Submission to the Western Australian Legislative Assembly's Economics and Industry Standing Committee Inquiry into the Economic Implications of Floating Liquefied Natural Gas Operations

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Contents

Introduction

This is a joint submission to the Western Australian Legislative Assembly's Economics and Industry Standing Committee Inquiry into the economic implications of floating liquefied natural gas (FLNG) operations. It has been prepared by:

- Mr Chris Hicks, a business owner with interests in the oil and gas sector in Australia and the Middle East over the past 25 years.
- Mr Ken Owen – a senior oil and gas engineer with over 40 years' experience in the oil and gas sector in the UK, the Netherlands, Germany and Western Australia (WA).

Both respondents are willing to address the inquiry if required.

This submission is a joint effort, because it is believed that it will provide the committee with a wider view of the relevant issues for consideration. The respondents welcome the inquiry and the opportunity to make a submission to the committee on the economic impact of FLNG and its benefits. However, it is felt that such an inquiry appears to be rather late in the day, given that so many matters concerning the burgeoning FLNG developments in waters off the Western Australian coastline have already been discussed with the federal government resulting in agreements with multinational companies (such as Shell) which this state (certainly the public) does not know anything about. It now seems that there is only the hope of salvaging somewhat minor benefits at best for the Western Australian and Australian economies.

This submission addresses the sectors of interest identified by the inquiry in the following order:

- engineering and design
- fabrication and manufacturing
- construction and ancillary services
- domestic gas supply and industrial gas users.

LNG and FLNG

For the purposes of this submission, the respondents wish to state that, while there are specific and particular differences between FLNG and LNG projects (onshore and offshore), much of the technology, engineering, design, fabrication, manufacturing and construction methods apply equally to both fields.

The use of prefabricated modular design and construction for LNG and FLNG projects means that there is a large overlap of common methodologies, expertise, acquired skills and intellectual capital, especially on the topsides process modules.

The committee is asked to please keep this important point in mind when reading the rest of this submission.

Engineering and design

From 1995 onwards, WA was being heralded as the up-and-coming hub for LNG engineering excellence in the world – one that would rival the established centres of London, Houston and Yokohama – yet that claim never came to fruition. This begs the question of what will happen to all the contracting companies, service industries, employees and their families that WA Premier, Colin Barnett, encouraged to set up in Perth on the strength of that claim.

It is probable that the manufacturing of ship hulls used for FLNG projects is currently outside the scope of Australia's shipbuilding capabilities, although whether this has even been explored is not known to the respondents. However, at least part of the engineering and design could be carried out locally. But for this submission, the respondents assume that local companies do not offer a competitive advantage to the large shipbuilders in other parts of the world. Therefore, when it comes to the 'floating' part of FLNG projects, the respondents will not address this particular component.

What is of great relevance, however, is the fit-out of the ships in preparation for exploiting Australian gas reserves. This is an area where the expertise and experience have been available in Australia for many years. However, there will be no benefits to Australian companies or workers from this component of FLNG projects as it seems that most of it has already been, or will be, carried out overseas. Certainly, the respondents have not seen any publicised agreements or press releases which counter that position. In fact, the engineering and design of Shell's Prelude FLNG platform has already been carried out in France by the Technip Samsung Consortium and design work has already begun on a further fleet of FLNGs.

According to Technip's website:

> Today, the construction of Prelude FLNG is well underway in our partner's shipyard in Goeje, South Korea, while the original agreement has been extended to cover innovations for the next generation of Shell FLNGs that are at design stage in Paris La Défense in France.[1]

Any opportunity for engineering and design work to be carried out on the Shell FLNGs in Australia has already set sail. If it were just Prelude, it would be galling enough. But the benefits to the French and Korean economies will be ongoing as Technip's website informs us that:

> In July 2009, Shell signed a 15 year umbrella contract with the Technip Samsung Consortium for a program of generic FLNGs.[2]

It is thought that at least four of Shell's FLNG projects will end up in Australian waters. Other projects awaiting final investment decision include ExxonMobil/BHP's Scarborough FLNG, GDF Suez/Santos Bonaparte FLNG, Woodside's Sunrise FLNG and Hess's Equus LNG project. All of these projects will be extracting gas from Australian territory, yet the benefits to the Australian economy, both in terms of jobs and state revenues, will be negligible. Even in Mr Barnett's original concept for the Browse LNG venture at James Price Point, the front-end engineering and design (FEED) would have been done in Houston. After shelving its onshore proposal, Woodside recently announced plans for three FLNGs for the Browse Basin.[3]

With more foresight, determination and careful management by state and federal politicians, much of this topsides work could have been (and hopefully still can be) done, at least in part, by Australian companies. If this were the case, these companies would now be employing hundreds of project engineers, draughtspersons, designers and all the requisite support staff in Perth-based offices. What has actually happened is that politicians have been focussed solely on earning revenue through levies and have failed to secure the high-end process work for local

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[1] http://www.technip.com/en/media-center/webzine/flng-combination-our-know-how#more (viewed on 06/08/13)

[2] Ibid.

[3] http://www.theaustralian.com.au/business/breaking-news/woodside-profit-up-75-per-cent/story-e6frg90f-1226701146002

engineers. As a result, we are seeing these highly skilled and experienced people leave Australian shores for more stable career centres (like Paris, Houston and London).

As long ago as January 2008, Mike Nahan was pointing this out in the *West Australian*:

> With train 5 [work going offshore to London] went the foundations of the LNG engineering cluster. The engineers, companies and knowledge built up with train 4 left town, mainly for London. With them went the State's ability to compete for future work on gas plant design. The loss is retrievable, but only if the Government acts smart and supports brains over brawn.[4]

The government did not act at all, so over the past 15 years we have seen a steady decline in high-end design and construction for fixed LNG platforms and onshore LNG projects in WA. There have been no greenfield oil and gas projects wholly designed in Perth since Woodside's LNG train 4 (2000–2005). Many people formerly involved in LNG projects have now taken early retirement. These highly skilled professionals could have easily transferred their skill sets to incorporate FLNG engineering and design as there is no difference in the topsides process modules. But successive federal and state governments failed to make binding and lucrative local content agreements with major oil and gas companies which could have secured thousands of jobs for Australian workers.

This is no exaggeration, as Nahan was clear in his article that WA could have rivalled the established LNG design centres of the world by building on a reputable foundation:

> WA has skills in engineering design, procurement and management. We have excellent high-level engineering skills and reputation … the people, the experience, local demand and a perfect environment for engineers to live and work. And we are internationally competitive … the State has the potential to become a world-class cluster for high-tech, resource-focused service industries.[5]

But Nahan wrote this in 2008 and instead of the state becoming that 'world-class cluster', the work situation for oil and gas engineers and designers in Perth became steadily worse. Moreover, once Chevron's Gorgon and Wheatstone projects are online, the same will be said for on-site personnel. Presently in WA, high-end process design engineering for greenfield oil and gas projects is non-existent. This situation will continue if something is not done urgently. At the same time, mineral and mining engineers are experiencing similar problems, with a limited number of projects and many people out of work.

The situation is clear to employment agents who are now mainly placing non-engineering positions in the oil and gas sector, such as document controllers, secretaries and procurement officers.

Furthermore, with the remaining engineering personnel either leaving Australia or taking early retirement, no one is passing on skills to the younger generations because there is no project continuity for this industry to harness the intellectual capital and historical knowledge.

Again, this situation was foreseen by Mike Nahan in a later 2008 article in the *West Australian*:

> Some of the lost generation are being lured back with huge pay packets, but many are gone. Many that remain are baby boomers who soon will be retiring. The young engineers

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[4] Nahan, Mike 'WA needs to back brains over brawn'. *West Australian*, 19 January 2008, business section, p.80. [see 'Attachments' at the end of this document]

[5] Ibid.

> entering the workplace are being thrust into roles and responsibilities beyond their experience and without mentors. Like most professions, engineers learn more on the job than in the classroom. The result is many mistakes and delays. In fact, at the start of the decade WA was better endowed with skilled personnel than most other countries. However, these people are now fully employed. Many have been lured overseas.[6]

In a nutshell, there is no greenfield high-end engineering or design work available to Australian engineers, designers and support staff. Not only that, the state is witnessing the decimation of all high-end process personnel from WA, either to overseas companies or through early retirement due to a lack of work. This, in turn, means that what could have been a hugely successful industry, will no longer exist.

If the state continues to neglect opportunities to foster the training needs of the next generation, by encouraging the procurement of high-end engineering work within the sector, these abilities will be totally lost to WA for good.

Fabrication and manufacturing

The first steel has already been cut in Korea for the Shell Prelude FLNG project as is proudly pointed out on Technip's website. The turret, consisting of six separate modules, and the turret mooring system are being built in Dubai. This will almost certainly be the case with Shell's future FLNG projects.

Woodside's North West Shelf Joint Venture LNG train 5 was designed and built by Foster Wheeler in the UK with only minor works being undertaken in Perth. This is in spite of the fact that train 4 was engineered in Perth.

Foster Wheeler also engineered Woodside's Pluto LNG and is heavily involved in a planned LNG development by Santos. These projects are destined for Australian gas reserves, yet if you go to the career page on Foster Wheeler's website, there are 20 countries listed – Australia is not among them!

Chevron's Gorgon LNG was engineered in the UK by KBR with only minor works in Perth. Japan's INPEX Ichthys LNG project, which will operate in the Browse Basin, has been engineered and constructed in Yokohama, and Chevron's Wheatstone project is being designed and constructed by the US company Bechtel.

It is clear that any opportunity for Australian companies to secure fabrication and manufacturing contracts for process modules in the future is non-existent. This point was clearly noted by Karratha and Districts Chamber of Commerce and Industry chief executive officer, John Lally, who said FLNG plants were a 'disaster' for the Pilbara.

> They will build [FLNG] in Asia, and they will staff it with FIFO workers – they won't need to staff it from here or even staff it with Australians. Even though it might be possible to put transport and logistic hubs in [to supply FLNGs], the impact will be minimal compared to processing the gas on shore.[7]

That means that jobs for workshop personnel, industry suppliers and support services personnel will all go overseas. There is no need for on-site construction personnel, site managers, tradesmen and their apprentices. All the accumulated knowledge built up in the last 25 years will dwindle away and leave the Australian part of the sector completely impoverished.

A good historical example is the fate of WA coded welders, an instrumental and thriving community within the industry which took many years to establish. After the

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[6] Nahan, Mike 'Aim to treble LNG needs cash, people'. *West Australian*, 26 April 2008, business section, p.76. [see 'Attachments' at the end of this document]

[7] http://www.pilbaraecho.com.au/2013/07/28/pilbara-must-find-ways-to-secure-benefits-from-floating-lng/ (viewed on 06/08/13)

construction of Woodside's Goodwyn A project, fabrication contracts went to yards in South-East Asia and this pool of highly skilled workers either retired or moved on as the work diminished. WA now has to import 457 coded welders to do work on projects in the state. Will this soon be the case for WA engineering as it is rapidly wound down?

To some extent, for 'stranded' offshore projects, the respondents probably agree that there is no other alternative than to use FLNG technology. But it would be good to see the state and federal governments applying enough pressure to at least give Australian companies a fair chance to compete for the topsides work needed on the vessels, thereby re-engaging local workers who launched their careers on the promise of ongoing opportunities.

Eventually, even maintenance work on existing plants will not be done by local personnel, as there will be no opportunity to develop and keep the skills needed to stay ahead in the sector. This is already the case for Gorgon and Wheatstone, where these contracts have been awarded to a Houston-based company, EDG, yet another example of an existing WA capability that is being awarded to contractors overseas.

According to the information, training and recruitment website, iMINCO:

> Australian unions have increasingly voiced their concerns against the use of FLNG technology, claiming it will rob Australia of thousands of construction jobs that are generated by companies building land-based gas plants. This is of course a valid argument as Australian workers compete for jobs on the existing land-based mining and civil construction projects.[8]

This view is clearly supported in a report prepared earlier this year (June 2013) by the Industry Capability Network of Western Australia (ICNWA):

> Many Australian firms face challenges in gaining access to international supply chains during the construction of major investment projects. The relative small size of the Australian economy, coupled with its geographical distance from the major markets of Europe and North America, and the trend towards greater use of overseas engineering and established supply chains by international investors, can create significant impediments to Australian industry participation in the construction of major projects.[9]

Premier Barnett has also recognised missed opportunities for Australian jobs in construction with a move away from onshore developments to FLNG projects:

> While FLNG will deliver royalty income and there will be some jobs for WA in servicing the project, there is no doubt this is a missed opportunity to secure thousands of jobs in construction and in the operation of a gas precinct and to secure gas for our domestic economy.[10]

According to a 2005 report by the ICNWA, entitled *Australian LNG Engineering Design: An Opportunity Lost?*:

> The most significant impact to Australia is the immediate loss of hundreds of engineering employment opportunities … if Australia loses its ability to undertake engineering for its local projects, it will have no opportunity to participate in the expected growth phase of world LNG engineering and construction.
>
> The loss of Australian engineers with LNG engineering design experience to overseas centres significantly weakens the local resource pool. It is understood that to support the

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[8] http://iminco.net/flng-jobs/ (viewed on 06/08/13)

[9] *Opportunities for Small to Medium Enterprises – For companies interested in operations, maintenance and facilities management of onshore Australian LNG facilities* (viewed on 06/08/13 at http://www.icn.org.au/sites/default/files/LOB%20final%20report%20-%20LNG%20Operational%20Supply%20Opportunities%2014%20June%202013_0.pdf)

[10] http://www.offshoreenergytoday.com/premier-barnett-browse-flng-is-a-missed-opportunity-for-thousands-of-new-jobs-australia/ (viewed on 06/08/13)

> LNG Train V engineering in the UK at least 20 local staff are being relocated from Perth to Reading [UK].[11]

Shell itself is noticeably unspecific on its website about the benefits of its FLNG projects to Australia, other than taxes:

> The [Prelude] Project will contribute to the Western Australian and Australian economies through tax revenues, creating hundreds of jobs and providing opportunities for Australian businesses.[12]

That's it. There is no mention of supporting any local element of the actual industry sector it relies on; no commitment to using local suppliers, contractors, engineers, designers, fabricators or air support services; no promise of establishing a local content policy like the ones in place in countless other countries; and no assurance to continue to develop education and training facilities. What Shell is actually saying is that it will pay its due taxes and that this will be its entire contribution to the economies of Western Australia and Australia.

Construction and ancillary services

To some extent, the Australian LNG construction industry owes its existence to the fact that onshore LNG facilities were 'stick built' and not even large multinational companies could do anything to circumvent this part of the process.

That was until technology moved on and companies found a way to reduce the need for stick-built construction by modularising onshore LNG facilities so that they could be designed and built overseas with only the need to be connected to one another on arrival at site.

Now technology has advanced to such a point that all the process modules on a foreign-built ship are manufactured and connected overseas. But these technologies were gradually phased in over the past 10 years and Australian LNG construction workers could have been at the forefront of these advances. Instead, successive governments wronged their own workers by not providing effective support when it was needed and they were effectively removed from the field of competition for FLNG module fabrication projects. It is in the interest of the multinational oil companies to circumvent the need to use local contractors and materials. They proactively seek the technological advances to do this in order to reduce their dependency on, and commitment to, local economies so that they can act as independently as possible to increase profits from sovereign nations' resources.

Once you lose the high-end process design and engineering work and the subsequent fabrication and manufacturing contracts, you inevitably lose out on many of the ancillary work because contractors in the countries where the manufacturing takes place have preferred suppliers and fabricators.

This is highlighted in the ICNWA's 2005 report:

> The loss of LNG engineering and procurement for local projects also means that local suppliers will not be known or become familiar to the overseas engineering and procurement teams. Therefore the local suppliers will be at a disadvantage to those suppliers based in the country where the engineering and procurement is undertaken.[13]

There is likely to be some minor work generated from things such as supply bases, air support services, minor maintenance work and the like. But this is nothing

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[11] *Australian LNG Engineering Design: An Opportunity Lost?* (2005) Industry Capability Network of Western Australia (ICNWA).

[12] http://www.shell.com.au/aboutshell/who-we-are/shell-au/operations/upstream/prelude.html (viewed on 15/08/13)

[13] Ibid.

compared to what might have been – a world-class centre of excellence in LNG engineering, design, fabrication and manufacturing.

In fact, there is nothing to stop future FLNGs operating a foreign workforce flown in and out of somewhere like East Timor and, as a result, WA would receive nothing in GST, payroll tax, or federal tax income. Even maintenance work could be carried out by overseas operators.

These concerns have been echoed by the Maritime Union of Australia which has said that FLNG development would mean fewer jobs in WA and fewer benefits to the state's economy.[14]

Furthermore, there will be less investment in training centres, apprenticeships and tertiary institutions which will result in fewer students taking up engineering places, thereby completing the downward spiral towards Australia being eliminated from the competition for LNG work as a whole. Instead, ships designed, engineered, manufactured and operated overseas will come into Australian waters, extract the gas and set sail for Asia, leaving only the relatively minor benefit of royalties behind.

It should be noted that Australian personnel providing support services would probably be at optimum capacity only in the event of an emergency on an FLNG platform. Then finally, Australian workers would be desperately called on by the multinational corporations to help with any medical emergencies, rescues, evacuations and subsequent spill clean-ups and environmental remediation.

Domestic gas supply and industrial gas users

Domestic and industrial gas supply is diminishing in WA and costs have continued to rise according to the DomGas Alliance. The alliance, which represents natural gas users, infrastructure investors and producers in WA, says that:

> Wholesale prices have risen from around $2.50 per gigajoule in 2005 to $8–9 currently.
>
> Prices are now two to three times the price of new gas in Victoria … Industry cannot secure affordable long-term gas contracts (>5–7 years) that could support new investment in manufacturing or power generation.[15]

The DomGas Alliance also points out that jobs and investment are being lost interstate or overseas because of WA's gas shortage and prices. At the same time, LNG producers continue to commit to 20–25 year contracts to export WA gas to overseas customers while failing to commit to long-term domestic supplies for local consumers.

The emerging FLNG industry will do nothing to ameliorate the domestic gas supply shortage or reduce the cost of gas to businesses and households. Any claim that it will shows a complete lack of understanding in the way in which FLNG projects will exploit gas fields. The gas will be transferred from vessel to vessel; there will be no pipeline from future FLNGs to the shores of WA. Therefore, any domestic supply would need to be shipped to shore. But the respondents of this submission think that this is a very remote possibility. In the foreseeable future, it seems more and more likely that Australians will have to buy their own gas back from the international operators who have extracted it in Australian waters.

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[14] 'Woodside backs floating LNG for Browse'. *Sydney Morning Herald*, 30 April 2013 (viewed on 07/08/13 at http://news.smh.com.au/breaking-news-national/woodside-backs-floating-lng-for-browse-20130430-2iqkg.html)

[15] http://www.domgas.com.au/issues_shortage.html (viewed on 06/08/13)

This point was raised by opposition energy and state development spokesman, Bill Johnston, who has said "processing the gas offshore would mean gas from the Browse project would not flow to WA's domestic market, which would be a 'disaster' for the state and a huge failure on Mr Barnett's part."[16]

Johnston's view is supported by Craig Arnold, the managing director of Dow Chemical Australia and New Zealand, who reports that:

> An economic analysis from Al Group and the Plastics & Chemical Industry Association estimated that for each dollar of benefit gained by LNG export growth, $21 would be lost through the tightening domestic market.[17]

Meanwhile, a shale gas boom in the US is expected by McKinsey and Company (a global management consulting firm) to boost annual economic output by USD700 billion by 2020. Arnold goes on to highlight the incompetent management of Australia's gas reserves:

> In stark contrast, domestic shortages of gas and resultant price hikes are expected to reduce Australian economic output by billions of dollars. How can this happen? Put simply, the US has the mechanisms in place to ensure the new wealth of gas flows first to its domestic market. Australia does not. Rather, the enormous increase in gas supply from Australia's east coast is committed wholly to export.[18]

It is clear that successive state and federal politicians have failed to put the necessary measures in place to secure a long-term domestic gas supply to both Western Australia and the rest of the country. It is likely, given the prevalence of emerging suppliers in other parts of the globe, that this lack of vision will result in the country's inability to compete in future international markets.

Conclusion

The development of FLNG will be the final nail in the coffin for WA's oil and gas industry – an industry that had the potential to deliver so much to individual workers, local companies and the WA economy. The following illustrates just how much the state has lost.

What might have been

In 1988, Woodside's Goodwyn A offshore production platform – the biggest in the southern hemisphere at the time – was designed and engineered in Perth. It employed hundreds of engineers, design draughtspersons and ancillary staff working with great innovation and world-best practices. As a result, Perth established itself with the capability to deliver high-end and high-value LNG projects. With the design complete, the fabrication was also partly undertaken in WA. Again, local companies proved to have world-class capabilities with fabrication of the rig, accommodation and utility modules at Jervoise Bay which employed hundreds of welders, boilermakers, pipe fitters, electricians, instrument fitters and scaffolders. Geraldton also received much needed work with the fabrication of the drilling modules and the piles that are inserted into the jacket that sits on the seabed.

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[16] 'Woodside backs floating LNG for Browse'. *Sydney Morning Herald*, 30 April 2013 (viewed on 07/08/13 at http://news.smh.com.au/breaking-news-national/woodside-backs-floating-lng-for-browse-20130430-2iqkg.html)

[17] Arnold, Craig. 'We are paying far too much for domestic gas'. *Australian*, 26 July 2013 (viewed on 15/08/13 at http://www.theaustralian.com.au/business/opinion/we-are-paying-far-too-much-for-domestic-gas/story-e6frg9if-1226685243090)

[18] Ibid

It should be noted that the fabrication of the process modules was undertaken in South Korea and the quality of work was so poor that they were brought back to Fremantle for remedial work and repair.

Throughout the 1990s, there was a continuation of engineering and fabrication on many world-scale projects that provided employment for thousands of individuals. Fremantle was home to the fabrication of Woodside's Laminaria FPSO topsides. The Wandoo platform, which is the only concrete gravitational structure in Western Australian waters, was cast in Bunbury. Its topsides facilities were designed in Perth and the subsea pipelines were fabricated in Fremantle. Wandoo generated in excess of AUD350 million (in 1994 dollars) for local businesses in design and construction work alone!

From 2000–2004, Woodside's LNG train 4 and the North Rankin A were also engineered in Perth. Later in the decade, when the oil and gas industry in Perth should have been the envy of the world, both state and federal governments let the ship sail. While they were busy counting royalties, they lost sight of the bigger picture: to create a lasting, world-class LNG design hub. Instead, onshore projects, such as Pluto, Gorgon, Wheatstone and Ichthys saw engineering and design work go overseas to London, Kuala Lumpur, Paris, Houston, Yokohama and San Francisco. Fabrication and manufacturing went to Indonesia, Malaysia, Thailand, Korea and China, while offshore project design work went to Malaysia, Paris and London.

It seems as if the French look after the French, the Americans look after the Americans, while Australians look after everyone else except Australians.

Clough has already set up a high-value engineering centre in Glasgow citing the high cost of doing business in Perth as one of the reasons.[19] However, Australian engineers are being encouraged to apply for overseas' positions on LNG projects. In fact, one of the respondents, Ken Owen, receives weekly offers for work in Scotland at the same rates he receives in Perth. It is therefore time to debunk the monotonous claim that high salaries are making contracts in Perth expensive. A considerable factor has been the strong Australian dollar. This, along with various work compliance rules and regulations; government fees, charges and taxes, as well as the cost of approvals processes, adds to the image of WA as an expensive place to do business.

But dollars and cents are not the only factors at play here. Political stability, economic strength, weather, culture and quality of life are equally important aspects in the success of large ongoing resources projects. These are also the sorts of things that determine where people choose to live and work.

It would be a fallacy to suggest that there is no engineering work currently being done on projects in Perth. Follow-on engineering work is being carried out on Gorgon and Wheatstone. Engineering work is also being done in Perth for a platform off the coast of Israel. But if this is the case, why is most of the engineering and fabrication work going overseas? If some of the engineering work can be done locally and on a cost-effective basis, then why not most of it? Australia needs to encourage Australian LNG workers back from overseas, back from early retirement and welcome overseas engineers to its shores. If that can be achieved, there might be something to salvage.

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[19] Williams, Peter. 'Costs force Clough to set up offshore'. *West Australian*, 28 June 2013 (viewed on 15/08/13 at http://au.news.yahoo.com/thewest/a/-/newshome/17781617/costs-force-clough-to-set-up-offshore/)

What might be salvaged

Everyone within the LNG industry and its observers is absolutely bewildered at what has happened to the Australian oil and gas sector in the past decade. The general sentiment was summed up by Craig Arnold, the managing director of Dow Chemical Australia and New Zealand in an article in the *Australian* 'We are paying far too much for domestic gas':

> Australia really needs to be marshalling competitive strengths for new, long-term investments. Yet we have taken one of the biggest employment boosters available – a natural gift – and turned it into a liability.[20]

This is a sad and depressing truth. The key factor in the failure of state and federal governments to ensure a healthy future for Australia's oil and gas industry was the sole focus on revenues from taxes rather than securing significant local content agreements.

Local content can be defined as the total value added to a nation's economy through the employment of select and related services; the production of goods; and the use of local materials, workers and equipment for particular sectors of an economy, in this case, the oil and gas industry. It can also include any 'spillover' benefits that can stimulate economic growth in other industry sectors.

Some countries were quick to enact legislation that guaranteed high investment in their local economies by requiring oil and gas companies to make use of local services and suppliers. The shining example is Norway, which put these measures in place in the 1960s and now boasts the largest 'oil fund'[21] in the world, with an estimated worth of around USD760 billion.

> When it comes to local content, Norway is one of the leading nations in terms of policy. The Norwegian government has introduced legislation necessitating that companies using natural resources also contribute to economic development. Its local content strategy has therefore been held up as an example of good practice for other countries.[22]

Very early on in its history of oil and gas development, Norway's politicians were astute enough to ensure that large-scale oil and gas projects exploited not only the nation's oil and gas reserves, but used local companies and materials to establish a thriving national industry. They also ensured that the industry continued to evolve through heavy investment in its intellectual capital and further development through education and training.

> The government aimed to award contracts to Norwegian bidders when they proved to be competitive in terms of price, quality, delivery time and service. The rationale behind this was to promote the establishment of local industry and this was achieved through cooperation with international oil companies. Overseas firms' commitment to and strategies for technology transfers were made a crucial and determining factor in the licensing process by the Ministry of Petroleum and Energy, once again putting local content programmes at the heart of investments.[23]

Furthermore, the Norwegian Oil Development initiative has shared the country's accumulated wisdom by helping developing countries such as Angola, Cambodia, Iraq, Madagascar, Mozambique, Nicaragua, Nigeria, South Africa, Sri Lanka, Sudan, Tanzania, Timor, Uganda and Vietnam to exploit their oil and gas reserves while, at the same time, maximising local content and increasing industrial development.

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[20] Arnold, Craig. Ibid.

[21] Norway's Government Pension Fund – Global is often referred to as The Oil Fund as it is largely funded by oil revenues, oil company taxes and payments for exploration licences.

[22] http://www.oilandgasiq.com/strategy-management-and-information/articles/norway-a-local-content-success-story/ (viewed on 15/08/13)

[23] Ibid.

Legislated and strong local content programmes also exist for Brazil, Canada, China, Ghana, Indonesia, Kazakhstan, Malaysia, Russia, Saudi Arabia, the United States and Venezuela. Many of these countries have also used strategies to engage asset operators and offshore personnel to help in recommending initiatives that would increase local content significantly; for example:

> Local content in Kazakhstan is backed by legislation and stipulates that field operators must use equipment, materials and finished products manufactured in Kazakhstan.[24]

Accenture is a global management consulting, technology services and outsourcing company that conducts research on multinational companies. In a 2008 report, the company explains that:

> In Nigeria, local content has been successfully raised from single-digit levels to about 30 percent through the creation of an ambitious local content agenda by the Nigerian National Petroleum Corporation (NNPC) working with the major oil companies, local suppliers and other institutional stakeholders … [The NNPC] published local content legislation and guidelines specifying the equipment, materials and services that need to be compulsorily sourced from within the country.[25]

More significantly, for the current inquiry's attention is this extract from the report:

> targets include raising local content requirements to 70 percent for the Nigerian oil and gas industry, fabricating and integrating a significant quantity of the topsides required for floating production and storage offshore vessels, significant pipe milling in-country, and manufacture of various materials and equipment.[26]

The Shell Petroleum Development Company of Nigeria operates a joint venture agreement with the NNPC and on its website informs us that it:

> employs more than 4,500 people directly of whom 95 per cent are Nigerians. Some 66 per cent of the Nigerian staff members are from the Niger Delta. Another 20,000 people are employed indirectly through the network of companies that provide supplies and services.[27]

The NNPC website says that Nigeria's goal is to achieve 70 per cent local content in oil and gas projects in its territories. It is not just developing nations that are benefiting from a large percentage of local content as Shell reports that 85 per cent of contracts (by value) for the Salym Petroleum Development in Western Siberia have been awarded to Russian companies (13 per cent to companies from the local area alone).[28]

There are numerous similar aspirations for higher local content in LNG projects around the world with regulatory requirements in place that define explicit targets for a large degree of local content.

However, in a recent article, Shell Australia's commercial manager, Ian Grose said that local content would amount to around AUD200 million if 70 per cent of operational contracts were awarded locally for the Prelude FLNG. That is a mere

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[24] http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Developing-Local-Content-Programs.pdf#zoom=50 (viewed on 16/08/13)

[25] Ibid.

[26] Ibid.

[27] http://www.shell.com.ng/aboutshell/shell-businesses/e-and-p/spdc.html

[28] *Royal Dutch Shell plc Sustainability Report 2008*, pp.34–35 (viewed on 15/08/13 at http://www.eisourcebook.org/cms/Responsible%20Contracting%20in%20the%20Russian%20Oil%20&%20Gas%20Industry.pdf)

1.53 per cent of the AUD13 billion project. Mr Grose conceded that there had been little Australian involvement in the construction phase.[29]

Similarly, it has recently emerged that WA controls a paltry four per cent of all the massive LNG developments off the Kimberley coast.[30]

If other countries can reap such large contracts and support from the oil and gas sector, this should also be the case in Australia. If all the abovementioned countries impose stipulations for greater local content, so should Australia.

If state and federal government initiatives are implemented now that stipulate a genuine commitment by the oil and gas multinationals to provide generous and fully auditable local content for the Australian LNG sector, floating or otherwise, it is just possible that existing expertise can be harnessed and new opportunities to expand can be fostered.

Even the global oil and gas industry association, the International Petroleum Industry Environmental Conservation Association (IPIECA) recognises the importance of securing local content for host nations:

> While there may be a short-term cost premium in developing local suppliers, in the long term a reliable local supply chain can offer better overall value.[31]

The association is also aware that provision of local content is an emerging issue and one that requires a long-term outlook:

> Although companies have made considerable progress in advancing local content, it remains an emerging issue. As such, it requires more time and effort to improve practices.[32]

It is imperative that this inquiry addresses the issue of local content and makes urgent recommendations to government for any future FLNG projects in Australian waters. This may involve providing tax incentives for local contractors and workers, changing state and federal laws, introducing an economic zone, promoting grants and undertaking infrastructure work.

The conditions set by government must be fully transparent and auditable to ensure that work is not actually being carried out in other countries under the auspices of WA local content contracts.

The respondents suggest that state and federal governments should stipulate that a fully auditable 40 per cent of all topsides process module work is undertaken by local companies on all future FLNG projects in Australian waters. After all, the United Arab Emirates government helped in securing lucrative contracts with Technip for the local heavy marine industry to build part of the Prelude FLNG in Dubai by ensuring government support.[33] It also emerged recently that four US senators, backed by the US-based Cliffs Natural Resources, are opposing a proposed loan to Gina Rinehart's Roy Hill iron ore project to buy US-built Caterpillar equipment as annual yields from the mine will be more than the entire US annual output and the effect on international

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[29] Williams, Peter. 'WA to benefit from Prelude FLNG: Shell'. *West Australian*, 12 August 2013 (viewed on 21/08/13 at http://au.news.yahoo.com/thewest/a/-/breaking/18460314/wa-to-benefit-from-prelude-flng-shell/)

[30] Klinger, Peter. 'Not much Browse for WA'. *West Australian*, 13 August 2013 (viewed on 17/08/13 at http://au.news.yahoo.com/thewest/a/-/breaking/18473529/not-much-browse-for-wa/)

[31] http://www.engineersagainstpoverty.org/_db/_documents/Local_content_strategy.pdf (viewed on 19/08/13)

[32] Ibid.

[33] http://shipbuildingtribune.com/2012/05/28/uae-chairman-of-emirates-group-welcomes-shells-prelude-flng-construction-teams/ (viewed on 21/08/13) [see 'Attachments' at the end of this document]

markets would harm US iron ore producers.[34] How can Australia compete with incentives provided by tax-free countries and pressure from powerful US lobby groups?

Is it not the role of any government to try to promote local advantage, forge relationships, remove impediments, ease burdens and provide incentives for strategic, long-term economic development within Australia's oil and gas industry?

When considering what is at stake – the possibility of witnessing what could be one of the country's healthiest industries wither into insignificance – it is imperative that state and federal governments act with the utmost expediency.

What is needed is a concerted effort by federal and state governments to achieve enough engineering and fabrication to compensate for the loss of construction. If Woodside is going to sanction three FLNG projects, at least one of them, if not all, should be done in Perth. If government cannot achieve something for the betterment of the oil and gas industry, the multinationals will simply build a supply base in East Timor allowing them to sidestep the Australian maritime unions. Royalties would then be the sole benefit to the nation – and they will not even cover the cost of the resulting increase in demand on the already beleaguered welfare system.[35]

However, if this inquiry can pave the way to securing a fairer, more sustainable and equitable LNG and FLNG industry, the economic benefits to this nation would be enormous.

[34] http://au.news.yahoo.com/thewest/business/a/-/wa/18667423/cliffs-joins-senators-in-roy-hill-protest/

[35] http://au.ibtimes.com/articles/497848/20130809/welfare-poverty-australia-unemployment-social-security-coalition.htm#.UhxaLZI3B8E

Attachments

WA needs to back brains over brawn

The biggest State has mis ... owing LNG industry

MIKE NAHAN

When this boom has subsided, we will look back to 2004-05 as a year of great success and failure.

It was the year the boom began in earnest. It was also the year WA lost its chance to become a world hub for LNG plant design.

Being a world-class quarry is fine but eventually the ore or oil runs out. It also leads to a shallow and volatile economy.

This is why, since the time of Sir Charles Court, the main aim of State development policy has been to diversify the State's economy through downstream processing of resources.

While much has been tried, success has been limited. The reason for the failure has been a fundamental misunderstanding of WA's comparative advantage.

WA does not and never has had a comparative advantage in manufacturing, metal bashing or brawn-intensive activity.

It has few people, a small local market and is far from its main markets. Its resources are in isolated places often with harsh climates and where building costs are high and workers few.

Over the years WA has been able to attract a large number of processing plants.

However, with few exceptions, these have been first stage processing dictated by the need to reduce shipping volumes such as gold ore to bullion, bauxite to alumina and gas to LNG.

The long sought-after steel, aluminium and petrochemical plants never eventuated or lasted as they made no sense in the marketplace.

WA and Australia do, however, have a strong comparative advantage in research and development, innovation, design, in-field adoption and problem solving applied to the resources sector.

Most importantly, WA has skills in engineering design, procurement and management. We have excellent high-level engineering skills and reputation. We have the companies, the people, the experience, local demand and a perfect environment for engineers to live and work. And we are internationally competitive.

Indeed, given the scale of the mineral and energy resource base, the State has the potential to become a world class cluster for high-tech, resource-focused service industries.

These would not only add local value to the State's resources but create industries and highly paid jobs that extend far beyond the boom and beyond our shores. We have the potential to become for the resource sector what Los Angeles is for movies and Detroit was for cars.

Unfortunately, our governments do not get it. Despite rhetoric about innovation, they are still focused on brawn over brains; on using the resource sector to provide work for welders rather than engineers.

For the mineral sector the lack of government leadership is not now a major problem. The mineral sector in WA has reached a scale and level of world dominance that a service cluster is developing under its own steam.

LNG is different. While WA is a major source of LNG with huge scope for expansion — indeed more money will be spent on LNG faculties than on the entire mineral sector over the next few decades — the sector is still in its infancy.

The LNG and petroleum industries are, because of their strategic nature, driven more by politics than the mineral sector, are dominated by a few companies, all of which are resident elsewhere. Thus governments have a large countervailing role to play.

The State received a big leg-up in 2001 when Woodside awarded the design and oversight contract for the train 4 processing plant to the Kellogg Brown Root-Clough Consortium (KJV). Until this decision, all such work had been undertaken in either Yokohama, London or Houston.

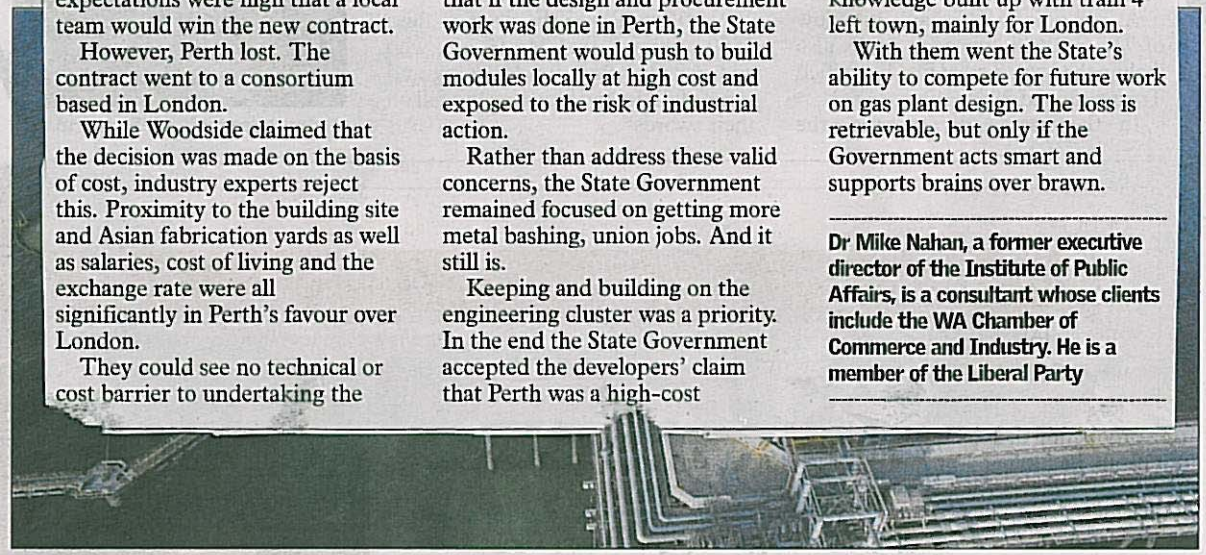
The contract gave Perth the ability to develop as the fourth centre of excellence for LNG plant design. It was a huge opportunity.

While the design contract for train 4 was not large — about $280 million — it led to the development of crucial skills locally; it located control of procurement of the rest of the $2 billion project in WA and it drew in hundreds of allied service businesses and engineers to the State.

In short, it established the foundation for an LNG engineering cluster. While there were some problems, KJV delivered an excellent product with only a small delay and more or less on budget.

In 2004-05 Woodside put out to tender a design and procurement

Continued on page 82



Growing exports: Western Australia is a major source of LNG with huge prospects for growth.

Brains needed for LNG in WA

From page 80

contract for a new train. Given the success of, and skills developed, with train 4 and the fact the new gas train was to be an exact duplicate of the previous one, expectations were high that a local team would win the new contract.

However, Perth lost. The contract went to a consortium based in London.

While Woodside claimed that the decision was made on the basis of cost, industry experts reject this. Proximity to the building site and Asian fabrication yards as well as salaries, cost of living and the exchange rate were all significantly in Perth's favour over London.

They could see no technical or cost barrier to undertaking the work here. It is clear that there was pressure of a political/strategic nature to pull the technology back to London. Yet, Canberra did nothing.

Woodside was also concerned about sovereign risk. Specifically that if the design and procurement work was done in Perth, the State Government would push to build modules locally at high cost and exposed to the risk of industrial action.

Rather than address these valid concerns, the State Government remained focused on getting more metal bashing, union jobs. And it still is.

Keeping and building on the engineering cluster was a priority. In the end the State Government accepted the developers' claim that Perth was a high-cost engineering location and allowed the project to go offshore without an argument.

With train 5 went the foundations of the LNG engineering cluster. The engineers, companies and knowledge built up with train 4 left town, mainly for London.

With them went the State's ability to compete for future work on gas plant design. The loss is retrievable, but only if the Government acts smart and supports brains over brawn.

Dr Mike Nahan, a former executive director of the Institute of Public Affairs, is a consultant whose clients include the WA Chamber of Commerce and Industry. He is a member of the Liberal Party

We must scour world to attract professionals, tradespeople to meet ambitious targets

MIKE NAHAN

Search: Resources companies must be allowed to substantially increase overseas recruitment of skilled labour.

Aim to treble LNG needs cash, people

Can WA achieve its greatest development challenge to triple LNG production in the State within 10 years?

This would entail new investment approaching $70 billion and make WA one of the world's main gas hubs.

The Australian Petroleum Production and Exploration Association, the nation's main gas lobby group, thinks so. The Federal Minister for Energy, Martin Ferguson, also thinks so.

On paper the target should be achievable. There are sufficient proven reserves in the North-West to more than meet the target and there is undoubtedly more gas to be found in the region. The target will be exceeded only if the LNG projects currently in the advanced planning stages go ahead.

The demand and price outlook could hardly be more positive for LNG. Spot prices for LNG have risen from the $3 per million British Thermal Units (mbtu) earlier this decade to around $20/mbtu today. Gas and LNG are rapidly being adopted around the world as fuel of preference. ExxonMobil and others predict a trebling of world LNG consumption over the next 20 years, with the biggest growth taking place in Asia.

Don Voelte, chief executive of Woodside, disagrees. When asked, he said: "It is my considered opinion, that it is not an aspiration, it is not even a dream — it is impossible." He added: "I don't think it is physically possible to build all that stuff," citing labour and equipment constraints.

Mr Voelte should know. Woodside is the only company to have built an LNG facility in WA and is the only one to have received board approval to proceed with a new LNG project in recent years.

There is no doubt the LNG industry, indeed the entire resources industry, in WA is under extreme cost pressure. The cost of building LNG facilities has trebled over the past six years. The huge Gorgon joint venture has been postponed at least twice because of rising cost. After so many false starts and hopes, the Gorgon venture has stopped making public announcements about costs and starting dates. BHP Billiton has said the Pilbara is, after the oil sand fields in Alberta, Canada, the most expensive place in the world to develop a new mine. This includes the middle of the Amazon jungle.

The main problem is the lack of people, particularly experienced, skilled engineers and tradespeople.

Australia, indeed the world, lost two generations of engineers and resources professionals over the past two decades.

During the 1990s the big petroleum and mining companies laid off thousands of highly skilled engineers and other people. The engineering contractors often tried to pick them up but times were slow and they simply did not have enough work to keep them busy.

During the 1980s and 1990s careers in the resources sector and the study of engineering, earth sciences and the traditional trades went out of vogue with the young. Many faculties of engineering closed for lack of demand. Demand for apprenticeships declined sharply. The best and brightest chose to study finance, law or environmental science and aimed for careers in merchant banks, human rights organisations or the World Wildlife Fund. As a result, the supply of trained engineers here and around the world peaked in 1988.

Some of the lost generation are being lured back with huge pay packets, but many are gone. Many that remain are baby boomers who soon will be retiring.

The big pay on offer has spawned renewed interest in engineering and related courses at universities and technical colleges. However, it takes time to retool the faculties and many teachers have left. Many resources companies are investing heavily in training and apprentices, but this also takes time. Moreover, the study of maths and science in schools declined over the last decade, limiting the supply of students.

The young engineers entering the workplace are being thrust into roles and responsibilities beyond their experience and without mentors. Like most professions, engineers learn more on the job than in the classroom. The result is many mistakes and delays.

The LNG sector is also suffering from aggressive competition from the big miners. BHP, Rio Tinto and Fortescue Metals Group were quicker off the mark than the LNG industry. They saw the labour shortage coming and hired heavily across the country. There are clear signs that some are smartly hoarding skilled workers. The result is slim pickings and/or higher wages for the oil and gas sector.

Of course, the excess demand for labour is not restricted to WA or Australia. The resources boom and the failure to invest in engineering skills in the 1990s was a global phenomenon. In fact, at the start of the decade WA was better endowed with skilled personnel than most other countries. However, these people are now fully employed. Many have been lured overseas.

The situation is set to get far worse with the demand for workers in the mining sector alone expected to expand by 42,000, or 70 per cent, over the next 10 years.

There is only one answer and one means of achieving the State's LNG target — scour the world to attract the people to the State.

Surprisingly, to date the resources sector has not been very active in importing labour. In 2006-07 the sector employed just 1130 people on temporary work or 457 visas — less than a quarter of 457 visa holders employed by the WA Government.

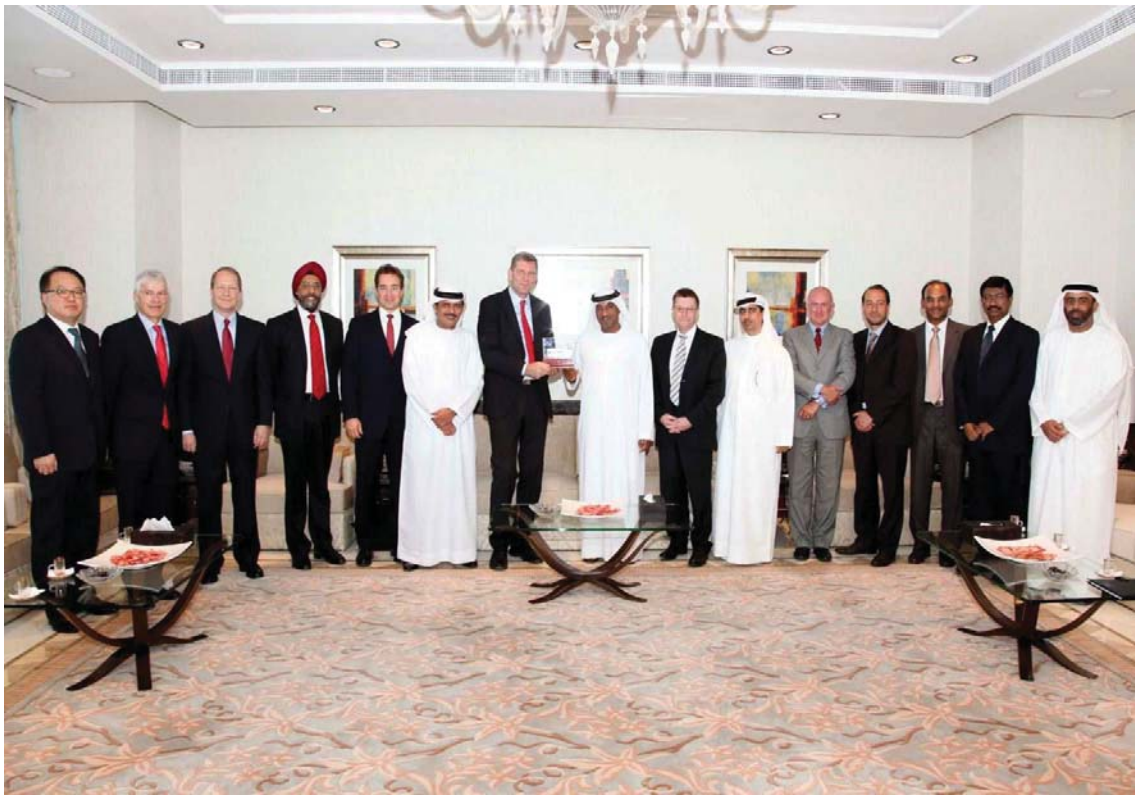
The resources companies, including the LNG joint ventures, must be allowed to substantially increase their overseas recruitment of skilled labour by at least a factor of five and sustain that drive for at least a decade.

Even this will be difficult to achieve, as the global competition is fierce. In this people-starved world, our potential comes down to people.

Mike Nahan has nominated for Liberal pre-selection for the State seat of Riverton

UAE: Chairman of Emirates Group Welcomes Shell's Prelude FLNG Construction Teams

Posted on May 28th, 2012 with tags Chairman of Emirates Group, Drydocks World, Maritime World, News by topic, Prelude FLNG Construction Teams, Prelude FLNG Project, Shell, UAE.



His Highness Sheikh Ahmed bin Saeed Al Maktoum, President of Dubai Civil Aviation and Chairman of Emirates Group, welcomed Khamis Juma Buamim Chairman, Drydocks World and Maritime World and heads and senior executives of the teams involved in the building of Shell's Prelude FLNG project.

The delegation comprised of Mr. Jean Marc Aubry President Technip France, Mr. Jaap de Vries Director General of Royal Shell prelude project, Mr. David Nichols Group Commercial and Marketing Director for the SBM Offshore Group and Mr. Janjul Kim of Samsung Heavy Industries – Korea and other senior executives.

Khamis Buamim presented a summary profile on the project and technical cooperation between all stakeholders in this giant project of global significance and the project's launch in Dubai during the steel cutting ceremony of the turret, which will be the biggest turret in the world, more than 90 meters in height and a diameter of more than 30 meters with a weight of 11,500 tons.

His Highness Sheikh Ahmed bin Saeed Al Maktoum, assured the support of Dubai Government to the very unique project of high importance to the marine heavy industry and to the development of the economy and international cooperation, and expressed his admiration of technological capability and the development of the project.

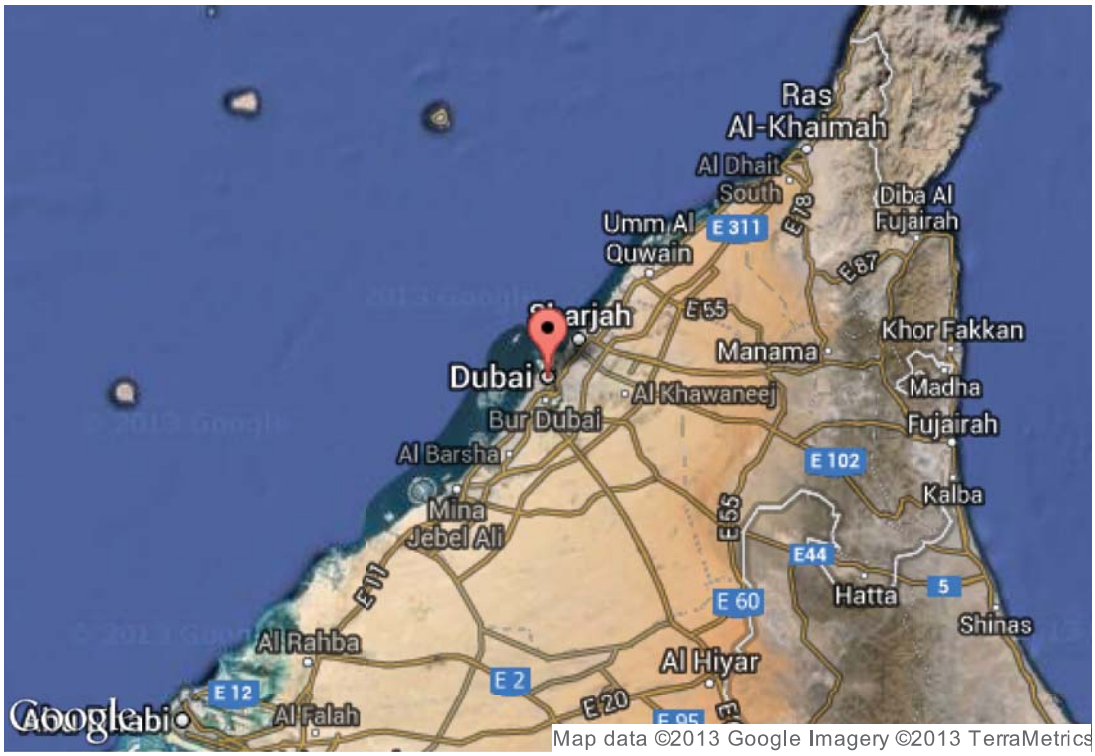
Jaap de Vries Director General of Royal Shell Prelude project expressed his happiness on the start of the project construction in record time, valuing the active role of His Highness Sheikh Ahmed and Drydocks World in reducing the setup time and the co-operative work of all teams and units and expressed admiration for evolving business systems. He explained that this project and the technology used is an important development for the LNG industry, because it reduces the cost of the project and the environmental impacts of the development of natural gas.

Jean-Marc Aubry, President of Technip France commended Drydocks World on its achievements and said "*We have worked for two years in the design and the development of the project and we are proud that the first building block for this unique project is in Dubai. This project is global by all means if we let the incredible size of the budget allocated and the actual capacity and productivity side, it is sufficient that the number of countries and nationalities contribute and interested in this project makes it a unique set up hence the number of nationalities involved are over 70. We are proud to meet Your Highness and appreciate your patronage and your interest in this giant project*".

In May 2011, Dutch Royal Shell took the decision to proceed with its giant facility Prelude for the extraction of natural gas (LNG) (FLNG) to be the largest floating structure at all. The FLNG facility itself has a length of 488 meters and width of 74 m, and when fully loaded will weigh about 600,000 tons – the equivalent of six times the largest aircraft carriers in the world. The iron and steel used will reach 260,000 tons, equivalent to about five times more than they used to build the Sydney Harbor Bridge.

The facility has been designed to withstand severe weather conditions, waves and even Category 5 sea hurricane. It takes into account public safety for the FLNG facility up to a maximum and the degree of security, safety and environment is very sophisticated and the best in the industry of modern offshore oil and gas facilities.

His Highness Sheikh Ahmed bin Saeed Al Maktoum received a memorabilia piece – the first piece of steel to build the project.



Shipbuilding Tribune Staff, May 28, 2012