



## Frequently Asked Questions (FAQ)

Apache Energy Limited (Apache), on behalf of the Van Gogh joint venture participants, is proposing to develop an oilfield, known as Van Gogh, off the Exmouth coast.

*Below is a list of frequently asked questions (FAQs) that may help to answer some of your questions about the Van Gogh Field Development.*

### THE COMPANY

#### Who is Apache; we haven't heard of them?

Apache Energy Limited (Apache) is one of Australia's most active and experienced oil and gas explorers and producers. Apache Energy Limited is an Australian operating subsidiary of Apache Corporation, one of the world's largest independent oil and gas exploration and development companies. For more information, see the About Apache section on this website.

#### What environmental record does Apache have?

Apache is committed to ensuring that the management of the environment, and the safety of its operations, employees and the local community is of the highest standard. The proposed Van Gogh Field Development will be subject to environmental assessment under Commonwealth laws.

The Company has an exceptional record of environmental management throughout its 14 years of operation in Western Australia. It has been formally recognised with numerous awards for its excellence in environmental management. For more information, see the Environment section on this website.

### PROJECT LOCATION

#### Where is the project located?

The project is located in exploration permit WA-155-P(1) in the Exmouth Sub-basin, 53km north-northwest from the town of Exmouth, 30km north of the Ningaloo Marine Park outer boundary and 45km north of Ningaloo Reef proper.

#### How much will the project cost?

Project costs are estimated to be over AUD\$1 billion. Apache will fund 52.5% of this cost, representing its joint venture shareholding in the development.

#### How long will the FPSO remain on location?

The project is expected to have a commercial life of 12-15 years, unless other fields are tied in to it in the future, in which case its commercial life may be extended for an unknown period of time.

### **How big will the FPSO be compared to others in the region?**

Apache Van Gogh's FPSO will be slightly smaller than other developments in the area. Its storage capacity will be 650,000 barrels of oil and its process capacity is 63,000 barrels of oil per day. By comparison, Woodside's Enfield FPSO, located 10km southwest of Van Gogh, has a storage capacity of 900,000 barrels of oil and a process capacity of 100,000 barrels of oil per day.

### **What does the seabed look like in the development area?**

A remote operated vehicle (ROV) survey was conducted in the development area in February 2007, and the vision obtained shows a flat and featureless seabed, with no notable sand waves and no rocky outcroppings or canyons. The seabed is composed of clayey silt with some fine sand and shell fragments less than one mm.

## **DRILLING**

### **How many wells will be drilled?**

Ten production wells (including nine dual lateral wells) will be drilled. Two water injection and one gas injection well will also be drilled.

### **How long will drilling take?**

It is estimated that drilling will take approximately 11 months.

### **What is a dual lateral well?**

Dual lateral wells are a single well bore that branches into two wells in the horizontal section of the well once within the oil reservoir (nominally 1.5 km horizontal branches for Van Gogh).

### **Is it certain that only water-based muds, rather than synthetic-based muds, will be used during drilling?**

Yes. Apache has invested significantly in WBM studies and getting formulations right, and has designed shorter well laterals in order to use WBM.

## **FPSO**

### **Will the FPSO be a newly-built vessel?**

No. It will be a rebuild of an existing Aframax size trading tanker, the MT Kudam. It will be converted into an FPSO in a Singapore shipyard, and was originally built in 1981. It will be designed and rebuilt in accordance with independent third party requirements, Lloyds Register, to meet 'as new' requirements. With the demand for steel and large tankers currently at an all time high, it would take about four years from order to completion and this would not meet Apache's 'first-oil' target.

### **What type of oil will be produced?**

The Van Gogh oil is like the other oils found to date in the Exmouth Sub-basin. It is typical oil – thick, black and not freely flowing. It has an API of 17° (API [American Petroleum Institute] gravity is a standard measure of crude oil density expressed in degrees). The reservoir temperature is 65° and the oil contains no wax.

The Van Gogh oil is unlike the oil Apache typically produces from its Varanus Island hub on the North West Shelf (10 km NNE of Barrow Island), which is much lighter (API typically > 35°) and more viscous.

### **When the FPSO is required to disconnect from the DTM buoy, will oil be lost from the flowlines?**

No. The disconnection process will take about six hours. During this time, the flow lines will be de-pressurised to ensure no oil is being produced. Also, as the oil has a low specific gravity of 17° API (thick, heavy oil), it cannot reach the surface without the assistance of gas lift, which will be shut down during the disconnection process.

### **How will the FPSO stay on location? Will it require tug boats?**

The FPSO will be connected to a disconnectable turret mooring (DTM) buoy, moored to the seafloor with nine anchors. The FPSO will have its own propulsion and be able to weathervane into the prevailing winds and currents, meaning it will not require a tug boat to remain stable in rough seas. In the event of storms or cyclones, the FPSO will be able to disconnect from the buoy and sail to calmer waters, avoiding the chance of loss of oil cargo. The FPSO will be fitted with metocean monitoring equipment to allow the crew to make the disconnect/reconnect decision.

### **Will gas be produced from the FPSO?**

Gas will be produced from the field, but it will not be sold. Most of the gas (~90%) will be re-injected back into the reservoir, with some of the gas used to run auxiliary systems on the FPSO, such as the power generators. Some gas will be flared during process upsets, commissioning and planned maintenance. The re-injected gas will be used to maintain reservoir pressure, i.e. gas re-injection is required for the oil to flow to the surface.

### **Will Apache be extracting oil from Woodside's Vincent field?**

Apache is aware of the geological barrier between the Vincent (Woodside) and the Van Gogh (Apache) fields, but is not sure exactly where it is. The Theo-2/3H drilling program (that started late May 2007) will help better define this barrier and assist the drilling campaign for Van Gogh. The thickness of oil columns is different on each side of the barrier, indicating that oil does not migrate between the two fields and that Apache and Woodside will not draw-down on each other's oil reservoirs.

The DoIR regulate how the companies extract the oil through a process of utilisation.

### **How often will oil be transferred from the FPSO, and how?**

Initially weekly (or 6-10 days) for the first year or so, and then declining as oil production declines and water production increases. Offloading tankers will be equipped to take

630,000 bbl, and this will take in the order of 30 hours, with at least an additional day required for the connecting and disconnecting process.

## **EMPLOYMENT**

### **How many crew will operate the FPSO?**

About 22-24 people will man the FPSO at any one time. Each role will have a back-to-back position. Rosters are likely to operate on Apache's general offshore system of two weeks on, two weeks off, fly-in, fly-out (FIFO) from Exmouth.

### **Where will the drilling and FPSO crews be sourced from? Are there opportunities for Exmouth residents to work offshore on this development?**

Stena Drilling is the drill rig operator, and ProSafe will be the FPSO builder and operator. They will source personnel directly. Such personnel need to be highly skilled. For more information, see the Employment section on this website.

Apache currently runs an apprenticeship program through APPEA (Australian Petroleum Producers and Exploration Association), with the aim of training people in the oil and gas industry.

## **ENVIRONMENTAL MANAGEMENT**

### **In the event of an oil spill, where is the oil likely to move to?**

Studies have almost been completed for oil weathering and oil spill trajectory modelling by experts in the field. Preliminary modelling indicates less than a one per cent chance of an oil/diesel spill during drilling or FPSO operations reaching the mainland or reef. Prevailing winds and currents will drive oil in an offshore direction.

### **What resources does Apache have to combat an oil spill?**

Apache is currently in preliminary discussions with AMOSC, BHP Billiton and Woodside about stocking an oil spill equipment centre in Exmouth (likely on Commonwealth land at the Harold Holt naval base). This would house equipment that all companies would contribute to financially and be available to any company in the event of a spill. A cooperative approach would also be employed in regard to training personnel (and Exmouth residents) in the use of this equipment in the event of a spill.

Apache's Oil Spill Contingency Plan (OSCP) will be updated for the Van Gogh Field Development, and will be reviewed by the Department of Primary Industries (Marine Branch) and approved by the DoIR prior to being implemented.

### **Will oil be lost from the FPSO transfer hoses during or after transfers?**

No, this is unlikely. The hose will be equipped with a self-sealing quick disconnect coupling to ensure that in the event of stress on the hose, the coupling can be disconnected without the risk of crude being spilled or damage to the hose.

A hawser (heavy cable strung between the FPSO and offloading vessel to keep them from moving apart) will assist in keeping the vessels steady during offloading, further minimising the risk of oil spill.

### **When will the Public Environment Report (PER) be released? Will we have an opportunity to comment on it?**

Apache is expecting to release the Draft PER for public comment in Q3 2007. The public will have 20 business days to provide comments on the report. Dependent on timing, members of the stakeholder community groups (SCGs) may have prior opportunity to make comments on the Preliminary Draft PER.

### **How will ballast issues be managed for the FPSO and support vessels?**

There is a low risk of introducing marine pests through ballast when stationed in water depths of ~350 m. AQIS (Australian Quarantine Inspection Service) manage the ballast exchange process in Australian waters. For the FPSO, it will take on ballast water in Singapore, discharge in deep water as it crosses the equator, record this information, relay it to its stevedoring company who pass this on to AQIS, and then take on 'clean' water in Australian territory.

For the drill rig, this process will have applied in the first instance it entered Australian waters. By the time it reaches the Van Gogh drill centres, it will have been operating on the North West Shelf for many months, so ballast quarantine will not be an issue.

### **What will happen with the water and gas extracted from the Van Gogh field?**

Produced formation water (PFW) will be injected back to the reservoir for most of the operating time (aiming for ~90% of the operating time under normal operating conditions). Surplus gas will be routinely re-injected to the reservoir (~ 90% of the operating time under normal operating conditions), except during commissioning, process upsets, production re-starts and planned maintenance, where some flaring may be necessary.

### **How will FPSO hull fouling be managed?**

The FPSO will be 'as new' when released for Van Gogh operations, with a clean hull. The short journey from Singapore to Australia means it should not accumulate much marine life on the hull (fouling). Should any marine life become attached on its journey to Australia, it will pose very little environmental risk as it is not likely they'll survive and/or breed in water depths of 350 m.

Under Australian legislation, other vessels associated with the development, such as support vessels, must be dry-docked every five years so that the hulls can be cleaned and have a anti-fouling paint applied. In shallower waters, marine life detaching from vessel hulls can pose a potential risk.

### **Does Apache own and operate the offloading vessels? What guarantees are there that 'ships of shame' will not be used?**

No. The Apache Crude Marketing Manager arranges for vessels to take our oil supply. An international database for oil cargo vessels, referred to as Q88, lists items for each vessel such as build date, certification, incidents, condition, etc. Apache vets potential offloading tankers against this database. The database helps ensure we don't use 'Ships of Shame' (i.e. ships that have been involved in major incidents, such as oil spills).

### **Will the FPSO be double-hulled?**

The FPSO will have double-hulled sides, with a single-hulled bottom. The water ballast will be housed between the outer and inner hulls. As part of the project's HAZID (hazard identification) process, it was determined that a single-hulled bottom was environmentally appropriate given the low risk of rupture from the bottom of the vessel as it will more or less be permanently moored on location.

## **IMPACT ON THE COMMUNITY**

### **Will fishing operations be impacted?**

Discussions with the relevant fishing industry representatives indicates that there is either very little or no commercial fishing at the proposed drilling and FPSO locations, so the development is not likely to impact on fishing (especially longline or trawling).

### **How will Exmouth benefit from this development?**

Apache will use Exmouth as the onshore base for the Van Gogh Field Development during operations. The Port of Dampier will be used during the installation phase, as the size of the vessels required precludes them from using the shallow-water marina at Exmouth. During operations, Exmouth will benefit from the additional business generated at the airport and helicopter base, while visiting Apache staff will make use of visitor accommodation and restaurants and associated services. During cyclone events, personnel from the FPSO may be required to stay in town. Local marine charters will be used to deliver goods to the rig and FPSO, eg. Bhargwan Marine.

### **Will the drill rig and FPSO be visible from the coastline?**

It is possible that the drill rig will be visible from the base of the Vlamigh Head lighthouse as a small distant object on the horizon. From the nearest beaches, it is not likely to be visible due to the curvature of the earth. At night, essential lighting on the rig will make it visible from the base of the lighthouse and possibly from the nearest beaches.