

# AUSTRALIA'S DECOMMISSIONING

Steps out of Limbo



Image Credit: Pexels/Zukiman Mohamad



## INTRODUCTION

# AUSTRALIA'S DECOMMISSIONING Steps out of Limbo

Offshore decommissioning in Australia is at a turning point. While many regions around the world have been steadily pressing ahead with their end-of-life responsibilities for offshore assets (most notably the North Sea and Gulf of Mexico, Australia has dawdled. According to a report from Advisian, commissioned by the Centre of Decommissioning Australia (CODA), the country has an offshore oil and gas asset stock consisting of 1,008 wells; 57 fixed facilities (including 237,000 tonnes of topsides and 518 tonnes of substructures); 11 floating facilities; 82 export and inter-field pipelines; 205 infield flowlines (1,7000 km excluding jumpers and spools); 130 static umbilicals (approximately 1,500 km excluding flying leads); 535 subsea structures; and 126 flexible risers and dynamic umbilicals associated with floating facilities. The decommissioning of this infrastructure presents an eye-watering bill with the estimated liability costs ranging from between US\$30bn to US\$50bn over the next 50 years. More to the point, this bill will need to be paid sooner than some might have expected as, although few of the country's fields have reached a stage where decommissioning is required, more than half of all offshore production facilities in Australian waters currently regulated by NOPSEMA are more than 20 years old and some exceed 50 years.

As of now, there has been relatively little decommissioning and abandonment activity in the country. However, the winds of change have begun to pick up and recent developments over the last two years have encouraged the Australian Government to adopt more stringent regulations and push operators into action.



## THE NORTHERN ENDEAVOUR

While discussions around revamping Australian decommissioning legislation had been in the offing for a number of years, the controversy surrounding the *Northern Endeavour* FPSO was the catalyst which eventually pushed this hushed dialogue into actions.

In 2019 the 170,000 bpd *Northern Endeavour* FPSO was shut down by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) after an immediate threat to health and safety was found at the facility. The owner, Northern Oil & Gas Australia (NOGA), was required to decommission the facility but in late 2019 the company went into liquidation and, as a result, the Government was forced to maintain the facility. By the end of 2020 it was clear that the facility needed to be permanently dealt with and so the Government announced it would take responsibility to decommission the FPSO along with all related infrastructure.

The US\$200mn bill for doing so was a heavy one to put at the door of the taxpayer and so, to help cover this, the Government issued a levy to the oil and gas industry which was met with disapproval from many organisations such as the Australia Petroleum Production and Exploration Association (APPPEA).

At the recent Offshore Well Intervention Australia 2021 conference a panel of industry experts within the Australian oil and gas sector gathered to assess the recent history of Australian decommissioning as well as its future. Reflecting on the impact that the *Northern Endeavour* had on this topic, Aaron McPhee, Developments Delivery Manager – Drilling & Completions, suggested that its importance could not be understated. He noted that the subsequent *Walker Review* brought the legal issues to the forefront so that they could no longer be ignored.

Benjamin Adamson, Associate Lawyer at HFW, added that when he was reading speeches in parliament for proposed changes to the law, they were all heavily influenced by opinions on the *Northern Endeavour*. "It was very obvious that it is driving forward laws to

come in, even though the laws have been in the pipeline for a couple of years before the events of the *Northern Endeavour*."

"As everyone is aware, our industry is defined by events," remarked Trevor McClymont, Principal Completion Engineer. "In the Gulf of Mexico we had the Macondo oil spill in 2010. One big thing that came out of this was that companies now have to consistently show that they have funds available to abandon all the resources they have on the ground. There is now an auditing system that happens yearly where they go through and make sure these funds are there. All the regulations we adhere to have usually had some significant event that drove it – the *Northern Endeavour* has brought decommissioning issues to light in Australia."

## THE NEW ZEALAND PARALLEL

Across the Tasman Sea there is a strikingly similar story unfolding in New Zealand with the Tui oil field serving as the impetus for change. The field, located 50 km offshore the Taranaki Coast has been marked for decommissioning since production ceased in 2019 when an oil sheen caused by a damaged subsea flowline was observed alongside the *Umuroa* FPSO. The demobilisation of the *Umuroa* and the P&A of eight subsea wells and associated subsea structures was required but in November 2019 the field operator, Tamarind Taranaki, put the company into administration with liquidation following in December 2019.

As was the case with the *Northern Endeavour*, it fell to the Government to pick up the project and the Ministry of Business, Innovation and Employment (MBIE) pushed ahead with the task. Since this point substantial progress has been made with the first phase of decommissioning (disconnection and demobilisation of the *Umuroa*) completed in May 2021 with the second phase (removal of subsea infrastructure) anticipated to be carried out in the summer of 2021/22 or alternatively in the summer of 2022/23. The MBIE has also entered into an agreement with Helix Offshore Services Limited for the P&A of wells in the field as part of phase three of the project.

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<sup>1</sup> *The Walker Review was commissioned by the Minister for Resources, Water and Northern Australia in the wake of the Northern Endeavour controversy. Steve Walker, a UK-based expert with extensive offshore regulation and industry experience, concluded that the regulatory bodies (NOPSEMA and NOPTA) took appropriate action during the events but were restricted by legislative limitations. The review made nine recommendations to improve the legislation, practices and policies around decommissioning in Australia.*

The New Zealand Government clearly wasted little time in tackling this overhanging project but it did not do so with an eye to willingly doing so again. Following the dissolution of Tamarind Taranaki and picking up the field, the Government introduced legislation to amend the Crown Minerals Act 1991. The Act, which was given royal assent in early December, amends the Crown Minerals Act 1991 on a number of key issues including: introducing an obligation for all current and future petroleum permit and license holders to undertake and pay for decommissioning activities, including civil pecuniary and criminal penalties for failing to fund and carry out decommissioning; holding parties who transfer out of the permit or licence liable for meeting the costs of decommissioning if the new holder fails to carry out and fund decommissioning; and enabling the Minister to more effectively regular monitor the holders financial position and plans for field development as well as assessing if the holder has the financial capability to complete decommissioning.

This change, spurred by the Tui oil field debacle, has drastically increased the Government's ability to monitor the nation's decommissioning responsibilities and ensure that this work is completed in the future without the need to spend taxpayer's money.

## AUSTRALIAN AMENDMENTS

Like their New Zealand counterparts, the Australian Government was quick to enact legislative amendments to ensure that an issue akin to the *Northern Endeavour* debacle did not occur again.

Following the *Walker Review*, in December 2020 the Australian Department of Industry, Science, Energy and Resources published a consultation paper for enhancing Australia's decommissioning framework which stated, "There are particular points in the lifecycle of an industry when policies and regulatory practices need to adapt to changing circumstances. For Australia, that time is now."

The paper continued to outline the department's proposal for an enhanced framework to ensure the Australian regime is clear and fit for purpose and ensure that future decommissioning challenges have effective regulatory oversight and robust financial safety nets to strengthen protections for taxpayers, the Government and the environment. It recommended introducing measures to enhance the decommissioning framework in order to manage more effectively the financial and environmental risks

associated with mature assets. These recommendations included: increased oversight of changes in company control and increased oversight of financial assurance, including the use of bonds and securities; modernising field development plans; early and proactive use of remedial directions powers; public comment and transparent reporting; and enhancing trailing liability to apply in a greater range of circumstances.

In 2021 the Offshore Petroleum and Greenhouse Gas Storage Amendment Act 2021 was submitted to, discussed within, and passed by both houses of Australian Parliament before receiving Royal Assent on 2 September. Taking its cue from the consultation paper and *Walker Review*, the Act strengthens the capabilities of NOPSEMA and NOPTA to ensure that decommissioning work is carried out and not postponed until it lands at the feet of Australian taxpayers. Primarily, this has imbued the Government and its regulators with the power to regulate changes of titleholders and impose penalties if these are not approved and to ensure that former titleholders and their related parties will retain trailing liability for decommissioning (effective from 1 January 2021).

The passing of the amendment has already bolstered NOPSEMA to act – it has since published a five-year Decommissioning Compliance Strategy in accordance with the expectations with the Government which articulated how it will work with stakeholders to reinforce and clarify decommissioning requirements and undertake compliance activities in a risk-based way where there is a higher risk of non-compliance with the decommissioning obligations. In the coming year, the compliance approach will focus on implementation where planning and progress towards decommissioning is not being undertaken in a responsible manner by titleholders – in such a case the body has indicated its readiness to issue directions for end of life requirements. NOPSEMA has set a goal of ensuring that by 2023 decommissioning plans are in place for all facilities and wells where equipment is not in use.

At the aforementioned OWI AUS 2021 session, McClymont turned his attention to the adjustments around trailing liabilities by noting that in the US this has been in place for a long time as is not anything new, so it should not be cause for alarm. "If you are a big player with big pockets and you sell to a smaller guy and they go under then BSEE (Bureau of Safety and Environmental Enforcement) will go back to the next title holder and keep going until they eventually run out,

only then does it go to the taxpayer. Lots of due diligence is done to make sure that liability can be properly handed over as you can't get out of this. No matter how great an operator's lawyers are, BSEE can always come back to them as that is how it is written in law."

McClymont continued by remarking that he believed these new approaches were justified and that now NOPSEMA will have greater authority to issue directional notices to perform work such as P&A – similar to other regions. "In the Gulf of Mexico when wells are uneconomic and the operation is shut in then a P&A clock starts. If this is not done in a certain amount of time it goes onto the 'idle iron' list which is essentially the naughty list. The regulator can issue directional notices and their ultimate card if these are not adhered to is company's can risk losing operatorship."

McPhee remarked that it was clear in the last couple of years the fallout from the *Northern Endeavour* and the subsequent law changes had resulted in significant organisational changes to the way companies are now set up. "For instance we now have a much more dedicated team towards P&A and decommissioning. We have done a few of these things but there is lot more to come. Structurally we are better set up to carry out these campaigns which is making things a lot easier. This may seem simple but 3-4 years ago this was simply not there."

## FACILITATING FUTURE CAMPAIGNS

While Australian regulators now have a firmer legal capacity to enforce decommissioning operations, it should be, and largely is, understood that this is not a battle between operator and regulator but is instead a partnership – the smooth running of which will only benefit all stakeholders involved. With this in mind, the panellists also reflected on the most dynamic factors which could drive associated costs down, in order to make them more manageable pills to swallow.

McClymont commented that there were a few advancements in technology which has caught his eye which could make some real difference in Australia and, indeed, globally. He noted, "Thru-tubing logging was something that I did not think would ever come in my career. Everyone wanted it but you never heard about it. Now it is commercial, been tested and a few companies out there have it. People are planning on using it in Australian waters and this could save a significant amount of money when it comes to P&A."

McPhee added that such technology could be implemented from smaller vessels and this is something that could really save significant value for operators. He noted that getting away from a well construction mindset of using a big rig, pulling everything out, doing logs to one where thru-tubing is utilised and tubing is potentially left in place would result in days being knocked off campaigns – again bringing cost-saving benefits.

The panellists also noted the potential of bismuth plugs which have been trialled in other parts of the world. Bismuth changes from liquid to solid (when the heating source is removed) almost instantaneously and is completely impermeable or affected by contamination issues. Cement plugs usually require several dozens of metres in length in order to qualify as a barrier whereas a bismuth plug of just a few metres is sufficient enough to provide long term isolation in the well. Aker BP used bismuth to plug the top section of old oil wells at the Valhall field in the North Sea and noted that although bismuth alloy costs a lot more than cement, the time spent per well was cut in half which resulted in significant cost saving from rig time.

Moving beyond technology the panellists also arrived at collaboration, an industry buzzword from the last few years. McClymont commented, "Australia has the best soil to plant the seed of collaboration. Especially for companies with smaller portfolios, collaboration is exactly what is needed to drive down costs for operators. It would be great to tear down commercial barriers and share rigs, get one down here capable of doing different work and get bridging documents in place to get everyone on the same standard.

"What inhibits some operators is if they don't have the economy of scale to bring all the equipment it can cause delays on campaigns. With shared programmes smaller vessels could be brought in to do reconnaissance work which would save operational costs because all problems would be better identified and contingency plans solidified. There are huge advantages to collaboration."

This is a 'no brainer' (as the panellists put it) but is something that needs to be pursued more ardently as, currently, the talk is not being put into action. The session participants acknowledged that there are lots of smaller groups trying to pursue collaborative efforts which, while certainly is a step in the right direction, would make more progress by forming a large consensus and forum. Collaboration would surely have a better chance of taking off in Australia if this was the



case, but it remains to be seen if anyone is willing to take the initiative and spearhead such an enterprise – although CODA is perhaps best positioned to do so.

It is also worth mentioning that the implementation and new technology were also singled out in the Advisian/CODA report as recommendations for reducing the cost of decommissioning in the future. Alongside suggestions such as leaving export and inter-field pipelines in place and 'refloating and towing' methods, the report noted that "a dedicated P&A workgroup to share lessons learned, pre-screen wells, optimise the execution schedule and ensure continuity of the work schedule" would result in cost saving. Additionally, it continues that the "suitable application of new technology" would provide a similar outcome and save time spent per well.

## SUCCESS STORIES

There is no doubt that Australian P&A and decommissioning has a long way to go before it can be considered comparable to that of the North Sea, but there has been some cause for celebration in the form of successful operations carried out around the country's waters. One of the most outstanding stories was showcased at OWI AUS by Sarah Robertson, Wells Engineering Supervisor at ExxonMobil, who reported on the well abandonment campaign in the Bass Strait which partners ExxonMobil and BHP had been undertaking utilising both rig and rigless operations. Robertson said, "This joint venture in the Bass Strait consists of 23 offshore platforms and installations and more than 400 wells, which is about half of Australia's well stock. Production began in the 1960's and now many are nearing end of life."

Well abandonment began in 2018 and to date nearly 70 wells have been plugged and abandoned. Robertson continued, "With so many to go execution efficiencies have a large economy of scale and throughout the Mackerel campaign from 2019 onwards we trialled different abandonment techniques which have been built into the current campaigns on the Kingfish B and Fortescue platforms."

For instance, for Mackerel wells the partners were able to de-risk the presence of shallow hydrocarbons through the use of pulsed neutron logs and a review of historical annulus pressure data. Approaching wells with highest risk first, the company brought a full hydraulic workover rig-spread with ancillary slickline, E-line, cementing and fishing services in order to

provide contingency options. Robertson noted that with wells with integrity issues they executed a conventional abandonment which involved recovering the tubing and setting a balanced cement plug. In these cases they took the opportunity to run a cement bond log of the production casing cement which provided a reference for comparison with their calculated top of cement.

Robertson remarked, "After taking care of higher risk wells we increased our focus on optimisations including trialling two techniques to maximise the amount of tubing left in the well without compromising the abandonment objectives. For wells with tubing leaks and indications of good primary cement, we punched the tubing above the production packer and used a jointed concentric string and cement retainer to ensure circulation below the holes in tubing. The annulus was cleaned ahead of cementing by circulating high viscosity pills. Cement was displaced down concentric string taking returns via the production annulus. Initially we over displaced the cement in the annulus and then ran a cement bond log inside the tubing to verify the placement. Later, when we were comfortable with this operation, we set a longer balanced cement plug and no longer conducted the CBL. We also trialled a thru-tubing abandonment."

Apart from leaving much of the tubing downhole, Robertson continued, the advantages that these rigless techniques presented were that they could be conducted upfront, prior to rig arrival and, from the lessons learned on the campaign, they could move to batch style abandonment. Batch one involved a wireline and cement unit with all pre-wireline work being completed and thru-tubing reservoir cement plugs set on the wells with tubing integrity. A hydraulic workover rig is mobilised for batch two to complete any concentric and tubing pull reservoir abandonments. Remaining shallow tubing cuts completed this time also and wireline can be demobilised. Surface abandonment is then completed in the third and final phase.

"The results of these rigless operations have been quite remarkable. In the second half of the Mackerel campaign we achieved a 30% reduction in the cost to set the reservoir barriers but have since extended this to a 75% reduction with upfront planning of the Kingfish B and Fortescue campaigns," Robertson explained.

"We have seen a reduction in the time per well with less equipment rig up and rig down throughout the batch process and we have had more opportunity to

complete work off the critical path such as removing the christmas trees after the reservoir barriers were in place. For smaller facilities that require jack-up rig abandonments, the cost saving would be even greater.”

Going into a specific example of a rigless operation saving time and reducing risk, Robertson noted that on the Kingfish B11 well they used a Bullhead abandonment technique. The well had a gas lift straddle set in the tubing which, in prior years, had resisted multiple attempts from slickline and braided line to recover it so that a fishing operation was most likely required. Instead, ExxonMobil opted to use the Bullhead P&A technique where cement equivalent to a 400 metre plug was pumped down the tubing and displaced with sea water. The well locked up when the cement reached the perforations as planned and was later successfully tagged and pressure tested. Instead of complex rig fishing job, the abandonment was completed riglessly in just two days. Since then, they have completed another with similar results.

## **CHANGE IN THE AIR**

Successful stories such as Robertson’s demonstrate the capability of the Australian offshore oil and gas community to perform P&A and decommissioning

activities and minimise the financial impact while doing so. The US\$30bn-US\$50bn decommissioning bill is indeed substantial but it is a figure that cannot be ignored now that the Australian Government has begun to strengthen its powers of enforcement. Indeed, this message is one that has begun to permeate the community as across 2021 there was a noticeable increase in stories relating to this topic as stakeholders position themselves to both prepare for and facilitate this wave. For example, in September EXCEED took the opportunity to launch EXCEED Australia in order to supply the decommissioning market with its expertise and the formidable Helix Q7000 will arrive in Australian and New Zealand in the near future with a view to conducting abandonment and decommissioning work.

The Australian Government has finally awoken to this issue and has been followed by the oil and gas community. It is now obvious that the bill has to be paid however, with the introduction of new technology and the incorporation of collaboration (among others) it could still be shrunk to a more acceptable level. This topic will remain at the forefront of the Australian offshore community for years to come and at D&A AUS 2022 attendees will have the chance to explore this issue in even greater detail.

***For information on speaker, sponsorship or attendance opportunities, please reach out to the details below.***



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**AUSTRALIA'S LEADING DECOMMISSIONING WORKSHOP**