



appea

the voice of australia's
oil and gas industry

Submission

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Safety-Related Matters Relating to
FLNG Projects, August 2014**



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KEY POINTS

- The offshore petroleum safety and environment regulatory regime in Australia is robust and considered to be leading practice in mature, developed petroleum producing jurisdictions.
- The WA Government has announced plans to move all major hazard and resources industries to a risk based regulatory model, as currently exists for petroleum safety, well integrity and environment.
- Industry and government have a long history of working cooperatively to review and refine the offshore petroleum safety and environment regulatory regime in Australia to ensure best fit for high technology, high hazard and dynamic industries, global best practice regulation and in response to local and international incidents.
- This has enabled both the operating practices and regulation of the industry to adapt as petroleum exploration, production and processing has steadily evolved due to continual scientific and technical advances in related fields.
- Shell was the first company to invest in FLNG, for the development of its Prelude field offshore Australia. Today, many of the major oil and gas companies have launched FLNG programs.
- The development of FLNG technology is simply one of the latest developments which build on the combination of experience with large FPSOs and floating platforms and the latest developments in liquefaction and offloading technologies. There is nothing inherently different for FLNG in regard to the approach to managing the safety risks of high hazard industries. The current safety case regime is well placed to address FLNG risks.
- As recognised by numerous international and Australian safety regulatory reviews and inquiries, petroleum operators are best placed to identify and mitigate the specific safety and environmental risks of their individual activities including FLNG programs.
- This is underpinned by a demonstrated commitment to good practice, including ensuring incidents, experience and lessons are shared across the industry and regulators as effectively, widely and rapidly as possible. This open approach is highly dependent on having in place a mature regulator(s) engaged with industry to share and problem solve but backed up by clear objective based regulation and firm but fair enforcement.
- The petroleum industry has in place a large number of emergency planning and response initiatives, both at an individual facility level and in collaboration with each other. The industry also works closely with a number of federal and state government agencies with responsibilities/oversight for maritime incident emergency response. Industry has not identified a need for additional Federal or State government emergency response resources or infrastructure to support FLNG projects.
- The Australian upstream petroleum industry takes the safety of its personnel and impacts on the environment very seriously. The industry is acutely aware that its social and regulatory licence to operate is based on maintaining high levels of performance in these areas.



OFFSHORE HEALTH, SAFETY & ENVIRONMENT REGULATORY FRAMEWORK

INTRODUCTION

The oil and gas industry is a significant part of the Western Australian (WA) and national economy. WA based projects accounted for 81% of Australia's LNG production in 2012-13 and new LNG projects worth more than \$112 billion are underway. These projects have provided jobs and investment opportunities and helped create a maturing gas market which is delivering security of energy supply.

Nationally, almost \$200 billion is currently being invested in oil and gas projects, including seven major liquefied natural gas (LNG) export projects¹. By 2020, the sector's economic contribution to the national economy is set to more than double to \$65 billion and taxation paid is projected to rise from \$8.8 billion (an estimated \$4.9 billion in corporate taxes and \$3.8 billion in production taxes) to reach almost \$13 billion. While the WA and Australian economies have benefited and will continue to benefit significantly from LNG investments committed in the past, there are even more projects under consideration. Developments under consideration represent a potential additional investment of tens of billions of dollars. Realising this investment would benefit the entire nation.

One way of creating further value for the Australian economy is through the use of innovative technology such as Floating LNG (FLNG) to develop natural gas resources that are technically or commercially stranded. The Committee is well aware of the technical innovations employed by Shell in the design of the Prelude FLNG facility, particularly the focus on safety, through evidence presented by Shell and Woodside during the inquiry into the economic impacts of FLNG on Western Australia.

The Australian oil and gas industry is committed to demonstrating it has uniformly high standards in place at all times to protect the safety, integrity and health of people, the environment and our communities. APPEA supports strong and independent regulation that sets an objective and science based framework for reducing risks while providing certainty to industry. Given the substantial benefits to the WA and national economy, regulation of the oil and gas industry should be designed and implemented to promote the necessary high standards of performance and risk management without imposing unnecessary regulatory burdens.

APPEA has been an active partner with the Commonwealth and State/Territory governments and regulators over many years in developing the current regulatory frameworks and industry practice governing safety and environment. APPEA has provided leadership to further strengthen regulatory regimes, improve transparency around critical controls and build additional emergency response capability after recent serious offshore incidents. At the same time however, unnecessary and duplicative regulation, and inconsistency and confusion between different regulators has increasingly placed a costly and inefficient burden on petroleum projects across Australia without

¹ Bureau of Resources and Energy Economics (2013), *Resources and Energy Major Projects*



contributing to raising standards or outcomes. The addition of any further regulatory bureaucracy may impede health and environmental outcomes.

APPEA'S UNDERPINNING PRINCIPLES OF REGULATION

Regulation of petroleum operations should reflect leading practice and be objective-based. For industries subject to rapid technological change and which operate in dynamic, high risk environments, prescriptive regulation is likely to become quickly outdated and worse, counterproductive in ensuring safe operations. Instead, regulations need to set clear objectives and leave it to operators to determine how these objectives are to be achieved and to provide robust justification (or case for safety, environment and structural integrity) to an independent and competent regulator.

It is imperative in high hazard industries such as petroleum operations that experiences and lessons are shared across the industry as effectively and rapidly as possible. This open approach is highly dependent on having in place a mature regulator(s) engaged with industry to share and problem solve, backed up by clear objective based regulation and firm but fair enforcement. A policing style of regulation where finding blame is the main game and prescriptive requirements are ticked off does not and cannot contribute to best industry practice and performance through sharing of lessons and experiences.

In line with this, APPEA supports strong and independent regulation that sets an objective and science based framework for reducing risk while providing certainty to industry. Regulation should reflect the following broad principles:

- Clear objectives and transparent oversight:
 - The rationale for any regulation must be well defined and understood; government regulation may not always be the most effective mechanism to manage risk
 - Transparent, clear, uniform and predictable processes for implementing regulation
 - Meet environmental and safety, as well as economic and social objectives
 - Be subject to continual review to assess ongoing relevance
- Underpinned by sound science and evidence:
 - An evidence-based approach should be adopted based on rigorous and reliable information and centred on well-defined risks.
 - The information, science and evidence used to underpin regulations should be transparent



- Risk-based and focused:
 - Objective and risk-based regulation should be adopted rather than prescriptive standards
 - Allowing a flexible and dynamic approach to changing circumstances (technology, environments, science and financial arrangements)
 - The ongoing compliance activity and costs imposed on governments and proponents are appropriate to the risks and impacts
- Transparent processes supported by guidance on regulator expectations:
 - Guidance should be flexible enough as to not to become prescriptive regulation by stealth.

PERFORMANCE OF THE AUSTRALIAN OIL AND GAS INDUSTRY

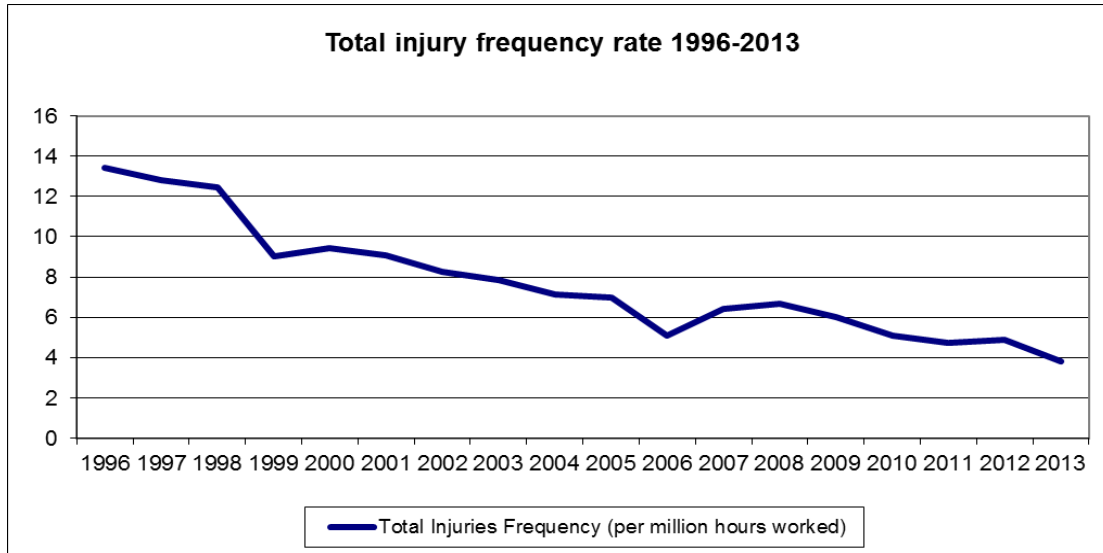
Since the introduction of APPEA's modern safety performance reporting in 1996, the safety performance of the Australian offshore oil and gas industry has steadily improved and has consistently been the best performer of any industry in Australia – particularly when compared to similar risk profile industries such as mining and manufacturing. Though making cross industry comparisons is difficult due to differences in reporting standards, both Safe Work Australia and WA WorkSafe² performance data has continuously supported the fact that the Australian oil and gas industry's performance remains one of the best in Australia, and the year on year improvement in injury frequency rates continues to be sustained.

² See: www.commerce.wa.gov.au/sites/default/files/atoms/files/anzsic_2006_rates_0.pdf

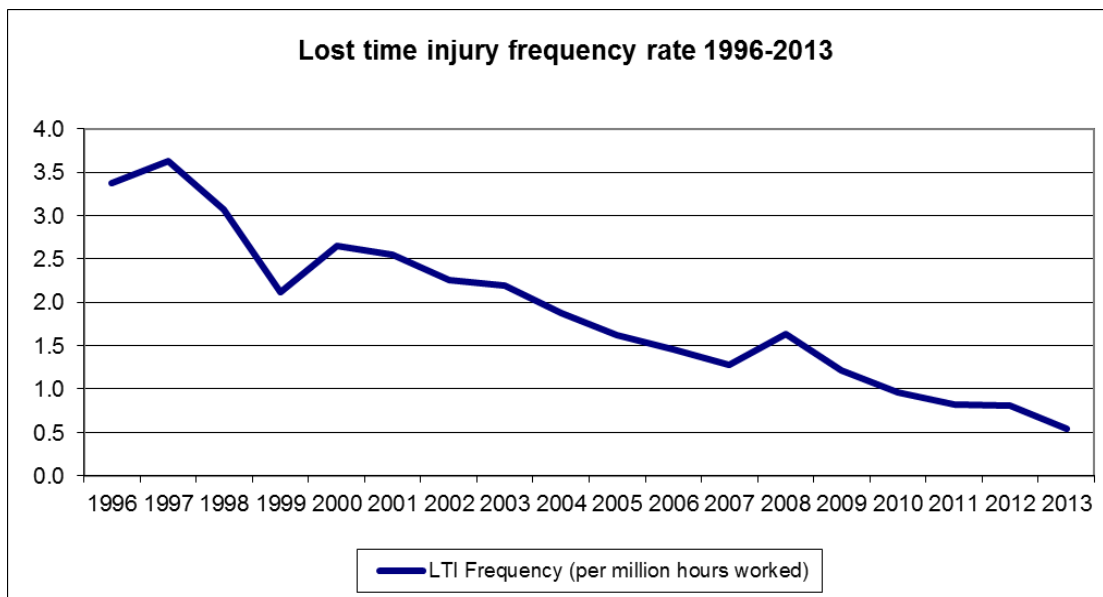


APPEA Safety Performance Data

The total injury frequency rate for 2013 was 3.79 injuries per million hours worked, compared to a total injury frequency rate of 4.91 injuries per million hours in 2012 - 23% lower than 2012³.



The Lost time injury frequency rate for 2013 was 0.54 lost time injuries per million hours worked, which is 33% lower than the lost time injury frequency rate of 0.81 lost time injuries per million hours worked in 2012⁴.



The importance of open and timely sharing of data, incidents and lessons cannot be overstated. In high hazard industries it is vital that industry and regulators rapidly and openly share this

³ APPEA data

⁴ APPEA data



critical information to prevent major accident events. As stated earlier, this open approach though is highly dependent on having in place a mature regulator(s) engaged with industry to share and problem solve, backed up by clear objective based regulation and firm but fair enforcement.

Process Safety

The safety case regulatory regime applying to all Australian offshore petroleum facilities addresses process safety as well as personal safety. Process safety is a disciplined framework for managing the integrity of operational systems and processes handling hazardous substances by applying good design principles, engineering, and operating and maintenance practices. It deals with the prevention and control of incidents that have the potential to release hazardous materials and energy.

In response to a number of offshore incidents, the oil and gas industry both in Australia and globally has identified opportunities to improve process safety key performance indicators (KPIs). These KPIs aim to proactively identify and address any challenges to critical controls or barriers that are in place to prevent major accident events. Over the next two years the industry anticipates greater alignment in terminology and definitions to facilitate reporting of process safety KPIs, and an increase in numbers of process safety KPIs reported. In 2013-14 APPEA moved to align its reporting requirements with global reporting standards to better facilitate benchmarking of process safety performance.

In 2014 APPEA is moving to align its' safety performance reporting with that of the International Association of Oil and Gas Producers (OGP) to allow international benchmarking and best practice reporting. In 2012 OGP produced the first international oil and gas process safety event report and in 2013 a high potential incident report, both of which can be accessed via the OGP website⁵.

High Potential Incidents and Alerts

In 2009 APPEA introduced a new requirement for members to report high potential incidents as part of the safety performance reporting process. High potential incident alerts are distributed by APPEA for the Australian oil and gas industry to highlight learnings from incidents.

The high potential incident reporting and alert program is now well established with wide dissemination of information, root causes and lessons learned. It covers incidents capable of causing fatalities or a major accident event.

Under a cooperative effort with the International Association of Oil and Gas Producers (OGP), APPEA's alerts are now being uploaded into the OGP incident database and shared across its global membership.

As at the end of July 2014, 161 alerts have been published, covering both the offshore and onshore industry. All alerts are made available to the public through the APPEA website: www.appea.com.au/safety-environment/hipo-alerts/

⁵ OGP Process safety events report: <http://www.ogp.org.uk/pubs/2012p.pdf> and High Potential Incident Reports: <http://www.ogp.org.uk/pubs/2013sh.pdf>



HISTORY AND EVOLUTION OF THE REGULATORY REGIME FOR OFFSHORE PETROLEUM

A wide range of offshore petroleum activities have been undertaken in challenging environments over many decades. Petroleum facilities have long had to be designed and operated to withstand extreme weather, sea conditions and also importantly, the temperatures and pressures associated with producing and processing hydrocarbons. Many of these same facilities have also had to provide living accommodation for the workforce in a relatively restricted space. The current regulatory regime has been developed to address these challenges, has been continuously reviewed and the soundness of the approach confirmed and strengthened over time.

Australian government(s) introduced 'safety case' regulation for the offshore petroleum industry in the mid to late eighties - adopting the established best practice approach to regulating the nuclear and other major hazard industries.

The safety case regulatory regime covering the offshore petroleum industry in Australia has been heavily influenced in the first instance, and most significantly in terms of the overarching philosophy of the safety case regime, by two UK Government Inquiries:

- 1972 Lord Robens' Report on the regulation of workplace safety and health across all industries in the UK; and
- 1988 Lord Cullen Inquiry findings into the Piper Alpha disaster in the North Sea.

This has been most recently augmented by the inquiry into the Varanus Island gas pipeline rupture, the Deepwater Horizon disaster in the Gulf of Mexico and the Montara well blowout incident in Australia. The reviews into the two Australian incidents are discussed in further detail in section two.

ROBENS COMMITTEE OF INQUIRY INTO OHS REGULATION AND CULLEN INQUIRY INTO THE PIPER ALPHA DISASTER

The Robens Committee of Inquiry was set up by the British Government in 1970 because of concerns that the traditional system of safety regulation, based upon the framework of the nineteenth century British Factory Acts, was too rigid and complex and unable to keep pace with social, economic and technological change. The 'mass' of legislation was reviewed by the Robens Committee, which concluded that in spite of this mass of safety related law, there had been no significant reduction in the numbers of people killed and injured at work. The Robens Inquiry identified three main problems with the existing prescriptive approach to safety regulation:

- There was too much law relating to health and safety at work and the detailed prescription of every aspect of work had the effect of persuading people that health and safety was purely a matter of government regulation and not of individual responsibility;
- Too much of the existing law was irrelevant to real problems; and
- There was a major disadvantage in attempting to address the problem of health and safety with the wide array of administrative agencies with responsibilities.

The Robens Inquiry concluded that:

"[t]here are severe practical limits on the extent to which progressively better standards of safety and health at work can be brought about through negative regulation by external agencies. We need a more effectively self-regulating system. This calls for the acceptance



and exercise of appropriate responsibilities at all levels within industry and commerce. It calls for better systems of safety organisation, for more management initiatives, and for more involvement of work people themselves. The objectives of future policy must therefore include not only increasing the effectiveness of the state's contribution to health and safety at work but also, and more importantly, creating conditions for more effective self-regulation.⁶

The weaknesses identified above by the UK's Robens Report also existed in Australia's approach to safety regulation. Through the eighties and nineties each of the Australian jurisdictions enacted new occupational health and safety (OHS) statutes based, to varying degrees, on the model proposed by Robens. Each of the Australian OHS statutes adopted the three tiered approach recommended by the Robens Committee.

The first tier is the Act and includes broad, overarching general duties for those who influence or exercise control over OHS in workplaces. Tier one also includes consultation and representation provisions, and provisions to help enforce the Act. A second tier contains more detailed provisions, obligations and requirements within regulations, complemented by guidance on how to comply with the Act and regulations outlined in codes of practice. Recent developments with national harmonisation and workplace health and safety legislation remain fundamentally Robens in approach, but reflecting changes over time to the structure of workplace arrangements (for example, contract structures)⁷

Safety regulation of the Australian petroleum industry has gone further than Robens style legislation in that it has adopted the safety case approach, whilst also retaining the OHS general duty of care provisions. Regulation of offshore petroleum facilities has had to address two interrelated aspects. The first is protecting the safety and health of the workforce (traditionally referred to as personal safety) - and this is fundamentally the same approach to safety regulation for any industry or workplace in Australia. Petroleum safety regulation at this level generally reflects Lord Roben's findings and is consistent with developments in general workplace health and safety regulation across Australia.

However, the safety case regime applying to petroleum operations also addresses a second critical aspect, and this is the prevention of significant events that could result in multiple casualties/fatalities and significant damage to assets and to the environment, and their mitigation in the event that such an event did occur. In Australia's offshore petroleum regulatory regimes these events are often referred to as major accident events or MAEs. These MAEs are low-probability but high-consequence events. Potential MAEs in the petroleum industry include for example, well blowouts, loss of containment of hydrocarbons (ignited or non-ignited), explosions, fires and collisions.

The 1988 Piper Alpha disaster in the North Sea, and subsequent report by Lord Cullen, played a major role in Australia adopting a 'safety case' approach to the regulation of these low-probability

⁶ Lord Robens, Safety and Health at Work: Report of the Committee 1970-1972 (HMSO, 1972)

⁷ Workplace Relations Ministers Council: Comparison of Occupational Health and Safety Arrangements in Australia and New Zealand: (ISBN No. 978-0-642-32799-4, 5th Edition, 2008)



but high-consequence events in the petroleum industry. The most significant outcome from the Cullen inquiry was the UK moved from a prescriptive regulatory approach that attempted to enforce minimum compliance to a goal setting regime. The onus is placed on the operator, not the regulator, to demonstrate through a safety case that they have reduced the risks associated with their operations to as low as reasonably practicable (ALARP).

The Cullen report found that in complex, dynamic and high risk activity such as hydrocarbon processing facilities, it is essential that the responsibility for managing the risks lies at the point of operations⁸.

HISTORY OF 'SAFETY CASE' REGULATION FOR PETROLEUM INDUSTRY IN AUSTRALIA

Following the 1988 Piper Alpha disaster, Australia introduced a safety case obligation to strengthen the implementation of the Roben's style duty of care regime. As noted in the Explanatory Memorandum to the Petroleum (Submerged Lands) Amendment Bill 2003⁹:

"The term 'safety case' is used to describe a sophisticated, comprehensive, integrated risk management system. This is characterised by an acceptance that the direct responsibility for the ongoing management of safety on individual facilities is the responsibility of the operators and not the regulator."

The primary objective of a safety case is the prevention of MAE's, with the fundamental principle of 'continuous improvement' (for example, regulation that is able to recognise and allow industry's 'safety case' to respond quickly to and effectively address new technologies, technical knowledge and experience) not minimum compliance with too often out of date and irrelevant prescriptive requirements.

In 1999, the Commonwealth Government commissioned a review of offshore petroleum safety in Australia. This was in response to the Government's 1998 commitment to review the offshore safety case regime and Commonwealth concerns over the adequacy of the current regulatory arrangements. At the time, the States and Northern Territory (NT) carried out day to day offshore petroleum safety regulation using a combination of the safety case approach and prescriptive legislative rules.

The review included an evaluation undertaken by an Independent Review Team (IRT) of offshore safety experts. The IRT assessed the effectiveness of the structure and implementation of Australia's offshore petroleum safety management. The review included substantial and broad engagement with operators of facilities, executives and line management, workforce representatives, State/NT regulators and Federal officials.

The final report, *Future Arrangements for Regulation of Offshore Petroleum Safety* was published in 2001. The report identified a number of shortcomings in the legislative and administrative structures. It recommended the current framework of laws be revised, and the regulatory system be restructured by establishing a national petroleum safety regulatory authority. The IRT found¹⁰:

⁸ Cullen, The Hon. Lord W. Douglas (1990): The public inquiry into the Piper Alpha disaster (London H.M. Stationery Office, ISBN 0101113102, 488 pages, 2 volumes)

⁹ See: www.comlaw.gov.au/Details/C2004B01497/Explanatory%20Memorandum/Text

¹⁰ Depart. Industry, Science and Resources, Offshore Safety and Security, Petroleum and Electricity Division: Future arrangements for the Regulation of Offshore Petroleum Safety/Australian offshore Petroleum Safety Case Review (Canberra, 2001)



- the Australian legal and administrative framework, and the day to day application of this framework, for regulation of health, safety and environment in the offshore petroleum industry is complicated and insufficient to ensure appropriate and cost efficient regulation of the offshore petroleum industry;
- there were too many acts, directions and regulations regulating offshore petroleum activities, their boundaries were unclear and application inconsistent;
- the role of the Designated Authorities was unclear and undefined;
- the regulators appeared to have inconsistent philosophies, procedures and approaches to regulation, both in regard to the discharge of their role in safety case development and assessment, and in regard to auditing activities; and
- resourcing all of the regulators with competent and experienced personnel to work with what are often complex work activities was a real concern, and salary levels made it difficult to recruit and retain a critical mass.

On 13 September 2002, the Ministerial Council on Mineral and Petroleum Resources (MCMPR) reconfirmed their priority for improving safety in Australia's offshore petroleum industry. The MCMPR, comprising State/Territory and Federal Ministers with a responsibility for petroleum activities from across Australia, endorsed the formation of an independent national offshore safety authority. It was agreed at the MCMPR meeting that a new National Offshore Petroleum Safety Authority (NOPSA)¹¹ would not only regulate federal waters, as the IRT recommended, but regulate both Federal and State/NT waters. This was to ensure a consistent regulatory approach for industry across all jurisdictions. NOPSA was accountable to the Commonwealth, State and NT Ministers.

NOPSA began operations on 1 January 2005. However, the original intent of the ministerial agreement e.g. to achieve one offshore petroleum safety regulator - has not yet been achieved.

The safety regime for offshore petroleum operations is set out by Schedule 3 to the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGs Act) and its associated regulations for Commonwealth waters. Similar provisions apply in designated coastal waters but only where States and the Northern Territory have made legislation that mirrors Commonwealth legislation.

PETROLEUM SAFETY & ENVIRONMENT IN COMMONWEALTH WATERS – NOPSEMA

Safety Case

In Commonwealth waters, a facility – including a Floating LNG facility - cannot be constructed, installed, operated, modified or decommissioned without a safety case in force for that stage in the life of that facility.

What constitutes an offshore facility (and associated offshore place) is defined under Schedule 3 to the OPGGS Act, and is intended to include those vessels and structures that present a safety risk to a significant number of people because of the presence of hydrocarbons.

¹¹ Now NOPSEMA



A safety case under the *Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009* must include¹²:

- A full description of the facility;
- A formal safety assessment (FSA) of potential major accident events, for example identification of all hazards that have the potential to cause a major accident event and a detailed and systematic assessment of the risks;
- Identification of the technical and other controls that are necessary to reduce the risks to a level that is low as reasonably practicable (ALARP) and a fully justified case as to why and how ALARP has been achieved (including what Australian and International Standards that are being applied and why they are appropriate and achieve ALARP);
- Identification of the performance standards expected of each control (or barrier) to ensure the controls/barriers are achieving what they are supposed to;
- Monitoring of those standards to make sure they are actually achieving what they are supposed to in practice;
- A detailed description of the safety management system and how it is implemented (so that it achieves the continuous and systematic assessment of hazards and control to ALARP of hazards and risks);
- Command structure and responsibility for safe operations;
- Means by which the operator will ensure that each member of the workforce has the necessary skills, training and ability (including for abnormal or emergency conditions);
- A documented permit to work system for coordinating and controlling the safe performance of all work activities;
- A detailed description of the evacuation, escape and rescue analysis – and this has to take into account the types of emergencies that could occur, including extreme weather conditions;
- Identification of the technical and control measures necessary to reduce the risks associated with emergencies to ALARP;
- A fire and explosion risk analysis, and detailed technical and other controls necessary to reduce the risks associated with fires and explosions to a level that is ALARP;
- Emergency communications systems and control systems in the event of an emergency; and
- A full emergency preparedness and response plan and evidence of how the plan will be implemented.

¹² This list is not a full description of all regulatory requirements.



Validation

For a proposed facility, NOPSEMA requires a validation of the proposed facility prior to the submission of a safety case. Acceptance of the safety case by NOPSEMA is contingent on a satisfactory validation¹³.

For an existing facility, if an operator proposes to significantly change the facility (for example modify or decommission the facility), and where the safety case in force does not address that proposed modification or decommissioning, a safety case revision is required. Associated with that revision, and if NOPSEMA becomes aware of the proposed modification or decommissioning, NOPSEMA requires a validation of the significant change. If NOPSEMA does not become aware of the proposed modification or decommissioning, there is still a legal obligation on the operator to gain agreement on the scope of validation for the proposed modification or decommissioning prior to submission of the revised safety case. Acceptance of that revised safety case is then contingent on a satisfactory validation.

Validation is focused on safety-critical hardware, firmware and software. The validation must establish, in the case of a proposed facility, that the design, construction and installation (including instrumentation, process layout and process control systems) of the facility incorporate measures that:

- will protect the health and safety of persons at the facility;
- are consistent with the formal safety assessment (FSA) for the facility; and
- in the case of an existing facility — that, after any proposed change or changes, the facility incorporate measures that will protect the health and safety of persons at the proposed facility.

An operator who has provided material for a validation must also satisfy NOPSEMA that each person who undertook the validation had the necessary independence, competence, ability and access to data, in respect of each matter being validated, to arrive at an independent opinion on the matter¹⁴.

Environmental Management & Well Integrity

The 'safety case' approach to regulation, where a 'case' has to be made to an independent regulator that clearly justifies how risks are managed to ALARP and major accident events prevented, also applies for environmental management and well integrity in Commonwealth waters.

The onus is on the operator or titleholder, not the regulator, to demonstrate and justify through an Environment Plan how they have reduced the environmental risks and impacts associated with their petroleum activities to ALARP and to an acceptable level. The fundamental principle is 'continuous improvement' (adapting quickly and effectively to new technologies, new processes and new risks) rather than minimum prescriptive compliance that can become quickly obsolete.

¹³ Offshore Petroleum and Green House Gas Storage Act and Safety Regulations; NOPSEMA Policy Documents at <http://www.nopsema.gov.au/safety/safety-case/>

¹⁴ T. Hunter and J. Paterson: Offshore Petroleum Facility Integrity in Australia and the United Kingdom: A Comparative Study of Two Countries Utilising the Safety Case Regime (OGEL, ISSN 1875-418X, October 2011)



The submission and acceptance of an Environmental Plan is now common to both the Commonwealth and Western Australian regulatory regimes.

Both the Safety Case and the Environmental Plan, in addition to providing justification of how ALARP is achieved for risks and impacts, cascade down into the practical details of emergency planning and response capabilities and implementation of these. In the event of a MAE, the planning and preparation for emergency response will have integrated the safety and environmental aspects, with the PEARL principle applied. The PEARL principle proposes that responses should be prioritised in the first instance to protect People (P), then Environment (E) before focusing on Assets (A), Reputation (R) and Liability (L).

In addition, titleholders undertaking well operations are required to have an accepted Well Operations Management Plans (WOMP - Commonwealth) or Well Management Plan (WMP – WA). A clear objective of the WOMP and WMP is to ensure the integrity of wells throughout the well life cycle, from design to abandonment. This includes the ongoing management systems and processes titleholders must have in place for ensuring ongoing well integrity throughout the well life cycle (e.g. not just individual well design).

These plans must outline the specific risks associated with each phase of the well life cycle, how those risks have been reduced to ALARP, the critical barriers, and the performance standards and measures to make sure those barriers are in place, healthy and maintaining well integrity at all times. They must also justify the mitigation measures in the event of an incident, including setting out the source control (e.g. sub-sea first response, well capping, relief well drilling) strategies that are in place. Further detail on emergency response initiatives is outlined in later sections.



CONTINUOUS IMPROVEMENT OF THE HSE REGULATORY ENVIRONMENT

INTRODUCTION

Safety regulation of the offshore operations of Australia's oil and gas industry has been subject to numerous and regular reviews which have confirmed the soundness of safety case regulation, whilst strengthening specific aspects and improving and streamlining administrative arrangements.

In March 2008, the Council of Australian Governments (COAG) announced the Productivity Commission (PC) Review of the regulatory burden on the upstream petroleum (oil and gas) sector. The Productivity Commission was requested to consider Australia's framework for upstream petroleum regulation and consider opportunities for streamlining regulatory approvals, providing clear timeframes and removing duplication between jurisdictions. One of the PC recommendations¹⁵, in part, identified the need for States and Territories to maintain consistency with the Commonwealth requirements for safety regulation of the offshore petroleum industry. This recommendation is shown in Box 1 and was broadly accepted by all States/ Territories.

Box 1 - Productivity Commission, Review of the Regulatory Burden on the Upstream Petroleum (Oil and Gas) Sector

RECOMMENDATION 10.3:

- *Separate policy and regulatory; objective-based legislation; statutory timeframes; increased transparency in reporting requirements and timeframes*
- *Governments should review and update all existing legislation to ensure it is consistent with the features of best practice regulation and good regulatory design. In particular, updated legislation and its administration should:*
- *Separate policy advice from regulation where practicable - where not practicable, for example due to scale particularly in smaller jurisdictions, reliance on appropriate checks and balances and transparency in policy and regulation making processes will be increasingly important.*
- *Promote the use of objective-based legislation where feasible.*
- *Ensure approval processes are best practice and clearly defined.*
- *Set statutory timelines for individual regulatory decisions (any decision should include a 'stop the clock' mechanism). There should be two timelines: one excluding periods when the 'clock' is stopped and one including all time elapsed. There should also be disclosure of reasons for regulators requesting additional information, and measurement and public disclosure of their performance against these targets.*
- *Measure and report overall timelines taking into account all stages of key regulatory processes (including scoping, advising, consultation and decisions).*
- *Be consistent with the definitions, format and approach of the updated Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cwlth).*
- *Provide clear guidelines where feasible on information requirements to assist proponents in efficiently providing the necessary information to allow timely regulatory decisions.*
- *Ensure reporting requirements are clear, justified, and avoid duplication and overlap with other mandatory reporting requirements.*

¹⁵ 2009, Productivity Commission, *Review of the Regulatory Burden on the Upstream Petroleum (Oil and Gas) Sector*



Subsequently, the Australian Government's response to the PC review, Montara Inquiry and other reports (see sections below) culminated in the establishment of a new national regulatory authority for offshore commonwealth waters on 1 January 2012. The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) is now responsible for the regulation of the three critical and interrelated areas of safety, well integrity and environmental management in Commonwealth waters through the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* and supporting Regulations.

In WA, the Department of Mines and Petroleum is currently reviewing all safety regulation applying to the mining, petroleum and major hazard industries under its jurisdiction, to streamline and simplify the petroleum safety legislation and ensure alignment with the Commonwealth laws relating to petroleum safety regulation, as well as the national harmonisation of workplace health and safety laws.

STATUTORY REVIEW OF COMMONWEALTH OFFSHORE PETROLEUM SAFETY REGULATOR

As part of continuous improvement, the Commonwealth's offshore petroleum safety regime has been subject to two statutory and independent reviews into the operational effectiveness of the National Offshore Petroleum Safety Authority (NOPSA) with Reports released in 2008 and 2011.

Broadly, both statutory reviews found that NOPSA had established itself as a competent safety regulator among stakeholders and peers in both the domestic and international offshore oil and gas industry. The reviews made recommendations to ensure continuous improvement of the regime and to implement previous decisions made by the Australian Government, in particular from the Productivity Commission, Varanus Island and Montara Inquiry Reports.

Most recently, in June 2014, the Australian National Audit Office (ANAO) released the results of their audit assessment of the establishment of the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) and the effectiveness of its regulatory function. The ANAO¹⁶ found that overall, NOPSEMA has appropriately integrated administrative arrangements for the new function of environmental management and has established a sound framework for the regulation of safety, environment and well integrity for the offshore petroleum industry. The ANAO also recommended some improvements to NOPSEMA's governance arrangements and aspects of its administration of its regulatory functions.

The ANAO made three recommendations focusing on: enhancing aspects of existing governance arrangements; developing individual facility risk profiles to inform safety inspection planning; and prioritisation of recommendations on matters related to compliance while addressing better practice aspects in inspection reports.

¹⁶ ANAO, 2014, *Establishment and Administration of the National Offshore Petroleum Safety and Environmental Management Authority*



VARANUS ISLAND INQUIRY

In 2009 the Commonwealth and WA Governments jointly set up an expert panel to undertake an inquiry into the occupational health and safety and integrity regulation for upstream petroleum operations, with reference to the 2008 Varanus Island gas pipeline rupture and explosion. The expert panels' subsequent report¹⁷ endorsed an augmented duty of care/safety case regime as the most appropriate means for regulating a complex, high hazard industry such as Australia's offshore petroleum industry. The 'augmented' component was to include regulation of 'integrity' (wells) into the commonwealth offshore petroleum safety regime, and this was implemented in 2011.

The panel also found the various offshore regulatory regimes produced a confusing mishmash of jurisdictional, legal, process and regulatory interfaces which were an impediment to good safety outcomes, and made recommendations to simplify, streamline and strengthen both regulation and also administrative approaches by the regulators.

A number of those recommendations were implemented in the Australian Government's Final Response to the Montara Commission of Inquiry Recommendations, and subsequent creation of NOPSEMA responsible for the regulation of the three critical and interrelated areas of safety, integrity of wells and environmental management for petroleum facilities and activities in commonwealth waters.

MONTARA INQUIRY

The Australian Government has sought to apply the lessons from the Montara and Gulf of Mexico loss of well control incidents, and has made significant progress in implementing the accepted recommendations in the Final Government Response to the Report of the Montara Commission of Inquiry (Final Government Response)¹⁸, which was released on 23 May 2011.

The June 2010 Report of the Montara Commission of Inquiry (the Report) made 105 recommendations with implications for governments, regulators and the operational procedures and practices of the offshore petroleum industry. In the Final Government Response, the Government accepted 92 recommendations and noted 10; it did not accept three Montara Commission of Inquiry (MCI) recommendations as they were technically inappropriate.

Implementation of the Government's response has included a suite of initiatives, including amendments to legislation and improvements to strengthen institutional arrangements. These include amendment of *the Offshore Petroleum and Greenhouse Gas Storage Act 2006* to establish, on 1 January 2012, the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), the new national regulator in Commonwealth waters, for safety, well

¹⁷ Bills, K. and Agostini, D., *Offshore Petroleum Safety Regulation Better Practice and the Effectiveness of the National Offshore Petroleum Safety Authority*, Department of Resources, Energy and Tourism, June 2009

¹⁸ *Final Government Response to the Report of the Montara Commission of Inquiry*: Department of Resources, Energy and Tourism; Commonwealth of Australia: 2011



integrity, environmental regulation and day-to-day operations of petroleum activities; and a new national titles administrator, the National Offshore Petroleum Titles Administrator (NOPTA).

The *Offshore Petroleum and Green House Gas Storage Amendment (Compliance Measures) Act 2013* (Compliance Measures Act No. 1) was passed in the Australian Parliament on 28 February 2013 and received Royal Assent on 14 March 2013. The changes aimed to strengthen the operating practices of the offshore petroleum industry and provide additional enforcement powers to NOPSEMA. Some of the changes include:

- the introduction of a civil penalty regime, which will provide the regulator with an alternative enforcement tool aimed at improving compliance outcomes;
- increasing the current criminal penalty levels under the *Offshore Petroleum and Greenhouse Storage Act 2006* (the Act) to bring them in line with other major hazard industry legislation;
- harmonisation of OHS offence penalties with the Work Health and Safety Act 2011 to reflect the greater consequence involved in a major hazard industry;
- redrafting of the Act to allow for the future triggering of the standard monitoring and investigation powers in the proposed *Regulatory Powers (Standard Provisions) Bill 2012* (the Regulatory Powers Bill), which will enable NOPSEMA inspectors to use the monitoring and investigation powers in the Regulatory Powers Bill to monitor and investigate compliance with all obligations of persons under the Act and associated regulations; and
- enabling the parties responsible for administering the Act to share information in appropriate circumstances.

The *Offshore Petroleum and Greenhouse Gas Storage Amendment (Compliance Measures No. 2) Act 2013* (Compliance Measures Act No. 2) was passed by the Australian Parliament on 16 May 2013 and received Royal Assent 28 May 2013. The Compliance Measures Act No. 2 provides for the further implementation of the recommendations of the Final Government Response to the Report¹⁹. Some of the changes include:

- implementing a range of alternative enforcement mechanisms, such as infringement notices, adverse publicity orders, injunctions and continuing penalties;
- enabling NOPSEMA inspectors to issue environmental prohibition notices and environmental improvement notices to require petroleum titleholders to take action where required to remove significant threats to the environment;
- requiring NOPSEMA to publish OH&S and environment improvement notices and prohibition notices on its website;

¹⁹ See: www.nopsema.gov.au/legislation-and-regulations/recent-changes-to-legislation



- implementing an express polluter pays obligation in the OPGGS Act and a third party cost recovery mechanism. This includes providing State and Northern Territory governments with a statutory course of action against titleholders in the event the government(s) incur clean-up costs in their coastal waters or onshore; and
- clarifying financial assurance requirements in the OPGGS Act.



OFFSHORE PETROLEUM INDUSTRY - EMERGENCY PLANNING & RESPONSE

INTRODUCTION

The Montara and Macondo incidents provided many valuable lessons and led to a significant collective response by the Australian upstream petroleum industry.

Whilst new oil spill response regulatory arrangements have been implemented, at the same time, the industry has focussed its collective leadership on expanding and strengthening its capacity and preparedness to respond to a major incidents. This is seen through initiatives such as the Subsea First Response Toolkit, mutual aid arrangements for drilling of relief wells, and international collaboration in developing advanced well capping solutions.

The industry remains focused on continuously improving its collective safety performance. Industry also continues to accept the need to work with governments beyond just the implementation of regulation. As such, the upstream oil and gas industry is committed to mutual aid arrangements under the Western Australia State Emergency Management Plan for Marine Oil Pollution, and the National Plan for Maritime Environmental Emergencies.

In the event of emergency response, operators or titleholders are required to not only demonstrate their own ability to respond to low and medium consequence events, but how they will respond to high consequence events (MAE's) no matter how low the probability.

As no one titleholder or operator can possibly continuously hold the emergency response capacity for a high consequence event of low probability, the petroleum industry, regionally, nationally and internationally, has developed a series of mutual aid arrangements (both between companies, and between industry and governments) that allow for the cascading of additional resources into an emergency response, if and when it escalates.

This framework and culture of mutual aid is fundamental to understanding the strong and ever increasing capacity of the oil and gas industry to respond to emergency situations.

The size or severity of an emergency situation is often categorised into a "Level" or "Tier", with most emergency response frameworks structured around these tiers, such that moving from one level up to another will trigger additional resourcing cascading into the response.

CHANGES TO REGULATORY ARRANGEMENTS FOR OIL SPILL RESPONSE POST MACONDO AND MONTARA

Titleholders/Operators as Combat Agencies and Oil Spill Contingency Planning

A major regulatory change in the event of an oil spill arising from an offshore petroleum activity has been that the petroleum titleholder is responsible to act as the Combat Agency²⁰. This responsibility is clearly articulated within Commonwealth legislation and the National Plan for Maritime Environmental Emergencies (the National Plan).

²⁰ Combat Agency is the agency identified in Emergency Management Plans as the entity primarily responsible for controlling the response to a particular emergency.



As a result each titleholder in Commonwealth waters is required to develop an Oil Pollution Emergency Plan (OPEP) or alternatively as operator in WA State waters an Oil Spill Contingency Plan (OSCP), and this forms a required component of their approved Environment Plan.

These plans outline the specific emergency response commitments a company commits to enact in the case of an oil spill event from any component of their activity (e.g. a release from a well, a loss of containment from a pipeline, a spill from a maritime vessel involved in the activity).

The OPEP or OSCP is also required to demonstrate the company's capacity and plan to respond to the initial stages of an emergency, which is often referred to as a First Strike Response Plan. Implementing the First Strike Response Plan includes such things as:

- standing up of the Incident Control Team;
- notifying the relevant authorities of the situation;
- mobilising readied equipment, vehicles and personal;
- beginning the planning, logistics, operational and monitoring functions that are established within their approved OPEP or OSCP; and
- beginning to implement its communication and stakeholder engagement plans.

The Incident Control Team assesses the specific emergency to ascertain the need to cascade additional resources (equipment, vehicles and human resources) from its mutual aid partners into combating the oil spill (discussed in further detail in the next section).

If drilling is a component of the petroleum activity the operator will be required to have an approved Well Management/Operational Management Plan (WMP or WOMP). This will cover the operator's first strike responses to the loss of well integrity and, as is the case with the OPEP or OSCP, describes how additional resources can be cascaded into the well response through mutual aid agreements (again discussed in further detail in the next section).

As part of the OPEP or OSCP, the titleholder or operator outlines how it maintains operational readiness to implement its First Strike Response Plans (e.g. equipment maintenance, competency training and conducting "real scenario" exercises).

Financial Assurances and Insurance (Commonwealth and State)

A critical dimension of Oil Spill Response is the financial responsibility that a company bears in the situation of a major oil spill incident. Under the *Offshore Petroleum and Greenhouse Gas Storage Act (2006)*, it is the responsibility of any titleholder operating under a Commonwealth title to demonstrate that they have sufficient financial assurances to cover the full cost of an oil spill response (including well control and clean up).

Under the Western Australian *Petroleum and Geothermal Energy Resources Act 1967* and the *Petroleum (Submerged Lands) Act 1982*, registered holders of a permit, drilling reservation, lease or licence are required to maintain insurances against the expenses of complying with directions to the clean-up or other remedying of the effects of the escape of petroleum resources.



REGULATORY ARRANGEMENTS FOR SAFETY EMERGENCY RESPONSE AND SECURITY

Safety at Sea

Australia is a signatory to a number of international conventions that place certain search and rescue (SAR) service and safety of life at sea obligations on it. These Conventions include:

Chicago Convention on International Civil Aviation 1944 which requires the 186 contracting states of the International Civil Aviation Organization (ICAO), including Australia, to:

"provide such measures of assistance to aircraft in distress, in the SAR areas under their jurisdiction, as is practicable" (Annex 12);

International Convention for the Safety of Life at Sea 1974 (SOLAS), which requires signatories to:

"...ensure that any arrangements are made for coast watching and for the rescue of persons in distress at sea around its coasts. These arrangements should include the establishment, operation and maintenance of such maritime safety facilities as are deemed practicable and necessary having regard to the density of the seagoing traffic and the navigational dangers, and should, so far as possible, afford adequate means of locating and rescuing such persons." (Chapter V regulation 15);

The International Convention on Maritime Search and Rescue 1979, which requires signatories to:

"...participate in the development of search and rescue services to ensure that assistance is rendered to any person in distress at sea." (Chapter 2);

The International Convention on the Law of the Sea 1982 states:

"Every coastal state shall promote the establishment, operation and maintenance of an adequate and effective search and rescue service regarding safety on and over the sea and, where circumstances so require, by way of mutual regional arrangements cooperate with neighbouring States for this purpose." (Article 98, Paragraph 2).

Australia's maritime SAR coordination responsibility is vested in the Australian Maritime Safety Authority (AMSA). The oil and gas industry, as one of many industries operating in the marine environment, assists AMSA when requested to perform SAR activities. As indicated below, industry has in place its own SAR initiatives. While these initiatives are primarily focused on supporting industry personnel, the industry takes seriously its support for assisting other maritime personnel who require assistance.

Security

The *Maritime Transport and Offshore Facilities Security Act 2003 (Cwlth)* (MTOFSA) is the principle legislation for managing the security of offshore petroleum facilities in Australia.

The MTOFSA requires the preparation and approval of an Offshore Security Plan that identifies the security measures to be implemented when different maritime security levels are in force. Offshore petroleum industry participants are required to have, and comply with, offshore security plans and various other persons and ships are required to comply with offshore security plans.



An offshore security plan must:

- include a security assessment for the participant's specific activities;
- set out the security activities or measures to be undertaken or implemented by the participant for maritime security levels 1 (the default security level), 2 and 3²¹;
- demonstrate that the implementation of the plan will make an appropriate contribution towards the achievement of maritime security outcomes; and
- complement, to the fullest extent possible, the occupational health and safety requirements under the laws of the Commonwealth, a State or Territory applying at the facility.

A Maritime Security Zone complements the Offshore Security Plan by prescribing in regulation such matters as limiting contact with, controlling the movement of people, ships and other things within and around a security regulated offshore facility. The Zone also includes cleared areas within and around these facilities and preventing interference with the facilities, people or goods (including petroleum) that have been or are to be transported to or from security regulated offshore facilities.

Maritime Security Zones and Offshore Security Plans use a risk based approach of a similar nature to the Safety Case and Environmental Plans (described above) and are critical tools for providing additional health, safety, environmental, asset and natural resource protection.

THE APPEA MONTARA TASKFORCE - OUTCOMES

In response to the Montara Commission of Inquiry and the 2010 Macondo incident in the Gulf of Mexico, APPEA established an industry taskforce to identify and progress key actions that would improve the capacity and readiness of the Australian Offshore Petroleum sector to respond to a major oil spill incident. This included the identification of critical subsea response equipment, and the logistic and contractual frameworks to allow rapid deployment of the equipment to site, as well as preventative measures such as a focus on improvements in well integrity.

The Macondo and Montara incidents provided an impetus for APPEA's members to invest tens of millions of dollars to further develop and strengthen our local capability and preparedness to both prevent and also respond to a loss of well containment. This investment also extends to international collaboration and mutual aid arrangements.

Well Capping, Containment, the Subsea First Response Toolkit and Mutual Aid

Well Capping and Containment Systems

At the Australian Government's September 2011 International Offshore Petroleum Operators and Regulators Summit, then Australian Resources and Energy Minister Martin Ferguson, signed an industry 'accord' with APPEA member companies to ensure an industry-wide well capping and source control system to be readily available to Australia for use during a loss of well control resulting in an oil spill. While the capping system is negotiated by individual companies on a commercial and global basis, the Australian industry committed to establish a locally based

²¹ These are declared by the Secretary of the assigned Department, currently the Commonwealth Department of Transport and Regional Services.



subsea debris clearance system including mechanical clearance tools and a subsea dispersant injection capability.

In the context of the local Australian industry's approach to source control, it is important to differentiate between capping and containment as the two terms are often used interchangeably, which can give rise to confusion.

A subsea capping system is a type of cap that fits over an existing damaged subsea wellhead or subsea BOP stack to seal off the well and stopping any hydrocarbon flow. A containment system is a subsea capture system designed to contain and collect oil from a well failure. Capping stops flow, containment captures flow.

The equipment requirements for a containment system may be considerably more complex than those for capping the well, as capture of hydrocarbons will likely require the use of a process train (e.g. well test rig up on a suitable rig or other vessel with processing capacity such as an FPSO).

From an environmental perspective, the elimination of a hydrocarbon spill at source will always result in lower impact than an attempt to recover the hydrocarbon once it has been released to the environment.

Each titleholder proposing to drill an offshore well in Australian waters is responsible for developing source control strategies. The titleholder will lay out the requirement for a capping stack contingency (including the technical justification if this contingency is deemed unwarranted). If a capping stack contingency is required, the titleholder will explain the mechanism it has in place for securing the use of a capping stack in a timely manner should a loss of containment occur.

Oil and gas industry explorers and producers in Australia have either joined the global Oil Spill Response Limited/Subsea Well Response Project (OSRL/SWRP); have a commercial arrangement in place for capping stack access (e.g. Wild Well); or utilise an in-house capping stack.

The SWRP is a non-profit joint initiative between several major oil and gas companies that enhances the industry's capacity to respond to subsea well-control incidents. The project has developed four capping stack systems, with one system delivered to Singapore, enabling the industry to cap most subsea oil wells in water depths up to 3000m around the world, as well as providing flexibility for various contingencies.

The SWRP planned the intervention system, which includes newly-designed subsea capping and dispersant application equipment. OSRL owns the equipment and is responsible for storage and maintenance. OSRL has made the equipment available to operators through subscription and a supplementary agreement.

The next stage of the collaborative project is to develop and deliver a containment toolkit that can further enhance the industry's capability to respond to a subsea well incident. The toolkit includes standard components which, used with existing standard industry hardware, can create a containment system. This can bring flowing hydrocarbons from a wellhead to the surface in a safe and controlled way, ready for storage or disposal, if well shut-in is not possible in the first instance. The first equipment will be available for international industry use from the end of 2014.



Australia's Subsea First Response Toolkit (SFRT)

APPEA's members have invested many millions of dollars into a local Australia located subsea first response toolkit. In the event of any loss of well containment incident, one of the first steps involved in any response is to survey the well site, attempt intervention on the existing well integrity systems, such as the Blow-Out Preventer (BOP) or Xmas tree, and if necessary, prepare the site for the possible deployment of a capping stack.

The first response equipment required for this intervention needs to be versatile (so that it can be used on different systems) and it needs to be readily available within the region for immediate mobilisation at the onset of a subsea well control event. This equipment encompasses the tools required to prepare the well for the source control as prescribed by each company in their Well Operations Management Plan (WOMP) or Oil Spill Contingency Plan (OSCP). This includes: assessing the damage at the sea floor; emergency override and operation of blow out preventers (BOPs); preparing the wellhead for a capping device; and injecting dispersant subsea.

In Australia, this collection of equipment is known as the Subsea First Response Toolkit (SFRT). Incident response times in Australian waters are minimised by locating this equipment in Australia and ensuring it is kept in a state of operational readiness at all times through the Australian Marine Oil Spill Centre (AMOSC).

As part of this SFRT initiative, the Australian petroleum industry has also established a 500m³ stockpile of dispersant suitable for use as part of the source control system. This is entirely organised by AMOSC and will become part of the response system on activation of the SFRT.

APPEA Mutual Aid Agreement for the Sharing of Critical Equipment and Relief Well Drilling

Other critical emergency response equipment such as vessels, work class remote operated vehicles (ROVs), and even drilling units will be available in the region with minimal response time if an emergency was declared that required that equipment. Whilst this equipment remains the responsibility of individual titleholders, the availability of this equipment is assured through an industry mutual aid agreement facilitated by APPEA and signed by Australian offshore operators.

STATE, NATIONAL AND INTERNATIONAL MUTUAL AID

Mutual Aid in Oil Spill Response

While titleholders and operators are now legally required to act as Combat Agencies in the event of an oil spill resulting from their offshore petroleum activities, a system of mutual aid arrangements exist between companies (as described above in relation to subsea responses), between companies and Australian governments (State, Territory and Federal) and internationally.

These arrangements exist under a variety of plans, protocols and specific mutual aid agreements, and their practical application are evaluated and reviewed through active joint training and exercises.



Mutual aid arrangements are also in place for the critical areas of Search and Rescue and Medical Evacuation (Medivac).

The Australian Marine Oil Spill Centre (AMOSC)

The Australian Marine Oil Spill Centre (AMOSC) is a not-for-profit company, financed by nine participating oil companies and other subscriber companies, and operates the Australian oil industry's major oil spill response facilities.

AMOSC provides a 24 hour a day oil spill response capability to the Australian oil Industry (both upstream and downstream). AMOSC's stockpile of oil spill response equipment includes oil spill dispersant and containment, recovery, cleaning, absorbent and communications equipment and is readily available to all its members through the activation of the AMOSPlan (see below). There is one main stockpile located in Geelong, two secondary stockpiles located in Fremantle and Exmouth and a supplementary stockpile located in Broome.

The substantial equipment stockpile located in Fremantle supports Western Australian based training and operations. In addition, selected AMOSC equipment is also available under short term hire arrangements to required locations, to cover temporary requirements for equipment, such as offshore drilling operations.

AMOSC, in collaboration with both its members and its response partners such as the Australian Maritime Safety Authority (AMSA) and the WA Department of Transport, are constantly reviewing and upgrading its response capacity. This includes its equipment (AMOSC recently took possession of an Oiled Wildlife Response Mobile Facility) and its specialised personnel (AMOSC recently recruited an Oiled Wildlife Response expert). AMOSC also recently upgraded its training capacity to now offer training in US Incident Command System (ICS), in addition to the Australasian Inter-Service Incident Management System (AIIMS), thus allowing Combat Agencies to work with both the international system and the Australian system for emergency incident response.

The AMOSPlan, the AMOSC Core Group and National Mutual Aid,

In recognition that oil spills could require response efforts beyond an individual company capabilities, oil and gas companies have over a number of years developed cooperative arrangements providing for mutual aid, both in Australia and globally.

At a national level, these mutual aid arrangements are brought together under the Australian Marine Oil Spill Plan (AMOSPlan). The AMOSPlan embraces the:

- response and training activities of AMOSC; and
- company to company mutual assistance arrangements administered by AMOSC.

Under the AMOSPlan, designated oil spill response resources of individual companies are made available to other companies and to the National Plan under service contract agreements administered by AMOSC. The AMOSPlan is activated by a company when the response to an oil



spill incident is regarded by the company as requiring resources beyond those of the company itself.

AMOSOC has a permanent staff of 14. When responding to oil spills, that permanent capacity is supplemented by participating oil company personnel specially trained for this purpose. This is referred to as the AMOSOC Core Group, which always comprises a minimum of 84 company employees. The Core Group receive support and training in excess of usual industry based oil spill response courses. This Core group is available to all AMOSOC Member Companies and more widely through the National Plan (see below).

The Western Australia State Emergency Management Plan for Marine Oil Pollution

The Western Australia State Emergency Management Plan for Marine Oil Pollution (WestPlan-MOP) outlines the roles, responsibilities and process for prevention, mitigation, preparedness, response and recovery to and from an oil spill in WA waters. The WA Department of Transport's Marine Safety Business Unit has responsibility for the development and review of the WestPlan-MOP.

The WA petroleum industry works closely with the WA Department of Transport in developing increased mutual aid capacity (through the AMOSPlan) and involving the Department in key oil spill response initiatives.

The National Plan for Maritime Environmental Emergencies

The National Plan for Maritime Environmental Emergencies (National Plan) sets out national arrangements, policies and principles for the management of maritime environmental emergencies. The National Plan is administered by the Council of Transport and Infrastructure under the Council of Australian Governments. A National Plan Strategic Coordination Committee sets policy direction and oversees the implementation of the National Plan. The National Plan is managed by the Australian Maritime Safety Authority (AMSA).

The recognition of mutual aid arrangements (including the AMOSPlan), the cascading of additional resources as an incident escalates, and the principle of providing for a comprehensive response to maritime environmental emergencies regardless of how costs might be attributed or ultimately recovered, is fundamental to the operation of the National Plan.

The Australian petroleum industry stays strongly committed to the National Plan, and has a strong and active relationship with AMSA

International Commitments, Mutual Aid and International Oil Spill Response Agencies

In addition to the mutual aid arrangements set out by the Australian Government via the National Plan and by the petroleum industry in the AMOSPlan, the Australian Government is also a signatory to the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC). The OPRC sets out the basis for facilitating international cooperation and mutual aid assistance in preparing for and responding to major oil spill incidents.



In addition to the international work on subsea response capacity building that APPEA has been a proactive participant in (see Well Capping, Containment etc. section above), the International Association of Oil and Gas Producers (OGP) has also developed a framework for mutual aid²² which can be applied locally (e.g. within a basin), regionally (e.g. with international neighbours) or internationally (as was the case in the Macondo incident).

Fundamental to the international industry's mutual aid arrangements is the existence of regional and international oil spill response agencies. For regional mutual aid the Australian industry primarily relies on the AMOSPlan. To access international scale resources, an increasing number of companies operating in Australia are members of OSRL²³.

OSRL is an industry-owned cooperative with a membership comprised of over 160 corporations worldwide. One key service provided by OSRL is its subsea well incident intervention services, which provides access to response ready capping and containment equipment, most notably for Australia providing access to a Well Capping Stack System (CSS) held in Singapore. OSRL also holds a global stockpile of 5,000 cubic metres of dispersant on behalf of its members, a proportion of which is held in Singapore for ready access, along with the aircraft and logistics support that allows the application of dispersants during a large scale spill.

Joint Oil Spill Response Exercises

In addition to regular training exercises conducted in-house, many companies with neighbouring operations will conduct joint oil spill response exercises to test not only the capacity of their individual companies, but of the mutual aid arrangements that are in place through AMOSPlan.

AMSA is responsible for undertaking joint exercises involving oil spill response agencies (such as AMOSC), state agencies, and industry – including the maritime sector as well as the upstream and downstream petroleum industries. The upstream petroleum industry is a strong supporter of joint exercises and contributes significant in-kind resources to joint industry-government training exercises.

Offshore Search and Rescue and Medical Evacuation

Search and Rescue

The offshore oil and gas industry has in place formal and informal search and rescue collaborative arrangements. This includes the recently announced Shell Australia dedicated search and rescue (SAR) helicopter service to support the offshore oil and gas industry in the Browse basin²⁴.

The new service is a key part of the growing oil and gas industry in the Browse basin and it is anticipated that other operators could join the service in the future.

²² See OGP Report No. 487 available at www.ogp.org.uk/pubs/487.pdf

²³ Apache, BP, Chevron, ConocoPhillips, ENI, ExxonMobil, Santos, Shell, INPEX, Total, Murphy Oil and Woodside are all full members.

²⁴ See: www.shell.com.au/aboutshell/media-centre/news-and-media-releases/2014/press-release-07072014.html



Aero Medical Evacuation

The Western Australia Resources Aero Medical Evacuation (WARAME) service was established in 2009 by six member companies of APPEA: Woodside Energy, Chevron, Apache Energy, BHP Billiton, Santos and Vermilion. An expansion of the WARAME service to cover the Browse basin is currently underway.

The principal aim of the service is to provide a 24 hour on call aero medical evacuation (AME) service to the oil and gas industry in WA. The service is based in Karratha and operates a fully medically equipped aircraft.

The INPEX operated Ichthys LNG Project also recently awarded a six year, \$45 million aeromedical support contract to national aeromedical charity CareFlight²⁵. The contract provides dedicated aeromedical capability, based in the Northern Territory, for support during the offshore construction and commissioning phases of the Ichthys LNG Project.

The oil and gas industry has a duty of care to provide the highest standard of medical care to its personnel. The very nature of the oil and gas industry exposes personnel to difficult and hazardous environments. In the case of WA, this is further complicated by the distances both offshore and onshore from primary health care facilities. The WARAME service allows personnel of member organisations rapid access from these locations to Port Hedland, Perth or Darwin hospitals.

The support services are intended to avoid drawing on government resources by limiting the potential impact on emergency services should medical evacuation be required. In the event of an emergency medical case in the community, the Royal Flying Doctor Service (RFDS) or local medical agencies can request use of the WARAME service based on clinical need. The decision to use this service will be made on a medical basis and will be physician led. Oil and gas companies provide substantial funding to the RFDS as part of their community investment programs. However, APPEA sees the sustainable funding of this community service as a critical role for Government.

State/Territory and Federal Governments have a major role in ensuring critical infrastructure and medical services are available in the remote regions of Australia – regions that contribute significantly to the economic well-being of both the States/Territories and Australia.

Basic Offshore Safety Induction and Emergency Training

The Tropical/Basic Offshore Safety Induction and Emergency Training (BOSIET/TBOSIET)²⁶ is also an industry requirement for every person going offshore to work in the oil and gas industry (includes construction and maritime, as well as drilling and production).

The BOSIET or TBOSIET course provides the safety and emergency response training and assessment required to work in an offshore environment. The course consist of four modules; Safety Induction, Helicopter Safety and Escape (HUET), Sea Survival and First Aid, Fire Fighting and Self Rescue.

²⁵ See: inpx.com.au/news/media-releases/2014/ichthys-awards-aeromedical-support-contract-to-careflight.aspx

²⁶ BOSIET - cold water; TOBSIET - warm water or tropical environment