EXECUTIVE SUMMARY

Longtom-3 (Vic/P54)

DRILLING OPERATIONS

Prepared for:

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Longtom-3 (Vic/P54) Drilling Operation Environmental Plan: Executive Summary

Description of the Action

Nexus Energy Ltd (Nexus) is proposing to drill Longtom-3 Appraisal well during the period May to September 2006, to confirm the extent, quality and continuity of gas sands in the field. The current spud date is June 2006 and it is expected that drilling will be 75 days in duration.

Longtom-3 is situated in the Commonwealth waters of Bass Strait approximately 30km (17nm) from the Victorian Coast in Exploration Permit VIC/P54. VIC/P54 is administered by the Victorian Department of Primary Industries (DPI) on behalf of the Australian Commonwealth Government. The coordinates of the proposed Longtom-3 gas well is 38^{o} 05' 34.774"S, 148^{o} 18' 41.479"E and are illustrated in Figure 1.

The drilling campaign will utilise the semi-submersible mobile offshore drilling unit, Ocean Patriot, with two attendant vessels which will undertake refueling, supply and safety surveillance activities. Longtom-3 well is a planned directional well of 2462m Total Vertical Depth (TVD)/5838m Total Measured Depth (TMD) and will be drilled by the following methodology:

- **Upper Well Sections:** Riserless drilling using seawater and prehydrated bentonite sweeps to clear the hole of cuttings; and
- **Lower Well Sections:** Closed Mud System using a low-toxicity, highly degradable ester-based Synthetic Based Mud (SBM). Adopted treatment and managements measures will minimize the amount of SBM discharged to the marine environment.

Following the successful completion of drilling, it is expected that production testing will be undertaken to appraise the type, quality and flowrate of the reservoir. It is expected that the well will be completed for future tie-in (i.e. with a subsea wellhead remaining occupying an approximate area of 9m^2 and extending 6m from the seafloor).

Summary of Nexus' Safety Health, Safety and Environment (HSE) Policy & Management System

Nexus has engaged Upstream Petroleum (UP) as the responsible party for the overall management of Longtom-3 Drilling Program. All Nexus drilling activities are conducted in accordance with UP's comprehensive Integrated Management System (IMS) which implements the Nexus HSE Policy and associated objectives. The key features of the Nexus HSE Policy includes: consideration of the environment in all their activities; ensuring compliance with legislative requirements and industry standards; implementation of a comprehensive safety and environment management system; continual improvement to environmental performance by setting objectives and targets; and management commitment to provide sufficient resources to enable the company to meet its health, safety and environmental commitments.

Description of the Receiving Environment

Longtom-3 is situated in the Commonwealth waters of Bass Strait in VIC/P54 permit area. A wide range of human activities occurs in Bass Strait including fishing, commercial oil and gas fields, shipping as well as recreational pursuits, heritage, research and tourism. The closest landfall to the Longtom-3 site is Lake Tyers, approximately 30km (17nm) NW, located on the Ninety Mile Beach (Victoria), an extensive continuous NE-SW oriented sandy beach-dune system. This beach-dune system, interrupted by occasional rocky headlands, provides a buffer zone to the RAMSAR wetlands located around the 400km^2 Gippsland Lakes waterways. No mangrove forests, coral reefs or extensive wetland lagoons lie along the exposed coastline directly opposite the proposed Longtom-3 location.

The sea-floor at Longtom-3 is gently undulating, but essentially flat (<0.1^o) with no bathymetric anomalies present (i.e. featureless). Seabed sediments are characterised by fine to course sand with abundant shells and shell fragments and minor olive green clay content. These sediments, approximately 1.5-6m thick, overlie more consolidated bedded silts and sands.

Water depth in VIC/P54 permit area varies from 40m in the northern section of the permit area to 60m in the south with a gradual gradient from shallow to deeper waters. A marine bed survey discovered four general seafloor habitat types in the area, including: medium sand and shell grit supporting sea pens, occasional sponges and colonial ascidians; shell accumulations consisting of large predominantly bivalve shells including scallops; sponge garden consisting of large sponges and bryozoans at approximately 50m water depth; and introduced New Zealand screw shell aggregations.

Both resident and migratory fauna, including fish, sharks, seals and sea lions, and cetaceans have been observed in the vicinity of the proposed Longtom-3 well site. Up to 10 migratory species, including 2 endangered species (Blue Whale and Southern Right Whale) and 3 threatened species (Great White Shark, Whale Shark and Humpback Whale) may potentially migrate or temporarily forage in VIC/P54 waters during certain periods. However, the VIC/P54 permit area is not recognized as an aggregation area for the species and there are no threatened ecological communities listed under the EPBC Act in the vicinity of the site. Commercial species of fish (shark, ling, perch, whiting) and shellfish (scallop, squid and prawns) also occur in the area.

Migratory seabirds listed under the EPBC Act are known to occupy the islands of Bass Strait, the nearby coastline, and may pass through VIC/P54 during the time of drilling. However due to the lack of suitable roosting and breeding habitats or important habitats for these species in VIC/P54, they are not expected to be present for extended periods of time.

Details of Major Hazards and Controls and Summary of Management Approach

A risk analysis has been undertaken for all aspects of the proposed Longtom-3 drilling campaign in accordance with procedures consistent with the requirements of AS/NZ4360:2004 (Risk Management) and HB203: 2004 Environmental Risk Management (Principles and Processes). The

analysis indicates that, with the proposed management/mitigation measures implemented, no significant environmental impacts are expected and the activities carry a low residual environmental risk. Further details of key environmental aspects of the drilling activities are provided in Table 1. This table also summarizes the management/mitigation measures and applicable standards for each aspect of the drilling operation.

Consultation Process

Nexus has consulted extensively with fishery groups, fishing industry groups and regulatory agencies in preparation for the Longtom-3 Appraisal well. Nexus Energy will continue to maintain regular communications with identified stakeholder and other interested parties to ensure that they are informed of any changes to the drilling program which may affect commercial fishing operations. Stakeholder consultation will include the following groups:

Federal Government Agencies:

- Commonwealth Department of Environment and Heritage (DEH)
- Australian Maritime Safety Authority (AMSA)
- Environment Australia (EA)
- Department of Industry, Science & Resources (DISR)
- Australian Fisheries Management Authority (AFMA)

State Government Agencies:

- Victorian Department of Primary Industries (DPI) – Petroleum & Fisheries
- Marine Safety Victoria (MSV)

Commercial and recreational fishing bodies, clubs, tourism operators and other public organizations:

- Seafood Industries Victoria (SIV)
- South-east Trawl Fishing Industry Association (SETFIA)
- South-east Fishery Association (SEFA)
- Lakes Entrance Fisherman Co-op (LEFCOL)
- San Remo Fisherman Co-op
- Twofold Bay Fisherman Co-op
- Scallop Fisheries Association
- VR Fishing (Peak Body for Recreational Fishing)

Contact Details

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Table 1 Summary of Performance Objectives, Standards and Criteria for Longtom-3

Environmental Aspects / Potential Impacts	Environmental Objectives	Management Measures	Management Standards	Risk
Physical Presence of Drilling Infrastructure (Marine Fauna) • Anchoring disturbs sea-floor resulting in loss of sea-floor fauna & temporary disturbance to local habitat • Subsea & manifold structures become an artificial reef • Disturbance to marine mammals & fauna with altered behaviour	Minimise impacts to marine mammals	• Drilling Activities short duration • Anchoring Procedures minimise anchor dragging • Survey to ensure that rig placement minimises damage to sensitive environments • Cetacean Monitoring Program for Ocean Patriot & attendant vessels • Environmental induction for crew • Adherence to National Guidelines for Whale & Dolphin Watching (2005) for Mobile Vessels	o Australian National Guidelines for Whale & Dolphin Watching (DEH, 2005)	Low
Physical Presence of Drilling Infrastructure (Socio-economic) • Hazard to commercial fishing and shipping (obstacle) • Commercial fishing impacts in proximity to Ocean Patriot and Subsea Infrastructure	Eliminate incidents which may result in oil spills to marine waters.	• Safety zone to protect & police infrastructure • Consultation with commercial fishing Industry undertaken • Lighting present on Ocean Patriot & attendant vessels • Notice to Mariners issued • Continuous radio and radar watch (attendant vessel) • Emergency Response and Oil Spill Contingency Plan established, implemented and tested	o PSLA MoE (Reg 14) o Navigation Act 1912 [Marine Order 27 & 30] o PSLA S140: Safety Zone declaration o Code for the Construction and Equipment of Mobile Offshore Drilling Units (IMO)	Low

Environmental Aspects / Potential Impacts	Environmental Objectives	Management Measures	Management Standards	Risk
Discharge of Drilling Fluids (Cuttings) • Localised smothering of benthic communities • Temporary alteration to sediment characteristics • SBM organics on seabed creating anoxic/anaerobic conditions in proximity to cuttings pile • Localised turbidity affecting sunlight to phytoplankton	Minimise impact of fluids on pelagic and benthic communities	• SBM Operations in accordance with Ocean Patriot OBM Procedures • Operational checks of shaker-house equipment prior to SBM circulation • Drill cuttings treated via shale shakers & centrifuges prior to ocean disposal • Daily Retort analysis of SBM residuals on cuttings to verify/limit SBM discharge overboard • Continuous monitoring of shaker-house operation by Shaker Hand & advice (as required) on necessary flow regulation	o PSLA (MoE) (Reg 7)	Low
Discharge of Food-scraps & Sewage • Nutrient enrichment of surrounding water • Chemical impacts	• Avoid negative affects to surrounding water quality. • Minimise waste	• All foodscraps macerated in the 'Gulf Gobbler' • All sewage treated in Hamworthy ST8 Super Trident Sewage Treatment Facility – reduces BOD loading which is inspected on a daily basis • Grey-water directly discharged overboard • Cleaning agents (detergents) selected are biodegradable	o MARPOL73/78 - Annex IV (Sewage) o PSLA (MoE) (Reg 7)	Low
Discharge of effluent from Equipment/Machinery Spaces • Potentially harmful/toxic discharges to marine environment • Potential turbidity and BOD reduction if discharged	Avoid negative effects on surrounding marine water quality	• Area contained and collected in bilge tank • Collected oil sent to shore for treatment & disposal • Chemical storage in spaces minimised	o MARPOL 73/78 – Annex 1 (Oil) & Annex II (Noxious Liquid Substances). o PSLA (MoE) (Reg 7)	Low

Environmental Aspects / Potential Impacts	Environmental Objectives	Management Measures	Management Standards	Risk
Discharges from Deck Drainage • Toxicity impacts to marine flora and fauna • Turbidity of waters about discharge point • Potential nutrient increases	Avoid negative impacts on surrounding marine water quality	Non-rig Floor Areas: • Oil & Chemical Stores contained with no residues/spills entering the drainage system • Spill cleanup equipment available • Chemicals reviewed at purchase to ensure availability of MSDS's, spill cleanup materials & storage compatibilities • Oily water directed to oil/water separation system for separation. Water discharged to MARPOL requirements (15ppm oil) • Oil residue is disposed onshore • Washdown detergents are biodegradable Drill Floor Areas: • Drill Floor area totally contained, drains plugged • Drain residues via dedicated vacuum system & recycled back to mud system • Vacuum system continually monitored	o MARPOL 73/78 – Annex 1 (Oil) & Annex II (Noxious Liquid Substances) o PSLA (MoE) (Reg 7)	Low
Discharges of Ballast Wate • Species introduction to productive fishery area • Potential contamination of ballast tanks with oil	Avoid invasion by non-endemic species	• Vessel to comply with the Australian Ballast Water Management Requirements (AQIS) • MODU & attendant vessels working within Australia for past 18 months • Local ballasting only • Segregated ballast tanks	o Australian Ballast Water Requirements (AQIS, 2001) o MARPOL 73/78 – Annex 1 (Oil): Segregated Ballast Tanks	Low
Storage & Disposal of Environmentally Hazardous and General Wastes • Potentially harmful/toxic discharges to marine environment • Potential turbidity and BOD reduction if discharged	• Avoid negative effects of marine water quality. • Minimise wastes	• Area contained and collected in bilge tank • Collected oil sent to shore for treatment & disposal • Chemical storage in spaces minimised	o MARPOL 73/78 – Annex 1 (Oil), Annex II (Noxious Liquid Substances) & Annex V (Garbage). o PSLA (MoE) (Reg 7)	Low

Environmental Aspects / Potential Impacts	Environmental Objectives	Management Measures	Management Standards	Risk
Emissions from Combustion Sources (Includes: Generators, Drill Equipment, Production Testing) • Inefficient use of hydrocarbon resources • Release of Greenhouse Gas Emissions • Aesthetics of smoke & particulates	Minimise emissions, use energy efficiently and avoid aesthetic impacts of incomplete combustion	• *Ocean Patriot* Equipment maintained to maximise combustion efficiencies • *Ocean Patriot* Equipment fuel consumption monitored • *Production Testing Equipment* appropriately sized for the expected flow conditions • *Production Testing* in accordance with regulatory approvals (i.e. duration, etc)	o MARPOL 73/78 – Annex VI (Air Emissions) o PSLA (MoE) (Reg 7) o PSLA Schedule (Clause 512)	Low
Atmospheric Emissions from Ozone Depleting Chemicals • Reduction in ozone and protection from UV	Minimise release of ODP Chemicals	• Halon releases limited to emergency events only (not used in emergency exercises or triggered during testing) • Halon areas clearly identified and controlled to prevent inadvertent activation • ODP systems serviced by accredited personnel	o MARPOL 73/78 – Annex VI (Air Emissions) o PSLA (MoE) (Reg 7)	Low
Generation of Noise • Potential impacts to marine mammals.	Avoid or minimise negative effects of noise on sensitive species	• Helicopter & vessel approach to cetaceans greater than 300 (whales)/150m(dolphins) • Cetacean monitoring program for Ocean Patriot/attendant vessels	o PSLA (MoE) (Reg 7) o Australian National Guidelines for Whale & Dolphin Watching (DEH, 2005)	Low
Hydrocarbon spill during Production Test Activities • Impacts to surrounding water quality and marine flora/fauna • Disruption to fishing activities	Avoid negative impacts on surrounding water quality	• Longtom is dry gas reservoir • Production handling facilities adequately sized for test program	o PSLA Schedule – Clause 512 o PSLA MoE (Reg 26) (Incidents, reports and records) o PSLA MoE (Reg 14)	Low

Environmental Aspects / Potential Impacts	Environmental Objectives	Management Measures	Management Standards	Risk
Loss of Well Fluids (Blowout) • Impacts to surrounding water quality and marine flora/fauna • Disruption to fishing activities	Avoid negative effect on surrounding water quality	• Longtom is dry gas reservoir • Implemented and tested Emergency Response & Oil Spill Contingency Plan in place • Installation & routine testing of BOP's • Drilling area surveyed to assess potential for shallow hydrocarbon areas • Mud characteristics monitored to prevent blow-out from occurring • Pressure testing of test string prior to production test	o P(SL)A Schedule – Clause 506 o P(SL)A Schedule – Clause 508 o PSLA MoE (Reg 14) o PSLA Schedule – Clause 502, 503, 505	Low
SBM Spill Potential effects include Impacts to marine water quality	Avoid negative impacts on surrounding water quality	• SBM preparedness audit conducted • Implemented and tested Emergency Response & Oil Spill Contingency Plan in place • Ocean Patriot SBM Containment Plan • Daily Inspection of the containment safeguards • Overboard lines/mud pit valves leak tested & padlocked against inadvertent operation • Mud system assessed for compatibility with selected SBM • System integrity (leaks & discharge routes) established and corrected (as required) prior to delivery of SBM • Shaker house constantly attended during SBM circulation to guard against SBM loss • Mud pits continually monitored for mud loss/gain	o PSLA MoE (Reg 26) (Incidents, reports and records) o PSLA MoE (Reg 14) o PSLA (MoE) (Reg 7)	Low

Environmental Aspects / Potential Impacts	Environmental Objectives	Management Measures	Management Standards	Risk
Oil Spill during Fuel Transfer Potential effects include: • Oiling of Seabirds • Disruption to fishing activities	Avoid negative impacts on surrounding water quality	• Implemented and tested Emergency Response & Oil Spill Contingency Plan in place <u>Fuel Transfer:</u> • Adherence to DOGC Fuel Transfer Procedures • Hose couplings are dry-break • Transfer hoses visually inspected at each transfer and replaced every two years • Constant radio contact between attendant vessels and *Ocean Patriot* during transfer • Support vessel maintains distance of one crane arm from MODU during loading/offloading • Transfers during favourable weather conditions under constant visual supervision • Suitable absorbent material on hand during transfers • Overfill protection devices fitted to Fuel Oil Day Tanks <u>Fuel Tank Rupture</u>: o Support Vessels observe OSV Code	o PSLA MoE (Reg 26) (Incidents, reports and records) o PSLA MoE (Reg 14) o PSLA (MoE) (Reg 7)	Low

FIGURE 1: Longtom-3 Location