
LOCATION

The drilling activity will take place at the existing Wandoo A Monopod (latitude 20°08' 20" S and longitude: 116°25' 17.5" E) and the Wandoo B Oil Production Platform (latitude 20°07' 43" S and 116°26' 04" E). These two structures are referred to as the Wandoo Production Facility (WPF).

DESCRIPTION OF ACTIVITY

The drilling activities planned for this campaign are typical in terms of technical methods and procedures, of standard drilling campaigns conducted in Australian marine waters. No unique or unusual equipment or operations are proposed.

The MODU Ensco 109 (a jack up drilling rig) operated by Ensco, will re-enter and sidetrack three of the existing production wells B12, B8 and A6. The wells will be drilled in a water depth of approximately 54 m. Total depth (TD) will be approximately 2,285 m for B12, 1,964 m for B8 and 2,243 m for A6. Approximately 176 m³ of cuttings (for all three wells) will be generated and disposed of into the sea. These existing three wells are to be re-entered, each involving the removal of the current upper completion, milling a hole in the current 244 mm casing and drilling an open-hole lateral section (9" and 8 ½" hole sections) with a water based mud system, running sand screens in the open hole, setting a multi-lateral junction to upper legs and then running an upper completion. The upper completion design will allow production to be controlled from both legs.

The installation of the riser onto the existing wellhead will allow for the recirculation of drilling fluids from the well bore back to the rig's solids control and tank system (closed system), during the subsequent drilling of lower 9" and 8 ½" hole sections. Drill cuttings and the water-based muds (WBM) will be discharged to the sea after use. WBMs have low toxicities, degrade rapidly in the marine environment and are routinely accepted for use by the regulatory authorities.

VOGA's drilling programme and procedures are based on records from previous activities carried out at Wandoo and the extensive experience of the VOGA well construction team.

DESCRIPTION OF ENVIRONMENT

Animals inhabiting the seabed are sparsely distributed, consisting primarily of infauna (small invertebrates living in the sediment) with occasional sessile sponge and soft corals. Humpback whales are the most common species known to occur in the Carnarvon Basin area. The Humpback whale migrates through the region in winter and spring. Humpback whales feed on plankton while in Antarctic waters during summer. In winter, the whales migrate north along the west coast of Australia. They reach the coast and pass latitude 28° S in June or July. Females give birth mainly during August, utilising the warm shallow waters of the region for calving.

The WPF is located approximately 40 km to the north west of the northern reefs and islands of the Dampier Archipelago. The nearest landmass is the outer islands of the Dampier Archipelago. Although a large proportion of the Archipelago and island coastlines are of significant conservation value, any oil or chemical spill from the WPF would be unlikely to impact the shore as the prevailing winds and currents will carry any oil spill away from these areas. There are no reef structures or landfalls (typically associated with high marine productivity), bird or turtle nesting sites, or other known areas of biological significance in the vicinity of the permit.

There are no shipwrecks or heritage sites in the vicinity of permit area WA-14L. The nearest declared wreck site is at Tryal Rocks, just north of the Montebello Islands, over 100 km away. There is no known Aboriginal or European heritage or archaeological sites of significance associated with the permit. There is no identified tourist activity in the local vicinity of the WPF.

DESCRIPTION OF THE MAJOR ENVIRONMENTAL HAZARDS AND CONTROLS

Each of the environmental hazards was subjected to a qualitative risk assessment as part of the hazard identification and analysis workshop process. There were no high risk hazards identified as part of the environmental risk assessment process. A summary of the major hazards and their controls is presented below.

Environmental Hazards and Controls

Activity	Aspect	Hazard	Control
Movement of MODU and support vessels to NW Shelf	<ul style="list-style-type: none"> Introduction of non endemic species, in particular at port location utilised by supply vessels. 	<ul style="list-style-type: none"> Non-endemic organisms could become established if introduced, with unpredictable consequences for native species including commercially important or ecologically sensitive species. 	<ul style="list-style-type: none"> MODU and support vessels will have been operating in NWS waters prior to movement to WPF. MODU ballast water exchange procedure in place. Support vessels will not be conducting ballast water exchange.
Drilling	<ul style="list-style-type: none"> Discharge of drill cuttings to seabed. 	<ul style="list-style-type: none"> Mortality of sessile benthic organisms due to burial or smothering. Increased turbidity. 	<ul style="list-style-type: none"> Cuttings discharged in vicinity of wells. Muds attached to cuttings are water based and are low toxicity.
	<ul style="list-style-type: none"> Discharge of drilling muds and fluids to the marine environment. 	<ul style="list-style-type: none"> Increased turbidity, toxicity and bioaccumulation to marine organisms. 	<ul style="list-style-type: none"> Drilling campaign based on use of water-based drilling muds and biodegradable drilling fluids to minimise impact.
	<ul style="list-style-type: none"> Discharge of hydrocarbon contaminated water. 	<ul style="list-style-type: none"> Disruption to marine ecosystem established in association with WPF. 	<ul style="list-style-type: none"> MODU has deck containment drains and bunds that drain to a sump. Oil-in-water content of discharged water must be less than 30 ppm of hydrocarbons. Recovered oil to be transferred to mainland for disposal.
	<ul style="list-style-type: none"> Unplanned release of drilling related chemicals into the marine environment. 	<ul style="list-style-type: none"> Disruption to marine ecosystem established in association with the WPF structure. Mortality of planktonic or benthic organisms due to reduced water quality. 	<ul style="list-style-type: none"> MODU has deck containment drains and bunds. MODU work practices developed to ensure chemical containment is priority. Waste handling in accordance with the MODU and VOGA. waste management procedures.

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Wandoo Well Construction Environment Plan Summary



Activity	Aspect	Hazard	Control
	<ul style="list-style-type: none"> Loss of well control leading to a hydrocarbon liquid discharge (> 100T). 	<ul style="list-style-type: none"> Stranding of oil on turtle nesting beaches. Stranding of oil on intertidal rocky shores, sand and mudflats and mangroves. Oiling of seabirds. Mortality of planktonic or benthic organisms due to reduced water quality or toxicity. 	<ul style="list-style-type: none"> Drilling campaign based on reservoir knowledge obtained from previous drilling programmes. Adopt industry standards and guidelines for well design and control. Senior VOGA personnel will be qualified under IWCF (International Well Control Forum) requirements. VOGA Emergency Management Procedures, Blowout Contingency Plan and Oil Spill Contingency Plan (OSCP) will apply to the drilling operation.
	<ul style="list-style-type: none"> Cyclone event resulting in damage to rig and discharge of fuel and/or drilling chemicals. 	<ul style="list-style-type: none"> Stranding of oil on turtle nesting beaches. Stranding of oil on intertidal rocky shores, sand and mudflats and mangroves. Oiling of seabirds. 	<ul style="list-style-type: none"> Activity taking place outside cyclone season. MODU designed for operation in cyclone areas. MODU cyclone procedures require securing the well by temporary plugging and shutting down all operations and securing the drilling rig.
	<ul style="list-style-type: none"> Damage to MODU from vessel (collision) resulting in oil spill (>100T). 	<ul style="list-style-type: none"> Stranding of oil on turtle nesting beaches. Stranding of oil on intertidal rocky shores, sand and mudflats, and mangroves. Oiling of seabirds. 	<ul style="list-style-type: none"> Existing maritime and navigation laws and safe operating practices will be applied. (The risk of a vessel colliding with the rig at night will be negligible due to lighting on the rig and its proximity to the Wandoo A monopod and Wandoo B platform - a known and existing navigation hazard). Wandoo OSCP.
MODU sewage and lighting	<ul style="list-style-type: none"> Discharge of sewage, grey water and putrescible wastes into the environment 	<ul style="list-style-type: none"> Localised impact on water quality with suppression or stimulation of pelagic, sessile and/or phytoplankton growth. 	<ul style="list-style-type: none"> Ensure compliance with the MODU Garbage Management Plan. Kitchen wastes will be macerated and sewage wastes will be disinfected to existing standards prior to discharge overboard.
	<ul style="list-style-type: none"> MODU lighting associated with continuous drilling operations. 	<ul style="list-style-type: none"> Mortality of turtle hatchlings due to turtles being attracted to the rig and eaten by predators Concentration of seabirds around the MODU 	<ul style="list-style-type: none"> MODU will marginally increase light intensity above that associated with the existing WPF. Additional potential for impact is considered minor. Distance from closest turtle nesting area is at least 40 km (Dampier Archipelago).

Activity	Aspect	Hazard	Control
Vessel operating in vicinity of MODU and WPF	<ul style="list-style-type: none"> Collision causing damage to infrastructure resulting in oil spills (< 10T) 	<ul style="list-style-type: none"> Localised impact on water quality resulting in the mortality of marine life. Mortality of planktonic or benthic organisms due to reduced water quality or toxicity. Oiling of seabirds. 	<ul style="list-style-type: none"> Vessels will be operated by trained and experienced crew. Safe operation is the responsibility of the vessel master who will assess conditions as required. SIMOPS plan will be followed.
	<ul style="list-style-type: none"> Losses or spillages to the marine environment associated with vessel to MODU transfers 	<ul style="list-style-type: none"> Localised contamination around the support vessel and MODU causing mortality of planktonic or benthic organisms due to reduced water quality. 	<ul style="list-style-type: none"> Chemical and equipment transfers will be undertaken by competent crew. Cargo handling equipment to be certified to DNV 2.7-1 requirements. Dropped objects (containers or equipment) to be recovered where practical.
Vessel to MODU fuel transfers	<ul style="list-style-type: none"> Diesel spill (< 1T) from hose or coupling failure, receiving tank overfilling. 	<ul style="list-style-type: none"> Localised impact on water quality resulting in the mortality of marine life. Mortality of planktonic or benthic organisms due to reduced water quality or toxicity. Oiling of seabirds. 	<ul style="list-style-type: none"> Vessel fuel transfer procedure will be adhered to including continuous monitoring on both vessel and MODU, regular hose inspections, weather limitations on transfer activities. Use of 'Dry Break' hose couplings will occur for all fuel transfers. Transfer system will have automatic shutdown of pumps on loss of transfer pressure.
Vessel steaming in open waters	<ul style="list-style-type: none"> Interaction with migrating cetaceans. 	<ul style="list-style-type: none"> Unnecessary disturbance or interference with individual cetaceans. 	<ul style="list-style-type: none"> Vessel Masters to comply with existing Commonwealth guidelines for interaction with cetaceans.

SUMMARY OF THE MANAGEMENT APPROACH

The management approach follows VOGA's HSE Management System. A systematic approach is taken through the identification and assessment of hazards and risk, the establishment of objectives, performance standards, criteria and the development of appropriate documentation.

In addition the VOGA HSES MS aims to continually improve its overall environmental performance. The VOGA HSE Policy and the VOGA HSES MS aims to assist this process by providing guidelines for the implementation and criteria for ongoing assessment of environmental performance. Both documents are updated as required to include changes of procedure, corrective actions and new guidelines. The VOGA HSES Advisor will look at methods of ensuring continual improvement over the duration of the field operations, focussing on incorporation of lessons learnt.

CONSULTATIONS

As the drilling is taking place within the exclusion zone of the WPF, consultations were carried out with representatives of DMP, WAFIC, NOPSA and AMSA. VOGA will make itself available for consultation with relevant government authorities, interested persons, organizations and its workforce. This will include meetings with the WA DMP, NOPSA and AMSA.



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