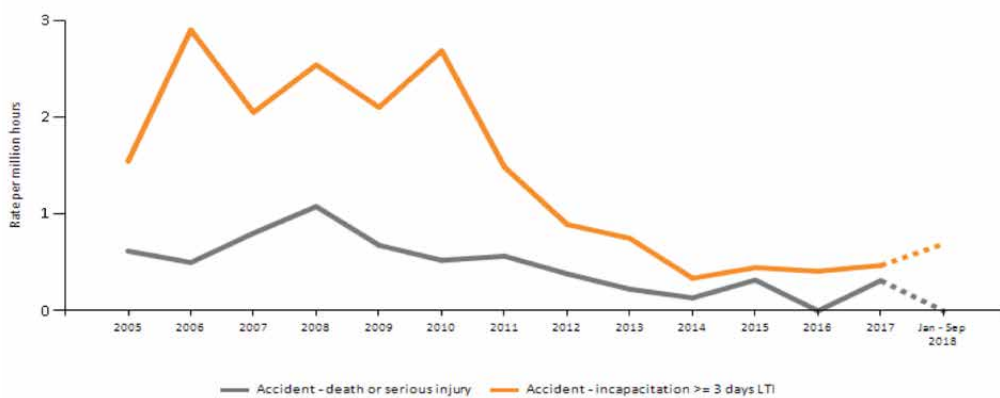
HOURS WORKED OFFSHORE

2017				2018			Current year total	Quarterly average (2017–2018)
Q1	Q2	Q3	Q4	Q1	Q2	Q3		
2 060 946	2 401 698	3 934 561	4 383 709	4 319 101	5 147 974	3 639 272	9 467 075	3 707 998

Note: Data represents the total number of hours worked by employees, contractors and marine crew attending a facility in NOSPEMA's jurisdiction.

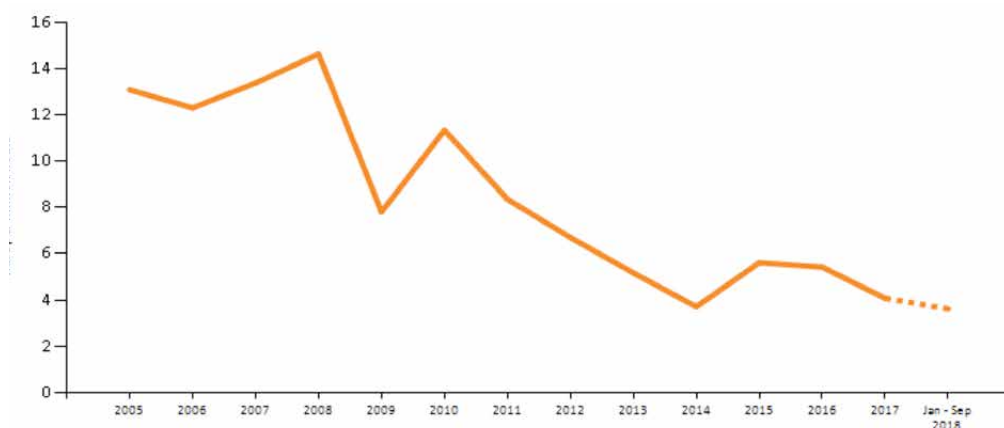
INDUSTRY PERFORMANCE INDICATORS

Accidents



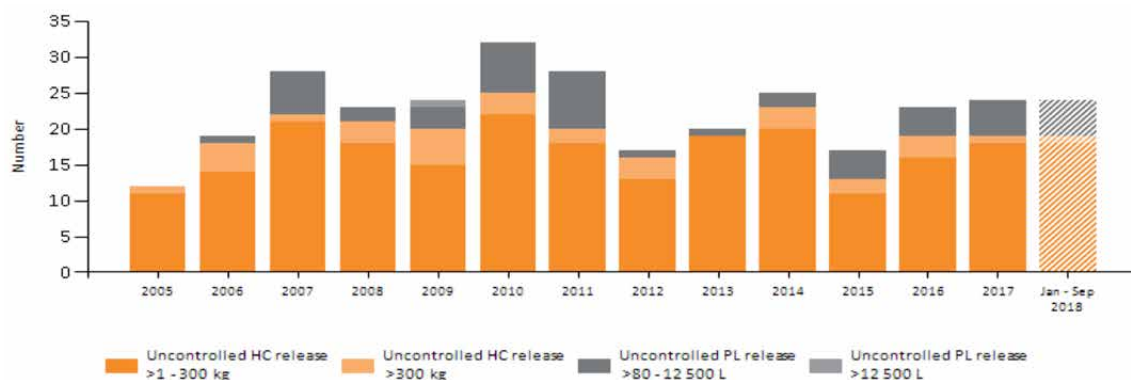
During the quarter, three accidents resulting in incapacitation \geq 3 days lost time injury (LTI) were reported to NOPSEMA.

Injuries



During the quarter, 13 injuries were reported to NOPSEMA, including six alternative duty injuries (ADIs), five medical treatment injuries (MTIs) and two lost time injuries resulting in incapacitation \geq 3 days. The TRC rate has continued its downward trend.

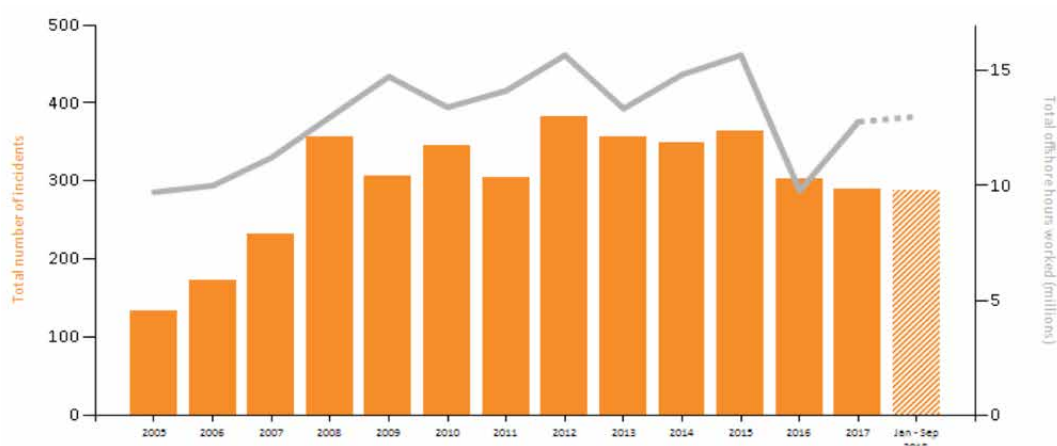
OHS hydrocarbon releases



Note: Hydrocarbon releases may have been reported as an OHS and environmental incident; this chart only includes releases reported under the OHS reporting criteria.

During the quarter, one uncontrolled petroleum liquid release (>80-12,500 L), one major gas release (>300kg) and ten low level hydrocarbon gas releases (>1-300kg) were reported to NOPSEMA.

Dangerous occurrences



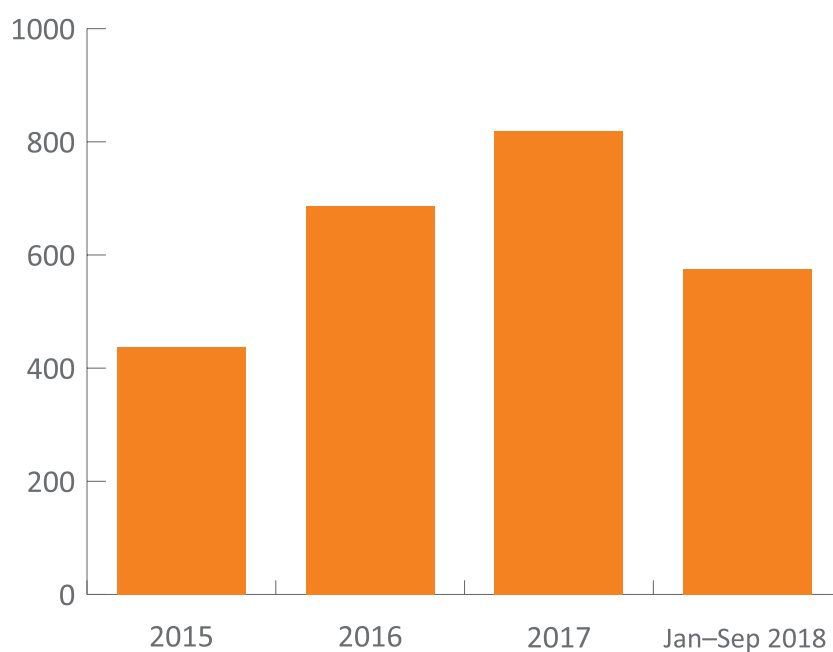
During the quarter, 94 dangerous occurrences were reported to NOPSEMA. The majority of incidents were unplanned events requiring emergency response plan implementation (37%) followed by damage to safety-critical equipment (29%).

NOPSEMA ACTIVITY AND PERFORMANCE

Improvement and compliance		
Type of activity	Category	Number
Inspections	Occupational health and safety	25
	Well integrity	3
	Environmental management	12
	Total inspections	40
Enforcement actions*	Occupational health and safety	11
	Environmental management	3
	Directions	0
	Total enforcement actions	14

*Excludes verbal warnings/advice, investigation notices and inspection recommendations.

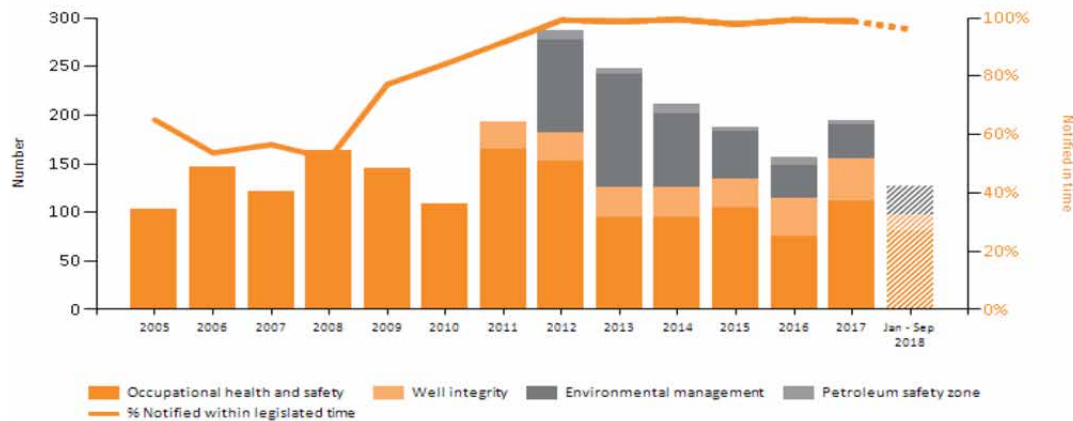
ADVICE, PROMOTION AND CONSULTATION



NOPSEMA conducted 192 liaison meetings, including engagement with duty holders (125), state, federal and international government agencies (39) and other stakeholders (28).

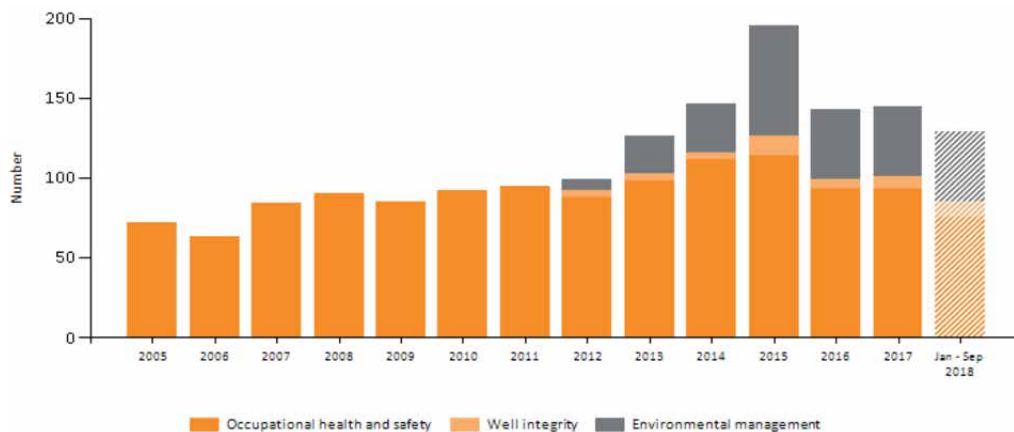
NOPSEMA PERFORMANCE INDICATORS

Notified assessments



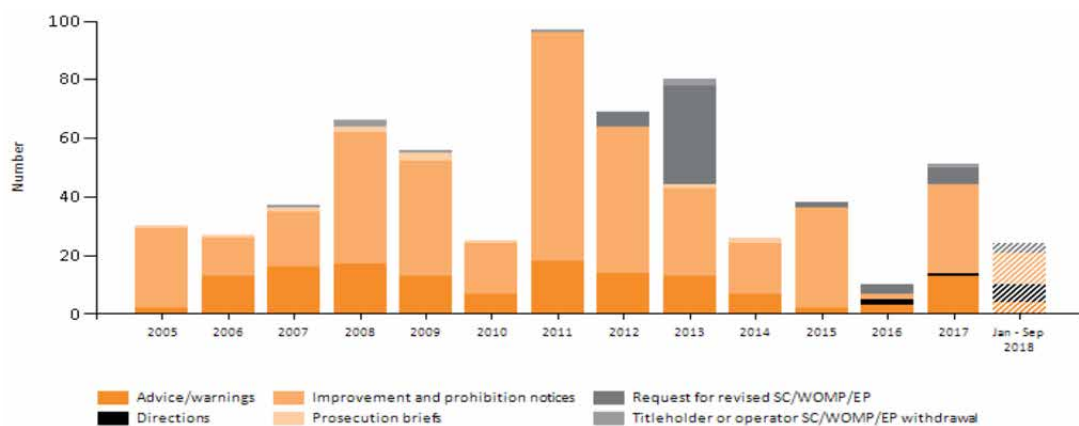
During the quarter, 100% of all assessments were notified within legislated time-frames. Only assessment types with legislated time-frames are included in the 'notified in time' data, however, it is NOPSEMA's policy to apply a specified time-frame on all assessment types.

Inspections



During the quarter, NOPSEMA conducted 40 inspections across 68 facilities and petroleum activities (a single inspection may cover multiple facilities).

Enforcement actions



During the quarter, NOPSEMA issued 14 enforcement actions including seven OHS improvement notices, three general directions, two environmental management written advice/ warnings, one OHS prohibition notice and one request for a revised safety case.

Notes

Notes

Handwriting practice lines consisting of 30 horizontal dotted lines.







Schedule of events

January 2019

23 January Information session: Procurement for ICT support and software delivery services, Perth

February 2019

13 February Environmental Management Good Practice Forum and Transparency Update, Perth

March 2019

Date TBC Environmental Management Good Practice Forum, Perth

Date TBC Health and Safety Representative Forum, Perth

May 2019

20 May Source control workshop: Examining source control technologies and arrangements for a timely response, Perth

20-24 May Spillcon, Perth

27-30 May APPEA 2019 Conference and Exhibition, Brisbane

Events listed are those at which NOPSEMA is presenting, exhibiting or has an organisational role.

For more information about any of the events listed email communications@nopsema.gov.au.

For presentations at past events visit [nopsema.gov.au/resources/presentations](https://www.nopsema.gov.au/resources/presentations).