Ichthys Project offshore activities

Overview of construction activities from 2013 to 2016

INPEX, on behalf of the joint venture participants of the Ichthys Gas Field Development Project (Ichthys Project), will undertake a number of offshore gas-condensate field construction and installation activities from 2013 to 2016.

The purpose of this fact sheet is to provide an overview of these proposed activities and includes the following details:

- the locations of activities
- the approximate timing and durations of those activities
- a basic description of the activities
- communication and feedback channels.

Detailed information on the Ichthys Project offshore activities that INPEX proposes to commence over the next 18 months and management of associated environmental sensitivities is contained in the following individual consultation fact sheets:

- Development well drilling
- Umbilicals, risers and flowlines (URF) installation
- Gas export pipeline (GEP) construction.

All Ichthys offshore activities are also outlined in the Ichthys Project Draft Environmental Impact Statement (EIS) and its supplement (see back page for details).

KEY OFFSHORE ACTIVITIES

- Phased drilling of approximately 20 development wells
- Installation of umbilicals, risers and flowlines (URF) and related subsea infrastructure including Christmas trees and manifolds
- Construction of the 882-km-long subsea section of the 889-km-long gas export pipeline (GEP) from the Ichthys Field in the Browse Basin to Blaydin Point, Darwin
- Hook-up of a central processing facility (CPF) and floating production, storage and offtake (FPSO) vessel
- Precommissioning, commissioning and start-up of all offshore facilities.
Project overview

The Ichthys Project is a world-class project to develop the natural gas and condensate field (Ichthys Field) that was discovered in the Browse Basin, off the north-west coast of Western Australia.

The Ichthys Field consists of two hydrocarbon reservoirs, Brewster and Plover. The field contains resources estimated at more than 12 trillion cubic feet of gas and approximately 500 million barrels of condensate. The latter represents the largest discovery of hydrocarbon liquid in Australia in 40 years.

The US$34 billion Ichthys Project will be ranked among the largest gas and condensate processing developments in the world. During operations the project is expected to produce approximately 8.4 million tonnes (Mt) of liquefied natural gas (LNG) and approximately 1.6 Mt of liquefied petroleum gases (LPGs) per annum, along with up to approximately 100 000 barrels of condensate per day at peak.

The Ichthys 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 Company and Toho Gas.

Project development activities are briefly outlined below.

Offshore activities – Ichthys Field and gas export pipeline

INPEX intends to install a floating central processing facility (CPF) to develop the Ichthys Field. Well streams will flow from the field through subsea infrastructure for preliminary processing on the CPF to remove liquids—including the greater part of the condensate—from the gas. The separated liquids will flow via a subsea flowline to the nearby floating production, storage and offtake (FPSO) vessel where the condensate will be treated and transferred to offtake tankers for export. Gas from the field will be directed from the CPF through an 889-km-long gas export pipeline (GEP) (882 km subsea, 7 km onshore) to the processing plant at Blaydin Point on Middle Arm Peninsula in Darwin Harbour.

Onshore activities – Blaydin Point, Darwin

The gas will be processed into LNG through a two-train processing plant. The plant will also separate out and export LPGs and the residual condensate that will be carried to the plant with the gas stream.

Construction of the LNG processing plant and associated harbour dredging activities are under way and are expected to be completed in time to achieve first production by the end of the fourth quarter of 2016. The products processed at the plant will be shipped from Darwin Harbour to overseas markets in LNG, LPG and condensate ships.
Location of offshore activities

Offshore activities will take place in and around the Ichthys Field, which is located in production licences WA-50-L and WA-51-L in the Browse Basin, approximately 220 km off the coast of Western Australia and 820 km south-west of Darwin. The field covers an area of around 800 km², with its reservoirs located below sea depths of about 235–275 m and more than 4000 m of rock. The Ichthys Field location and gas export route are shown in Figure 2.

Subsea infrastructure at the offshore development area will consist of the following:

- approximately 50 subsea wells drilled from between 12 to 15 drill centres, developed over a period of 40 years, and with about 20 of these wells being drilled between 2013 and 2016
- control umbilicals, service lines, risers and wet-gas, corrosion-resistant infield flowlines.

This subsea infrastructure will be tied back to the CPF and FPSO by a series of flexible umbilicals, risers and flowlines (URF). The CPF will be connected to the FPSO by transfer systems consisting of flexible risers and flowlines. Both the CPF and FPSO, shown schematically in Figure 1, will be moored in position for the expected 40-year life of the Project.

The GEP will be installed from the seabed beneath the CPF to Middle Arm Peninsula in Darwin Harbour. It will travel nearshore through Darwin Harbour parallel to the existing Bayu–Undan Gas Pipeline. A pipeline shore crossing will complete the subsea portion of the GEP, bringing the gas to the onshore processing facilities.

Schedule

Most offshore construction work will take place between 2013 and 2016, as outlined below. From 2016 onwards, additional wells will be drilled and tied back to existing operations.

Key offshore construction activities

Development well drilling

Development of the Ichthys Field will require the drilling of approximately 50 wells over the Project’s lifetime. Wells will be drilled from drill centres in groups of approximately five to optimise the efficiency of rig operations and to minimise the Project’s footprint on the ocean floor.

Schedule

The first phase of drilling, comprising 20 wells within the Brewster reservoir is anticipated to start in mid-2014 and take approximately 40 months. Remaining wells and drill centres will be added to maintain gas production as the two reservoirs are depleted over time. Wellheads and manifolds will be installed at the end of drilling and well-testing (see Figure 3).

Vessels

A number of vessels will be required to complete the drilling activities safely and efficiently. The ENSCO 5006 semi-submersible mobile offshore drilling unit (MODU) pictured in Figure 4 will conduct the first phase of drilling supported by two anchor-handling supply vessels for the duration of the drilling and rig-moving operations. Logistic support will be provided from Broome. As a legislative requirement, a 500-m-radius safety zone will be maintained around the MODU and no unauthorised vessels will be permitted within this area.

For more detailed information about this activity, please refer to INPEX’s Ichthys fact sheet Development well drilling.
Umbilicals, risers and flowlines (URF) installation

This scope of work includes the installation and precommissioning of subsea flowlines, support structures and control systems, and the connection of these systems to the other offshore components. The URF program also includes the installation of the moorings for the CPF and FPSO and the connection of both facilities to their mooring systems. These activities will be performed on behalf of the Project by McDermott International and Heerema Marine Contractors. Key subsea infrastructure is shown in Figure 5.

Schedule
Preparatory work is planned to commence in mid-2014, with key infrastructure being installed over the following 18 months. The FPSO and CPF are scheduled to arrive at the field in late 2015 for connection to moorings, umbilicals, flexible risers and control systems. Other URF infrastructure and wellhead connections will be installed between mid-2015 and mid-2017.

Vessels
URF installation activities will involve several key offshore construction and installation vessels, including the Emerald Sea, Aegir and North Ocean 102 (or similar class vessel), which will be supported by supply and standby vessels, tugs and barges.

For more detailed information about this activity, please refer to INPEX’s Ichthys fact sheet Umbilicals, risers and flowlines (URF) installation.

Gas export pipeline (GEP) construction

The subsea portion of the GEP will be installed on behalf of the Project by Saipem (Portugal) Comercio Maritimo SU Lda [Saipem]. Two different pipelay vessels will carry out the installation, one specialising in shallow-water pipelay and the other in deep-water pipelay.

After pipelay has been completed, the GEP will be hydrotested with filtered and treated sea water. It will then undergo precommissioning to remove the sea water and residual salt.

Schedule
Pipeline route dredging operations in Darwin Harbour are planned to commence in late 2013. Pipelay is scheduled to begin in Darwin Harbour in the second quarter of 2014 and finish in the Ichthys Field in 2015. Final precommissioning of the pipeline is expected to be complete by the end of 2015.

Vessels
Dredging operations within Darwin Harbour will be performed by Boskalis Australia Pty Ltd using several vessels, including the Queen of the Netherlands trailing suction hopper dredger and the Baldur backhoe dredger. Pipelay will be performed by the Semac 1 (Figure 6) in shallow water and by the Castorone (Figure 7) in deep water.

For more detailed information about this activity, please refer to INPEX’s Ichthys fact sheet Gas export pipeline (GEP) construction.
Central processing facility (CPF) hook-up

The CPF will be used for gas–liquid separation, gas dehydration, gas compression and export and future inlet compression. It will also export a commingled liquid stream of condensate, monoethylene glycol (MEG) and produced water to the FPSO and accept flash gas back from the FPSO. (MEG will be used as a hydrate inhibitor [anti-freeze] to prevent risk of blockage in lines on the sea floor where the seawater temperature will be about 4 °C. The MEG will be injected into production fluids at the wellheads. MEG is a non-toxic biodegradable organic compound).

Schedule
The CPF will be constructed by Samsung Heavy Industries Co. Ltd. in Korea. It will be towed to the Ichthys Field in late 2015, where it will be hooked up to 28 anchor chains by McDermott International. It will then be commissioned by INPEX to be ready to receive reservoir hydrocarbons in mid-2016.

A detailed fact sheet for this activity will be available in 2014 or 2015.

Floating production, storage and offtake (FPSO) vessel hook-up

The FPSO will be used for condensate dewatering, stabilisation, storage and export. The FPSO will also be used for MEG regeneration, produced-water treatment and flash gas compression and export to the CPF.

Schedule
The FPSO will be built by Daewoo Shipbuilding & Marine Engineering Co. Ltd. in Korea. Its internal turret will be constructed by SBM Offshore NV in the Keppel Shipyard in Singapore. Following construction the turret will be transported to Korea and integrated into the FPSO hull. The complete FPSO will be towed to the Ichthys Field at the end of 2015. McDermott International will permanently moor the FPSO by hooking up 21 anchor chains to the weathervane turret. Following installation the FPSO will be commissioned by INPEX to be ready to receive reservoir hydrocarbons in mid-2016.

A detailed fact sheet for this activity will be available in 2014 or 2015.
ICHTHYS PROJECT OFFSHORE CONSTRUCTION ACTIVITIES

ICHTHYS PROJECT

SECURING THE FUTURE

INPEX CORPORATION is a worldwide oil and gas exploration and production company, with more than 70 active projects globally. Since 1966, INPEX has been growing steadily, from the core areas of Indonesia and Australia, into the Middle East, the Caspian Sea region and South America.

In Australia from 1986, INPEX has been gaining strategic interests in a range of successful projects, including the Griffin Fields, Darwin LNG and the proposed Ichthys Project.

INPEX is securing the future – future energy supply to our customers, and the future sustainability of the communities in which we operate.

Enquiries and feedback

Further information on offshore activities can be found in the Ichthys Project Draft Environmental Impact Statement (EIS) and its supplement, located on the INPEX website www.inpex.com.au/projects/ichthys-project/environmental-documentation.aspx [at the bottom of the web page].

You can also request copies of the fact sheets specific to each offshore activity (as they are made available).

If you would like to provide comment or seek further information, or if you do not wish to receive future communications about Ichthys offshore activities, please contact us by any of the following means:

Contact: Bill Townsend
General Manager, External Affairs/Joint Venture

Subject: Ichthys Project offshore activities

E-mail: consultation@inpex.com.au
Phone: (08) 6213 6000
Fax: (08) 6213 6455
Post: Attention: General Manager, External Affairs
Level 22, 100 St Georges Terrace,
Perth WA 6000

Website: www.inpex.com.au

The Ichthys Project is operated by INPEX in joint venture with major partner Total and Tokyo Gas, Osaka Gas, Chubu Electric Power Company and Toho Gas.