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Economic & Industry Standing Committee
Parliament House PERTH WA 6000

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Response to Inquiry into the Economic Implications of Floating Liquefied Natural Gas Operations

Introduction

INPEX CORPORATION is Japan's national flag carrier in the global oil and gas exploration and production industry. It has some 79 operations in 28 countries and is ranked in the top 50 global energy companies¹. It is listed on Tokyo Stock Exchange and the Japanese Government, through the Minister of Economy, Trade and Industry, currently holds 18.9 per cent of INPEX's shares.

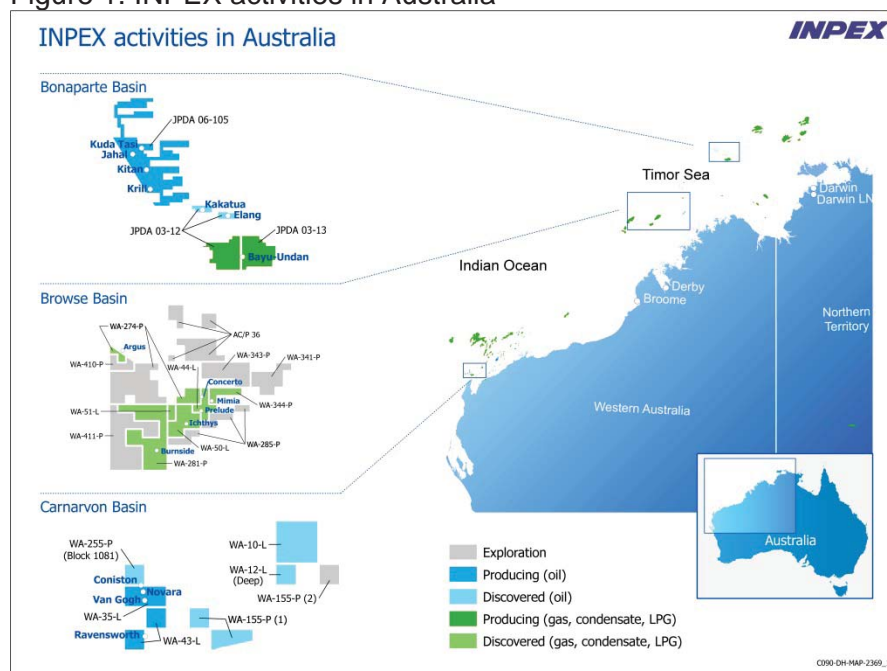
INPEX is engaged in the energy supply business on a global scale with operations including acquisition of license blocks for oil and gas fields, exploration, production and the sale of processed products. INPEX also operates a 1,400km natural gas pipeline network in Japan and is constructing an LNG receiving terminal in Honshu.

INPEX is progressing two world-class LNG projects as Operator, the Ichthys LNG Project in Australia and the Abadi LNG Project in Indonesia.

INPEX has been involved in the Australian business community since 1986 and is now the largest Japanese investor in Australia. Perth is the company's Australian headquarters with more than 850 staff across a number of city locations.

Since 1986 INPEX has invested in a number of projects in Australia and the Timor Sea. These include the world-scale Ichthys LNG Project, the leading-edge Prelude FLNG Project, the Van Gogh, Ravensworth and Coniston oil projects off Western Australia, Darwin LNG and the Bayu Undan gas development and Kitan oil development in the Joint Petroleum Development Area of the Timor Sea.

Figure 1: INPEX activities in Australia



Source: INPEX 2012

INPEX CORPORATION – A Global Perspective

The INPEX corporate objective is to contribute to the creation of affluent societies by realising a stable and efficient supply of energy.

To achieve this objective, the company has set three growth targets: continuous enhancement of exploration and production activities, strengthening its gas supply chain and reinforcing renewable energy initiatives.

In the year to 31 March 2013, INPEX's net sales were equivalent to A\$13 billion, and net income was equivalent to A\$2 billion. At that time INPEX's reported reserves were 2,188 million barrels of oil equivalent (boe) and net daily production was 408,000 boe. Annual production to 31 March was around 19 million tonnes to LNG which is equivalent to 22 per cent of Japan's LNG demand and about 8 per cent of global LNG trade.

The Ichthys LNG Project, off the north-west coast of Western Australia, and the Abadi development in Indonesian waters, are the "pillars" in INPEX's plans to lift daily output from around 400,000 boe to 1,000,000 boe. Together Ichthys and Abadi are expected to contribute to INPEX producing around 700,000 boe a day in 2020.

Ichthys LNG is now under construction under a US\$34 billion development plan with production scheduled to begin in the final quarter of 2016.

The Abadi gas field is located in the Arafura Sea in Indonesian territorial waters but only about 400 km north of Darwin. It is a large gas field with an area of more than 1,000 square kilometres. The Indonesian Government in December 2011 granted approval for Stage 1 of Abadi using an FLNG facility with a capacity of 2.5 million tonnes a year. In December last year INPEX invited Shell on board as its strategic partner. Shell now holds a 30 per cent stake in the Abadi LNG Project.

In March 2013 INPEX announced it had agreed to acquire a 17.5 per cent participating interest in the Shell-operated Prelude FLNG Project from Shell Development Australia. At the time INPEX said that participating in the Prelude FLNG Project would enhance INPEX's FLNG experience and would help in the timely delivery of the Abadi LNG Project.

The Prelude FLNG Project's Prelude and Concerto gas-condensate fields – estimated to contain about 3 trillion cubic feet of liquids-rich gas – will be developed utilising an FLNG facility, and has been designed to produce at least 3.6 million tonnes of LNG a year, along with 0.4 million tonnes of LPG and approximately 36 thousand barrels per day of condensate at peak. These discoveries are adjacent to but substantially smaller than the estimated resources of Ichthys.

Australia is increasingly becoming the focus of INPEX exploration activities in the region firstly because of the overall exploration strategy but also because of the aim to find more gas to feed a potential expansion of the Ichthys onshore processing plant.

INPEX is involved in six LNG plants or development concepts worldwide: Ichthys LNG and Abadi LNG as Operator and as an equity partner in the Mahakam fields feeding the Bontang LNG facilities (Indonesia), Darwin LNG, Tangguh (Indonesia), Prelude FLNG (Australia) and a prospective LNG Project in British Columbia (Canada).

Figure 2: The INPEX global footprint



Source: 2012 INPEX Corporate Brochure

The Ichthys LNG Project

The Ichthys LNG Project is a Joint Venture between INPEX group companies (the Operator), major partner TOTAL group companies and the Australian subsidiaries of Tokyo Gas, Osaka Gas, Chubu Electric Power, Toho Gas and CPC.

The Ichthys field – in permit area WA-285-P – covers about 800 square kilometres in the Browse Basin at a sea bed depth averaging approximately 250 metres. It consists of two reservoirs – one in the Brewster Member and a lower reservoir in the Plover Formation which is the major petroleum system to Australia's northⁱⁱ.

The Global LNG Industry – an Australian perspective

By definition LNG is a global industry with gas being liquefied so that it can be transported by sea to markets.

Successive Australian Governments have encouraged the development of an LNG industry in Australia with the current public policy aim of developing an industry that will export some 80 million tonnes of LNG a year, making it the world's largest supplier.

There are currently 31 producing LNG liquefaction plants in the world. Three of them in Australia: North West Shelf, Darwin LNG and Pluto. Of the 13 LNG plants under construction around the world, seven are located in Australia with total investment estimated at A\$200 million.

Australia's Bureau of Resources and Energy Economics estimates that export earnings from Australian LNG developments will increase from A\$12 billion in 2011 to around A\$61 billion in 2017 the year in which Ichthys is scheduled to begin deliveries to its customers in North Asia.

The oil and gas industry is a major contributor to the Australian economy.

Aggregating both current and proposed projects Australia plays host to a multitude of major ventures with a combined value of more than \$340billion.

New direct employment in the Australian LNG industry is estimated to grow by mid-decade (2016) – ahead of Prelude FLNG coming on stream – by up to 3200 jobs depending on the number of LNG processing trains in operationⁱⁱⁱ.

There is no evidence that FLNG will require fewer operational personnel than conventional offshore LNG facilities, nor is the multiplier likely to be lower. Indeed because of the greater utilisation of marine logistics it is likely that there will be a greater number of jobs created to support such developments than conventional offshore LNG developments.

It should be noted that each of the owners of conventional LNG projects in Australia, either in operation or under construction, stresses the long term nature of the development both in terms of sales (earnings) and jobs, over and above the peak demand for construction labour during the construction phase.

Japan has been the mainstay of the development of an LNG industry in Australia and Japan's imports of LNG from Australia are expected to increase to around 40 million tonnes by 2035^{iv}.

Each of the three producing LNG production plants in Australia is underpinned by long term sales contracts with Japan. LNG exports were 19 million tonnes in 2011-12 on the cusp of an expected 26 per cent increase, driven by Pluto LNG, to 24 million in 2012-13^v. Most of those exports were to Japan.

Virtually all of the conventional LNG projects currently under construction in Australia or planned are focussed on the premium Japan market ahead of lesser markets such as China, Korea, Taiwan and India^{vi}.

The Global LNG Industry and Western Australia

Committed LNG investments being managed from Western Australia since the 1980s (in current dollars) are nominally worth around US\$175 billion made up of the North West Shelf, Gorgon, Wheatstone, Pluto and the Ichthys LNG Project.

Once projects are established the operational phase of LNG Projects provides a diversity of opportunities over many decades. These include:

- Operations
- Technical services
- Facility repair and maintenance
- Marine support services
- Aviation services
- Domestic services

A study commissioned by APPEA^{vii} noted that international oil and companies are investing hundreds of millions of dollars in research and development in Australia. It states that "Many of the projects...involve world technology firsts, and all invest heavily in local scientific capability, bringing opportunities for local research organisations to develop capabilities in cutting-edge research and technology areas and providing employment opportunities for local scientific professionals."

Globally significant technologies involved in WA's oil and gas sector include:

- Gorgon CO2 sequestration project
- Big bore gas wells
- Significant specific subsea technology
- World's largest semi-submersible platform
- World's first FLNG facility.

There has been investment in WA-based scientific capability through the Western Australian Energy Research Alliance (WA.ERA), CO2 CRC, partnerships with academic institutions including professorial chairs in oil and gas disciplines, and oil and gas research infrastructure. This new and multi-disciplinary scientific knowledge in WA presents opportunities for greater involvement in the global LNG business.

A similar argument can be made for environmental and biodiversity research, a large component of which is funded by the oil and gas sector as part of the Environmental Impact Assessment process for various projects.

INPEX notes that in 2010 the Economics & Industry Standing Committee through then chairman, the Hon Dr Mike Nahan MLA, presented a discussion paper on the potential for the development of a Centre of Excellence in LNG Industry Design in Western Australia^{viii}.

This paper pointed out that in the absence of further downstream processing of gas successive Western Australian Governments "have expanded the focus of policy to encompass the development of upstream services industries, that is, the attraction and development of businesses, skilled personnel, research facilities, business networks and technology involved in understanding, exploring designing, planning and project oversight of mineral and energy developments."

It added: "Western Australia appears ... to have a strong comparative advantage in upstream services and the scope to become a major regional, if not global, hub in mining, and oil and gas services."

Discussion about local content and training and employment are important with all major oil and gas projects requiring industry participation plans that enshrine their commitment to local business engagement. The level of local content varies from project to project and is influenced by a number of factors including modularisation, capital servicing requirements and local capacity.

However, with construction expected to peak in 2016 for all of the approved projects the opportunities for Australian business are not insignificant. In a recently commissioned APPEA report the authors suggest that the Gorgon project estimates that it will spend A\$33 billion on local goods and services over the first 30 years of operation^{ix}. Most companies will readily acknowledge that there are inherent benefits from using local operational support and these relationships are ultimately beneficial and more cost-effective in the long term.

FLNG – Some Considerations

Although INPEX is an equity participant in the Prelude FLNG project we are not the operator. We are therefore not in a position to comment on the Committee's specific terms of reference regarding the technical aspects of the inquiry.

Nevertheless, we believe it is important to highlight the broader industry perspective on the potential opportunities offered by FLNG

FLNG is only now emerging as a viable development option for projects and is on the cutting edge of technology developments.

As the oil and gas industry matures, the focus is increasingly on more remote resource locations – farther offshore and in greater water depths. Demand for more innovative and cost-effective solutions will be required if Australia is to develop these resources and maintain its competitive global position in the LNG sector.

At its core FLNG now offers greater flexibility in the development of resources in a more efficient and cost effective manner.

The step change that FLNG represents to the industry is not without precedent. The development of the floating production, storage and offtake (FPSO) vessels over the past several decades is illustrative of the increased benefits innovative technology can deliver. The Ichthys FPSO, for example, is designed to hold more than one million barrels of condensate, which will be periodically offloaded to shuttle tankers that take the product directly to market. The FPSO will have the capacity to accommodate around 150 personnel. Advancements like FPSO technology are aimed at improving efficiency and cost-effectiveness of major capital-intensive projects at a time when rising costs, increased environmental sensitivity, and remote field locations are making investment decisions more difficult. Technology thus facilitates commercialisation.

Australia stands to benefit greatly from FLNG. This is not only through accelerated commercialisation of projects and the associated royalties and taxation benefits, but also from the decades of local investment that will flow from the operational support requirements of FLNG Projects. This includes engineering, logistics support, maintenance, etc. Drilling campaigns will also require local support and are likely to involve significant expenditure in the WA economy.

A focus on innovation has been a hallmark of the Western Australian oil and gas sector since the development of the North West Shelf (NWS). Over the past 10-15 years, Perth has established itself as a global hub for LNG sector. This has underpinned the economy and attracted a highly skilled and educated workforce to WA.

Perth is ideally positioned to develop itself as the centre of excellence for FLNG. This is particularly applicable given that Prelude is likely to be the first operating FLNG facility in the world when it comes on line.

INPEX recognises the positive development of initiatives such as the proposed Oil and Gas Innovation Partnership and the Global Centre for Floating Liquefied Natural Gas Learning and Research. In addition the Federal Government recently announced plans to establish a new National Floating Systems Research Centre in Perth aimed at attracting new investment and new high skill, high wage jobs in Australia. This type of investment can promote and support business innovation, collaboration and capacity building.

INPEX notes Shell's commitment to working with governments and industry to help develop WA into a global centre of excellence for Floating LNG.

This focus on developing a knowledge-based economy is a long-term investment that can deliver a multi-generational benefit for Western Australians if managed appropriately.

FLNG technology has an added advantage of reducing the environmental footprint and impact of LNG projects. Not developing onshore means that coastal eco-systems are not impacted. Additionally, onshore cultural heritage is not disturbed by FLNG developments. This means that environmental and social approvals for FLNG projects are likely to be less onerous than traditional onshore LNG developments and thus quicker to process and easier to administer.

Most participants in the oil and gas industry have corporate social responsibility at the heart of their business activities. They recognise that notwithstanding the location of their resource and the infrastructure required, they have an obligation to support the sustainable development of the communities in which they operate. INPEX, too, shares this view and has a key corporate social responsibility principle to "Contribute to the development of host countries and communities based on eh understanding of cultural diversity." The benefits of this significant long-term social investment should not be underestimated when assessing the implications of FLNG. A large amount of this social investment is targeted at Aboriginal and Torres Strait Islander (ATSI) peoples.

Conclusion

INPEX believes that FLNG represents an exciting new technology. It will open new options for field development, create opportunities for local businesses and contribute significant benefits to the community. No jurisdiction globally is better placed to take advantage of FLNG than Western Australia. Indeed, Perth is poised to leverage its position as an LNG hub to establish itself as the FLNG centre of excellence.

INPEX encourages the Western Australian State Government to support FLNG development and to ensure that WA remains an attractive destination for international oil and gas investment.

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- ⁱ Platts Top 250 Global Energy Company Rankings
 - ⁱⁱ Geoscience Australia: Petroleum Systems of the Bonaparte Basin
 - ⁱⁱⁱ National Resources Sector Employment Taskforce, April 2010
 - ^{iv} Advancing Australia – Harnessing our comparative energy advantage, Deloitte Access Economics (for APPEA), June 2012
 - ^v Resources and Energy Quarterly June Quarter 2013 – Bureau of Resources and Energy Economics
 - ^{vi} US EIA International Energy Statistics
 - ^{vii} The wider contribution to Australia of the Oil and Gas Industry, Australian Venture Consultants Pty Ltd, September 2012
 - ^{viii} Economics and Industry Standing Committee – Report No 3 in the 38th Parliament
 - ^{ix} The wider contribution to Australia of the Oil and Gas Industry, Australian Venture Consultants Pty Ltd, September 2012