Ministerial Statement

Varanus Island Incident Final Investigation Report

Minister for Mines and Petroleum

24 May 2012

I wish to inform the house today that I am tabling the findings of the final phase of the State's investigation into the pipeline explosion incident that occurred on Varanus Island on June 3, 2008 – the Bills/Agonstini Report.

This day has been a long time coming for myself and the people of Western Australia. I believe they have a right to know the cause of that incident, the level of effectiveness of the State's regulatory systems at the time, and the safety and energy security implications for the State.

By tabling this report today I provide all Western Australians with that opportunity.

The House will recall that when I announced on March 29 that the Department of Mines and Petroleum had discontinued its prosecution case against Apache North West Pty Ltd and its co-licencees, Kufpec Australia P/L and Tap (Harriet) P/L, I was unable to release the final investigation report due to a legal undertaking made to the Supreme Court.

I have now fulfilled that undertaking, which was to provide Apache a 'fair and reasonable time' to review the report before I publicly released any findings of the report.

Consequently, Apache provided me its response – a very comprehensive document of some five volumes, each containing about a 1000 pages or more, which took me a considerable amount of time to review.

However, I am now very pleased to be in a position to inform the House that I will today table the *Offshore Petroleum Safety Regulation - Varanus Island Incident Investigation Report.*

This incident occurred before the Barnett Government come into office, however, since I have been the Minister for Mines and Petroleum I have received some criticism for not publicly releasing the report sooner.

I take this opportunity to reflect on the course of events since the incident occurred which has influenced my actions during that time.

For instance, for two years Apache initiated litigation which hindered every effort by the State, as well as the joint State and Federal Government effort, to publicly release the findings of the Bills/Agostini Report.

In order to receive the report in 2009 I had to make the undertaking to the Supreme Court that I would provide the report to Apache before releasing any findings.

Throughout this protracted process, my intentions were always to get the best outcome and to ensure the State's prosecution was not hindered in anyway by premature release of this report or that further litigation did not hinder me further in providing this information to the House today.

However, due process has taken its course and the day has finally come when the people of Western Australia will have the opportunity to make up their own minds.

In summary, I can inform the house that the report is highly critical of Apache, particularly regarding the company's technical and operational failings as the operator.

The report concluded that Apache Northwest had the ultimate responsibility for maintaining the Varanus site in good condition and repair.

The investigators were also critical of regulators at the time, highlighting that there was significant confusion between the then Department of Industry and Resources (DoIR), the National Offshore Petroleum Safety Authority (NOPSA) and industry in regard to regulatory boundaries within, and between, these agencies.

But I will let the members be the judge of that by sharing with you the Executive Summary from the Bills/Agostini Report.

Read Executive Summary

GOVERNMENT OF
WESTERN AUSTRALIA

Offshore Petroleum Safety Regulation

Varanus Island Incident Investigation

by
Kym Bills and David Agostini
June 2009

Executive summary

In the early afternoon of 3 June 2008 a high pressure 12 inch export sales gas pipeline (SGL), critically weakened by a region of external corrosion, ruptured and exploded on the beach of Varanus Island off the coast of Western Australia. Almost immediately, a parallel 12 inch high pressure inflow gas pipeline less than a foot away also ruptured. Both pipelines directed intense fires towards the main gas processing plant on the island and nearly an hour later two other pipelines, the 16 inch sales gas pipeline and a 6 inch import gas line, ruptured closer to the plant. Fire and heat caused two further 4 inch pipelines to rupture. Large rocks and debris from the explosions penetrated about 50 metres into the Harriet Joint Venture gas plant. There was approximately A$60 million in damage to the plant. Plant closure led to up to A$3 billion of losses to the WA economy which lost 30 per cent of its gas supply for two months. By early October 2008 production from Varanus Island was up to around two thirds of previous production, however full restoration was still not achieved more than a year later.

In a complex, high hazard industry such as offshore oil and gas, society expects a robust regulatory regime in which operators maintain safety to minimise the risk of a major accident event and regulators provide assurance that this is being done. The duty of care/safety case co-regulatory regime progressively introduced in Australian waters since 1992 places the onus on operators and provides them with flexibility in how best to manage hazards and minimise risk. But regulatory competence, clarity and scope covering all relevant offshore operations is a fundamental requirement of the regime. However, on Varanus Island itself a full safety case regime was not yet required under Western Australian law per se but only as a PPA licence condition (PL12 licence).

Australia's offshore industry has a good safety reputation. However, in recent years a number of key safety indicators have plateaued or worsened. In Australia, as overseas, not all operators have a mature safety culture or seek to operate at best practice safety levels. Regulators must deal with differences in motivation and culture among operators by targeting scarce regulatory resources towards higher risk operators, facilities and activities. Better practice co-regulatory regimes require balance and integration between prescriptive elements and cooperative elements and genuine dialogue, goodwill and pro-activity among participants.

Apache, a fully owned subsidiary of the US company Apache Corporation, was the operator on Varanus Island and the majority shareholder in both joint ventures on the island. Because the onus for safety was with the operator, Apache Northwest Pty Ltd, we have not considered any role by the minority joint venture partners. We found that there was a range of Apache documentation that should have alerted the operator to serious risks involving external corrosion around the shore crossing of the 12 inch SGL, where it ruptured. We believe that the risk of this occurring was not only foreseeable but to some extent foreseen. Some Apache consultant reports seemed to understate the risks involved, perhaps because they had not reviewed prior consultancy reports which had already identified corrosion vulnerabilities. Hazard mitigation measures proposed in the safety case and Pipeline Safety Management Plan for the Varanus Island hub pipelines were inadequate and did not properly assess risks inherent in the pipeline system on the island, especially in the vicinity of shore crossings. Overall, the lack of robust corrosion data and prevention systems for the Varanus Island shore crossing zone of the 12 inch SGL was not addressed prior to the explosion.

While the hazard and risk of a major accident event from possible external corrosion was clear in Apache's documentation, Apache's understanding of the cathodic protection system on the 12 inch SGL was confused and confusing. Worryingly, this seems to be so even in relation to the CP system that was put in place after the incident raising the possibility of a further incident. Professor Rolf Gubner has outlined four scenarios for the external corrosion based on well-known industry mechanisms. These include a pipeline anti-corrosion coating failure due to: lack of adhesion during application shielding the pipe from CP protection, interference from direct current from adjacent pipes with different potentials, interference from alternating current from other structures, and disbondment due to CP over-protection. Irrespective of the mechanism, Professor Gubner expects that corrosion would have progressed at no more than about 2 mm a year so that the thinning of the 12 inch SGL to the point of rupture would have taken in the order of five years. Annex 11 includes some even more rapid examples.

High reliability organisations (HROs) operate in environments where it is not prudent to adopt a strategy of learning by mistakes and this is particularly relevant to a major accident event (MEA) in the offshore industry. HROs deploy sufficient people in the normal course of events to be able to deal with abnormal situations when they arise. Apache's strategy to operate with low manning levels, as identified in the Lloyd's Register report, leads to vulnerability in the event of abnormal operations.

We also examined Apache's safety culture and found that it was probably best seen as in the middle rank within some well-known hierarchies and was generally not at the level of being proactive or generative. Organisations with conventional outlooks and cultures tend to focus on successes rather than being ever mindful of failure. When accidents occur, they see them as 'fundamentally surprising' events because they call into question the organisation's model of the risk they face and the effectiveness of countermeasures employed. NASA's adoption of a policy of 'better, faster, cheaper' prior to the space shuttle accidents may have parallels with Apache's focus on cost and 'a sense of urgency' and suggest that Apache needs to better consider human and organisational factors and 'resilience engineering'.

While the primary technical and operational failings involved the operator, our examination of the 3 June 2008 incident also included consideration of the regulatory regime. We encountered a confusing mishmash of jurisdictional, legal, process and regulatory interfaces upon which was overlaid poor relationships among regulators. In such an environment, even serious operator shortcomings were far less likely to be found and addressed to reduce the risk of a major accident event.

On 3 June 2008, the Varanus Island plant, including the area in which all four pipelines ruptured, was regulated by the WA Department of Industry and Resources (DOIR) and defined as a 'pipeline' under the WA *Petroleum Pipelines Act 1969*. Under this Act, the increasingly complex Varanus Island hub activities were licensed under pipeline licence PL12 which has gone through 17 variations since it was granted in 1985, most of which had occurred since Apache took over in 1995. One variation in 1998 introduced a 'safety case' requirement but this was grafted into a prescriptive licensing regime which had poor and inadequate compliance penalties.

From its creation on 1 January 2005, the National Offshore Petroleum Safety Authority (NOPSA) provided contracted regulatory services to DOIR with respect to Varanus Island. In contrast, oil and gas feeding into the Varanus Island plant from facilities in Commonwealth waters had been covered by a comprehensive duty of care/safety case regime under Commonwealth law since at least 1996. From 27 March 2007 WA amended its *Petroleum (Submerged Lands) Act 1982* and regulations to mirror a safety case type regime with a requirement for Pipeline Management Plans in WA State waters. NOPSA had conferred power to consider the safety element of these by 27 March 2008.

The Safety Division in the WA Department of Consumer and Employment Protection (DOCEP) was the OHS regulator for the onshore petroleum and mining industries. From 2005, it provided (unpaid) regulatory advisory services to the offshore regulator in DOIR that were ultimately formalised in a MOU in late 2007. These services included the mainland end of the 12 inch SGL from the low water mark to the compressor station and main pipeline to Perth over 30 km away. While seriously under-resourced, from late 2006 DOCEP proactively drew Apache's attention to the lack of pipeline integrity data including for the condition and safety of the 12 and 16 inch sales gas lines. Not satisfied with Apache's response, in April 2007 DOCEP formally suggested that DOIR write a tough regulatory letter to Apache that included consideration of in-line-inspection for corrosion (intelligent pigging).

The DOIR regulator did not send the letter drafted by DOCEP but sent an amended and less demanding version. When an Apache PMP that included the entire 12 inch SGL was received by DOIR in March 2008, DOCEP's advice on it was not sought before it was approved. DOCEP considered that its advice was treated by DOIR as coming from a contractor and could be accepted or rejected. In hindsight it is clear that DOCEP was correct in its assessment of the risks of the 12 inch SGL.

Under the PL12 licence, the Petroleum and Royalties Division in the Department of Industry and Resources (DOIR) was the regulator of the Varanus Island facilities including the sections of the four main pipelines that ruptured. While most of the Varanus Island plant is licensed as a 'pipeline', the 12 inch high pressure gas import pipeline next to the 12 inch SGL, that ruptured first, was not declared to be a pipeline or licensed by DOIR. Although DOIR retained regulatory responsibility, in 2005 half of its technical safety staff were recruited by the new NOPSA and almost all of the rest went to DOCEP and to industry. DOIR either did not place adequate priority on replacing such expertise or was unable to replace them because of market conditions. The Petroleum and Royalties Division in DOIR also faced a large range of other policy and regulatory responsibilities including responsibility for resource management (exploration and development approvals) that overwhelmed the division resources and further reduced its focus on safety.

DOIR audits of Apache prior to the creation of NOPSA uncovered some serious issues including with change management, maintenance and audit systems. In 2001, a lack of specialist corrosion staffing was linked to a case of dangerous external corrosion in offshore platform pipework that was only discovered

by chance. In addition to many positive findings, NOPSA's audits also found deficient systems and maintenance issues. From 2005 the DOIR regulator received audit and other reports and advice from DOCEP and NOPSA but, with the one exception noted above, it took no independent initiative to seek remedy to identified shortcomings.

In mid 2006 just before the 21 year renewal of the PL12 licence was due, DOIR decided to accept a validation exercise by Lloyd's Register which had been engaged by Apache, for the purpose of supporting a licence renewal. DOIR's safety regulatory attention was cursory and it wrote to NOPSA seeking advice on whether Apache's provision of what amounted to Lloyd's proposed scope for future validation work, was itself sufficient to enable DOIR to renew the PL12 licence for 21 years. NOPSA appropriately advised that the validation work needed to be done. DOIR did not consult NOPSA further on the matter.

DOIR states that on the basis of only a one page executive summary to the final Lloyd's 16-page validation summary report in May 2007 it was supportive of a 21 year licence renewal. Subsequent to the accident, Apache referred to this page as an indication of Lloyd's support for the integrity of the pipeline system. We agree that this page and the similar concluding page give an overly positive assessment but note that a reading of the detail, including in the other 14 pages, places the proposed renewal in perspective. Two recommendations by Lloyd's Register were stated to be 'required to be implemented' to avoid DOIR cancelling the PL12 licence and 'numerous' suggestions were made to help Apache attain 'best practice'. The detailed background was in earlier Lloyd's Register reports that DOIR did not receive or seek.

Using Commonwealth safety case regulatory and guidance material to form a template, the DOIR regulator had accepted a safety case for the Varanus Island hub on 22 July 2002 including the Sales Gas Pipelines. During our investigation, documentation was difficult to access and DOIR agreed that its files were often extremely poor. Systems to monitor or follow up licence conditions were incomplete and it was not clear how conditions added during licence revisions applied to pre-existing plant and pipelines. Apache's 2007 revision of the safety case for the Varanus Island hub included as a major accident hazard the possibility of external corrosion causing a pipeline rupture and jet fire escalating to a major accident event (MAE) with multiple lives lost. We found no evidence that DOIR undertook analysis itself or that particular advice was sought from NOPSA or DOCEP on hazards and MAEs and their mitigation. The same was true a few months later with

respect to the Varanus Island hub Pipeline Management Plan (including the ruptured pipeline areas) and its safety elements at shore crossings and onshore.

Overall, DOIR was an under-resourced and less than competent safety regulator working in a difficult legislative and industry environment in which safety case language was confusingly grafted into an already inadequate licensing regime. We do not believe DOIR regulation met any of the nine principles of offshore regulation agreed in 2002 by the Ministerial Council on Mineral and Petroleum Resources (MCMPR). It unconsciously hindered robust regulation of Varanus Island: there was minimal oversight and poor use of contracts and MOUs with NOPSA and DOCEP, and personal relationships were unhealthy and detrimental to safety.

NOPSA provided audit services to DOIR on Varanus Island in relation to later versions of the 2002 safety case from 2005 until a five-yearly safety case revision was due in mid 2007. DOIR was the Varanus Island regulator and its lack of engagement after NOPSA submitted reports and advice, and the weaknesses in the WA legislation and PL12 licence, no doubt constrained NOPSA's pro-activity. However, we believe that NOPSA could, for example, have recommended enforcement action when serious deficiencies were found or were not addressed in a timely way.

On 31 October 2007, NOPSA accepted the revised Apache Hub Safety Case in relation to NOPSA's legislated offshore responsibilities and on 6 December 2007 DOIR accepted the safety case in relation to its responsibilities including 'production facilities located on Varanus Island'. It did this late - NOPSA had advised DOIR on 31 October that the onshore island elements of the safety case were satisfactory and recommended DOIR acceptance but DOIR had to be reminded through follow-up correspondence.

With regard to the 2007 Varanus Island Hub Safety Case and the March 2008 Apache Pipeline Management Plan, NOPSA accepted the portions for which it had legislated responsibility only, but the DOIR regulator considered that NOPSA had endorsed the broader details. Regarding the Pipeline Safety Management Plan (PSMP) NOPSA wrote to DOIR citing the regulations under which it provided acceptance 'in full'. A close look at the cited legislation would show that these did not include the portions of the pipelines above the low water mark on Varanus Island. However, the document included the portions on the island and NOPSA's letter included more general statements about the whole PSMP covering the health or safety of persons at or near the pipeline.

The NOPSA services contract with DOIR stated that NOPSA 'will be responsible to the project manager' in DOIR for the duration of the contract and 'will provide advice and contractor services for the contract areas' including with respect to 'evaluation of safety case submissions' and 'recommendation to DOIR of acceptance' and 'review of safety aspects of Pipeline Management Plans'. NOPSA was paid a $10,000 monthly fee for these services. The contract was silent on whether NOPSA had to be asked first. NOPSA submitted that it should have been asked but we note that it did not require to be asked in certain contracted areas such audits and inspections. Clearly, the jurisdictional complexity and complex interfaces in this case clouded the critical issues and militated against effective safety regulation. Given the ambiguities and tensions surrounding service contracts, we do not support future contract arrangements for regulatory services but rather a clear conferral of powers from WA to NOPSA with respect to Varanus Island and like facilities.

The legislative environment in WA was a contributing factor to regulatory ineffectiveness and needs to be simplified as soon as possible. We believe it is inappropriate to use a pipeline licence under the *Petroleum Pipelines Act 1969* to regulate Varanus Island, particularly given the shortcomings of that legislation with respect to safety cases and penalties. In our assessment, conferral of powers to NOPSA to maximise integration of offshore petroleum safety and integrity regulation and a properly resourced regulator in an augmented safety case regime is the best option for future safety.

We also strongly recommend the creation of a properly resourced national independent no-blame offshore oil and gas and petroleum pipeline investigation capacity that can investigate major accident events and near misses in the future with appropriate powers so that learning important safety lessons is not made hostage to legal action.

I am pleased to be able to report to the house that despite the delays in receiving the advice contained in the report due to the litigation initiated by Apache, the Barnett Government has taken significant steps to improve regulatory services and delivery of resources safety for WA's resources sector.

The regulatory agency DoIR was restructured to form the Department of Mines and Petroleum (DMP), which came into effect on January 1, 2009, creating a new regulatory body for extractive industries and the petroleum sector.

Resources safety responsibilities were transferred from the then Department of Commerce and Employment Protection (DoCEP) and returned back to the Department of Mines and Petroleum.

This created a Department with a stronger focus with clear, unambiguous responsibility for ensuring regulation of safety, health, environment and facility integrity in the upstream petroleum industry is world best practice.

This is part of a suite of reforms to approvals processes implemented by this government which has designated the Department as the lead agency for regulating mining, petroleum, geothermal and carbon capture and storage proposals.

At the conclusion of my statement I will take the opportunity to table the Department of Mines and Petroleum's response to the Report's recommendations.

The State Government's commitment to continuous improvement of DMP has also initiated a review of the offence and penalty regimes in all petroleum and mining legislation. That review will include an analysis of other jurisdictions and is expected to be completed this year.

The Varanus Island incident highlights that while streamlining regulatory requirements for resources projects, the State Government must also act to improve regulatory systems, expertise and enforcement.

Industry and community alike expect that the upstream petroleum industry must meet best-practice regulatory standards to ensure the integrity of the offshore petroleum facilities that provide vital energy to WA.

This incident has also highlighted for Western Australia that the South West of this State is an integral part of our future gas security.

It is a flawed perception to think the delivery of the majority of the State's gas supply can be maintained reliably with a single pipeline from the North West region.

In closing, I would like to say that since this incident Apache has maintained that the Varanus Island explosion was 'neither foreseeable, nor foreseen', a view that was reiterated in Apache's response to me, and recently through full page advertisements to the people of Western Australia.

I leave it to members of the house and the people of Western Australia to draw their own conclusions.

I would also like to reassure the house and the people of Western Australia that I am committed to take the steps necessary to ensure the safety and security of this vital sector.

We are working with the Commonwealth Government to ensure Western Australia maintains an appropriate involvement in the administration and regulation of offshore petroleum titles.

Western Australia's industry has decades of profitable years ahead of it, and we need to play a major role in realising these benefits for the people of this State.

I table the Bills/Agostini Report and move that the report do lie upon the table and be printed.

I addition, I intend to table the response the Department of Mines and Petroleum has made to the recommendations of the Bills/Agostini Report.

Before I do I want to advise the House that this Report refers to the inspectors, Messrs Bills and Agostini.

I want to quote from this Report to inform the House of the qualifications of Messrs Bills and Agostini which led to their appointment to undertake the inquiry.

Mr David Agostini

David Agostini is a consultant in the oil and gas sector having worked in the industry since 1957. He worked for Texaco as a Petroleum Engineer and Production Specialist, and later joined Woodside Energy in a similar capacity.

He subsequently managed drilling operations and offshore production. On secondment to Shell in the Haugue, he worked as Deputy Strategy Manager for downstream oils and gas.

Mr Agostini managed Woodside's LNG business and was involved in marketing gas into Asia.

Mr Agostini is currently the Chairman of the Western Australian Energy Research Alliance (WA:ERA). He has also chaired the Australian Resources Research Centre (ARRC) advisory group, the State Government Electricity Industry Reference Group (EIRG) and was a member of the COAG Energy Review Panel. He holds engineering qualifications from the North Carolina State University.

Mr Kym Bills

Kym Bills is the current Chief Executive Officer of the Western Australian Energy Research Alliance (WA:ERA), a collaborative energy-related research alliance between the University of Western Australia, Curtin University and the Commonwealth Scientific and Industrial Research Organisation.

He has held the position since August 2011 and is also a board member of the National Offshore Petroleum Safety and Environmental Management Authority.

Previously the Executive Director of the Australian Transport Safety Bureau, Mr Bills has also been the head of the Commonwealth Maritime Division. He has also held board

positions at ANL Limited and the Australian Maritime Safety Authority, and chaired the Commonwealth/State Marine and Ports group. In 2005, he worked with the Rt Hon Sir John Wheeler-reviewing Australia's airport security and policing.

Mr Bills' initial degrees were a B.A (Hons I) from the University of Adelaide and a M.Sc from the University of Oxford. He holds professional fellowships with the Chartered Institute of Logistics and Transport, the Safety Institute of Australia, the Australian Institute of Management, the Australian Institute of Company Directors and the Australian Institute of Energy.

I now table the Report and move that it do lie on the table and be printed.

Thank you.