



**Environmental
Protection
Agency**

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Environmental Permit (Renewed)

Issued under the Environmental Protection Act, Cap. 20:05, Laws of Guyana, the Environmental Protection (Amendment) Act, 2005, and the Environmental Protection (Authorisations) Regulations, 2000.

Reference No.:	20160705-EEDPF
Fees:	Extra Large (C1) – USD \$3100 per year
Fees Paid:	USD \$15,500 (i.e., 5 years: June 1, 2022 – May 31, 2027)

Addressee(s): Mr. Alistair Routledge
President
Esso Exploration and Production Guyana Limited
86 Duke Street
Kingston
Georgetown
Guyana.

Activity: Liza Phase 1 Project – Operation of Production Facilities, Stabroek Block, Offshore Guyana.

Esso Exploration and Production Guyana Limited (EEPGL), hereinafter referred to as the "Permit Holder", is hereby authorised by the Environmental Protection Agency (EPA), hereinafter referred to as the "Agency", in accordance with the Environmental Protection Act, Cap 20:05, Laws of Guyana and the Environmental Protection (Amendment) Act, 2005, and its accompanying Regulations, to undertake Phase 1 of the Liza Project for the Development of Petroleum Production Facilities, hereinafter referred to as the "Project", which includes but is not limited to, drilling of subsea development wells, installation and operation of subsea equipment, use of a Floating Production, Storage, and Offloading (FPSO) vessel to process, store, and offload the recovered crude oil during production operations, as well as the use of shorebase facilities and marine/aviation

services in support of these activities, in the manner indicated, so far as it is reasonably practicable, in the Application for Renewal of an Environmental Authorization, the National Oil Spill Contingency Plan, the Environmental Impact Assessment dated June 1, 2017, and the Environmental and Socioeconomic Management Plan dated June 1, 2017, the Revised Oil Spill Response Plan dated March 29, 2022, and Wildlife Response Plan, all of which may be updated from time to time, and are subject to the terms and conditions set forth herein and any existing or forthcoming regulations, best practices, approvals, directives, guidelines and standards relevant to this project.

Environmental Permit, Reference No. 20160705-EEDPF, issued on June 01, 2017, modified on May 12, 2021, expired on May 31, 2022, and renewed May 31, 2022, is hereby revised on October 27, 2022.

1.0 GENERAL

- 1.1 The Permit Holder shall comply with all applicable laws, regulations and guidelines, including but not limited to the following:
- a. Environmental Protection Act, Cap 20:05, Laws of Guyana and associated Regulations;
 - b. Petroleum Exploration and Production Act, 1986;
 - c. Petroleum Exploration and Production (Amendment) Act, 1992;
 - d. Pesticides and Toxic Chemicals Act, No. 13 of 2000;
 - e. Pesticides and Toxic Chemicals Regulations, No. 8 of 2004;
 - f. Pesticides and Toxic Chemicals (Amendment) Regulations, No.8 of 2007;
 - g. Laws and regulations enacted by Guyana to implement the National Policy Framework; and
 - h. International Conventions and Protocols.
- 1.2 The Permit Holder shall comply with any directions which the Agency gives from time to time, including but not limited to, those directions given in furtherance of the implementation of any international or other obligation under any treaty or International Law related to the environmental protection of Guyana and surrounding regions likely to be affected (including neighbouring South American Coast and Caribbean Sea).
- 1.3 The Permit Holder shall maintain a Project Community Grievance Mechanism to receive and address complaints from individuals and communities who believe that the project causes environmental harm to their community. The Grievance Mechanism, which shall be in keeping with the World Bank's Approach to

Grievances Redress in Projects, must be practical, inclusive, and accessible for all project affected stakeholders.

- 1.3.1 The Permit Holder shall maintain records of environmental grievances and report on the numbers, nature and how these were or will be addressed. This information must be provided in the Monthly Report as required by Condition 13.10.
- 1.3.2 The Annual Report required by Condition 13.9 of this Permit, must contain a summary of the environmental grievances and management, including actions taken, challenges and/or constraints in addressing same.
- 1.4 The Permit Holder shall employ and maintain the best available techniques, which consider economic and technical feasibility, as well as the facilities and controls described in the EIA, to prevent or mitigate pollution in relation to all aspects of the operation.

2 NOISE MANAGEMENT

- 2.1 The Permit Holder shall, where practicable, ensure that all noise producing devices and/or equipment are retrofitted with appropriate and effective noise reducing devices (e.g. silencers, mufflers and enclosures, etc.).
- 2.2 The Permit Holder shall implement the necessary engineering controls, administrative controls and training, in accordance with Good International Industry Practice (GIIP), to protect human health and the environment from noise- induced harm and injury.

3 AIR QUALITY MANAGEMENT

- 3.1 The Permit Holder shall implement environmentally-effective and technically feasible best practices, in accordance with the American Petroleum Institute (API) Standards and Recommended Practices, for reducing emissions.
- 3.2 The Permit Holder shall ensure that offshore facilities are designed and operated to maximize energy efficiency, and reduce fugitive emissions.
- 3.3 The Permit Holder shall annually quantify aggregate Scope 1 and Scope 2 greenhouse gas (GHG) emissions as well as other criteria pollutants emitted from the Liza Phase 1 Project.

- 3.4 The Permit Holder shall utilize low sulphur fuels on all vessels and/or use associated gas on the FPSO.
- 3.5 The Permit Holder shall ensure that there is no use of chlorofluorocarbons (CFCs) and polychlorinated biphenyls (PCBs) on the FPSO unless such use is authorised by the Agency.
- 3.6 The Permit Holder shall ensure that there is no discharge of ozone-depleting substances (ODS) in accordance with the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) Annex VI.
- 3.7 The Permit Holder shall ensure that associated gas brought to the surface with crude oil during oil production is re-injected into the reservoir, utilized as fuel gas on the FPSO, and/or exported to shore to a processing facility. The Permit Holder shall seek permission in writing from the Agency for any alternative use of associated gas.
- 3.8 The Permit Holder shall adopt the necessary preventive measures, in accordance with the Global Gas Flaring Reduction (GGFR) Partnership, as far as they are practicable, when considering flaring.
- 3.9 The Permit Holder shall employ all reasonable efforts to prevent equipment breakdowns and plant upsets which could result in flaring which efforts shall include, but may not be limited to, acquiring the necessary spare equipment and ensuring that they are in Guyana, utilising plant turn-down protocols, supplementing all equipment relating to gas handling, water handling and oil handling systems on the FPSO, and maintaining equipment in accordance with Condition 11.23.
- 3.10 Routine flaring and venting are **strictly prohibited**. For the purpose of this Permit tank flashing emission, standing/working/breathing losses, low pressure streams are not taken to constitute routine flaring and venting.
- 3.11 Flaring is only permissible during commissioning, start-up or special circumstances, which for the purposes of this Permit, are defined as follows:
 - a. **Commissioning** shall be defined as the process of ensuring that all systems and components are designed, installed, tested, operated, and maintained according to their operational requirements or manufacturers' specifications. This condition shall also apply to the commissioning of any new units or

systems post-production, or the renovation of existing units or systems, which may require flaring. During commissioning, all gas systems, must be properly installed, fully leak tested and able to receive gas, before start-up.

- b. **Start-up** shall be defined as the activity that occurs at the end of commissioning where production operations are initiated for the first time.
 - c. **Special Circumstances** include only emergencies, maintenance and restart which for the purposes of this Permit, are defined as follows:
 - i. **Emergencies:**
 - a) Controlled - any unavoidable expected event, including inclement weather conditions strictly requiring the flaring of gas; and
 - b) Safety Response - any unplanned event requiring the flaring of gas for safety purposes or flaring required to maintain the flare system in a safe and ready condition (purge gas/make-up gas/fuel gas) and pilot flame.
 - ii. **Maintenance:**
 - a) Planned/unplanned maintenance and inspections on gas handling systems and related processes, and construction activities.
 - b) Scheduled unloading or cleaning of a well or well work-over, well testing, production testing, other well-evaluation testing, or the necessary blow down to perform these procedures; and maintenance required during and after an emergency shutdown or restart.
 - iii. **Restart:** the act of resuming oil production following a shutdown event.
- 3.11.1 The Permit Holder shall not exceed **sixty (60) cumulative days** of flaring during commissioning. For the purpose of this Permit, any day that gas is flared above background flare levels, regardless of the duration, is considered **one (1) day** of flaring. The question of when background flare is reached shall be determined by the Agency only, taking into account any relevant information which the Permit Holder may provide.
- 3.11.2 The Permit Holder shall notify the Agency of the expected duration and flaring volumes expected during commissioning at least **six (6) months** before commissioning, for its Approval.

- 3.11.3 The Permit Holder shall notify the Agency within **twenty-four (24) hours** of all special circumstances which resulted in a flaring event lasting more than **twelve (12) hours** on the FPSO.
- 3.11.4 With the exception of the background flare, where any of the abovementioned special circumstances is expected to exceed **fourteen (14) calendar days**, the Permit Holder shall seek Approval from the Agency for flaring within **the first ninety-six (96) hours** of the commencement of flaring.
- 3.11.5 Where flaring during commissioning is expected to exceed **sixty (60) cumulative days**, the Permit Holder shall seek an Approval from the Agency for flaring no later than **five (5) calendar days** prior to the end of the sixty (60) cumulative-day period.
- 3.11.6 When seeking an Approval under Condition 3.11.4 or Condition 3.11.5, the Permit Holder shall submit the following to the Agency:
- a. a description of conditions which include, but may not be limited to, commissioning schedule and maintenance schedule, where applicable;
 - b. schedule for flaring;
 - c. justification(s) for required approval; and
 - d. daily projected flare volumes.
- 3.11.7 The Agency reserves the right to require the submission of such further information it deems necessary, before issuing an Approval for flaring.
- 3.11.8 An Approval for flaring shall be subject to such terms and conditions as may be required by the Agency, including the strict adherence to Conditions 3.12, 3.13 and 3.14.
- 3.11.9 An Approval shall not be issued for a period exceeding **sixty (60) calendar days**. Where flaring exceeds or is expected to exceed the sixty calendar (60) day period, the Permit Holder shall seek an additional Approval at least **forty-eight (48) hours** before the expiration of the existing Approval, which additional Approval may be issued subject to such further terms and conditions as the Agency deems appropriate.



- 3.11.10 The terms and conditions of any Approval for flaring shall be considered as forming part of the present Permit so that any breach or contravention thereof, shall be considered a breach or contravention of this Permit.
- 3.12 The Permit Holder shall pay **US\$50 per tonne** of carbon dioxide equivalents (CO₂e) emitted as a result of flaring in excess of the periods of flaring expressly stipulated at 3.11.1 and 3.11.4 above.
- 3.13 The Permit Holder shall submit a CO₂e Emissions Payment Calculations Report within **twenty-eight (28) calendar days** from the date of expiration of the Approval granted by the Agency. CO₂e emission payments shall be made payable to the Agency within **fourteen (14) calendar days** of the Agency's approval of the CO₂e Emissions Payment Calculations Report or as may be expressly stipulated by the Approval.
- 3.14 Nothing contained herein shall be interpreted to mean that the Agency rescinds its authority to revise the rate of **US\$50 per tonne** established by Condition 3.12 for the emission of CO₂e for any period of continuous flaring beyond **sixty (60) days**, to order the cessation of all flaring, or take any other course of action provided by the Environmental Protection Act Cap 20:05.
- 3.15 The Permit Holder shall estimate GHG emissions, including carbon dioxide (CO₂) and CO₂e emissions, in accordance with sound engineering mass and energy balance calculation, and accurate data.
- 3.16 The Permit Holder shall estimate and report all GHG emissions in accordance with the most recent updated versions of the following approved methodologies:
- a. American Petroleum Institute's (API) Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Gas Industry;
 - b. Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventory;
 - c. U.S. Code of Federal Regulations (CFR), Title 40 – Protection of the Environment, Chapter I – Environmental Protection Agency, Subchapter C – Air Programs, Part 98 – Mandatory Greenhouse Gas Reporting, Subpart W – Petroleum and Natural Gas Systems (USEPA 40CFR98.233 – Calculating GHG Emissions); or
 - d. Any other equivalent standard/document required or approved by the Agency.
- 3.17 The Permit Holder shall summarise and report to the Agency, the considerations made to estimate the volume of GHG emissions.

3.18 Prior to a flaring event, the Permit Holder shall:

- 3.18.1 Ensure that all new equipment and future modifications to existing equipment are designed and built to API Standards and Recommended Practices;
- 3.18.2 ensure that flare equipment and gas handling system(s) are inspected, correctly installed, function tested, certified for use under operation conditions, and maintained in accordance with manufacturers' specifications, throughout operations;
- 3.18.3 calibrate and maintain a flare metering system in accordance with the manufacturers' recommendations which calibration certificate must be submitted to the Agency upon completion of calibration;
- 3.18.4 ensure that the flaring stack is installed a safe distance from storage tanks and accommodation units;
- 3.18.5 minimize the risk of pilot flare blowout by ensuring sufficient exit velocity and providing wind guards;
- 3.18.6 determine the minimum exit velocity required to avoid pilot flare blowout and submit information to the Agency within **thirty (30) calendar days** of receipt of this Permit;
- 3.18.7 operate the facility in a manner to keep overpressure events as low as practically possible and install high-integrity instruments and pressure protection systems to respond to overpressure events; and
- 3.18.8 implement burner maintenance and replacement programs in accordance with manufacturer's recommendations to ensure continuous maximum flare efficiency.

3.19 During a flaring event, the Permit Holder shall:

- 3.19.1 employ a metering system with an accuracy of **plus or minus five (5) percent** to determine the quantity of gas to the flare system;
- 3.19.2 ensure that the flaring systems are being operated within manufacturers' recommended specifications;
- 3.19.3 utilise efficient flare tips;
- 3.19.4 optimize the size and number of burning nozzles;
- 3.19.5 flare in a manner which controls odour and smoke emissions, where practicable;
- 3.19.6 ensure that the volumes of hydrocarbons flared and the estimated quantity of specific pollutants emitted from flaring including but not limited to carbon dioxide (CO₂), carbon dioxide equivalent (CO₂-e), nitrogen oxides (NO_x), sulfur oxides (SO_x), carbon monoxide (CO), particulate matter, hydrogen sulfide (H₂S), volatile organic compounds (VOCs), methane and ethane, benzene, ethyl benzene, toluene, and xylenes (BTEX), and glycols, and the methodology used to determine the concentration of each pollutant, are recorded;

- 3.19.7 control and optimize flare operations to achieve maximum combustion efficiency; and
- 3.19.8 minimize liquid carryover and entrainment in the gas flare stream with a suitable liquid separation system ensuring that all new equipment and future modifications to existing equipment are designed in accordance with API Standards and Recommended Practices.

4.0 WATER QUALITY MANAGEMENT

- 4.1 The Permit Holder shall not discharge contaminants into the marine environment unless authorised, in keeping with prescribed limits, and in accordance with GIIP.
- 4.2 Discharges into the marine environment from operations shall be undertaken in a manner that does not cause or permit the entry of contaminants into the environment in amounts, concentrations or levels in excess of that prescribed by any directive or GIIP.
- 4.3 The Permit Holder shall manage produced water during operations using the following principles, which may be considered in a hierarchy:
 - 4.3.1 Minimise or use/reuse produced water where practicable and commercially viable during operations:
 - a. Optimise well management during well completion activities and subsequent hydrocarbon production operations to minimise produced water;
 - b. Perform recompletion of high water-producing wells to minimise produced water, where technically feasible; and
 - c. Use downhole fluid separation techniques, where possible, and water shutoff techniques, when technically feasible.
 - 4.3.2 Treat produced water from the reservoir on-board the FPSO to reduce **all** constituents with potential for environmental impact to below acceptable environmental performance levels in accordance with GIIP, prior to discharging where practicable:
 - a. Prevent prior formation of stabilised emulsions in produced water to the degree practicable. Formation prevention may be reduced through selection of production chemicals and optimisation of chemical dosage; and
 - b. Treat using primary and secondary treatment techniques, which shall depend on the properties of the oil/water mixture, and location-specific factors.



- 4.4 The Permit Holder shall ensure that the oil content specification of produced water to be discharged does not exceed **42 mg/L** on a daily basis or a monthly average of **29 mg/L**.
- 4.4.1 The Permit Holder shall employ continuous online/electronic oil in water (OIW) analyzers and manual sampling to determine the oil content of produced water to be discharged. Analyzing and sampling points must be located immediately after the last item of the produced water treatment equipment or downstream of a turbulent region and before any subsequent dilution. The results of the manual oil content sampling must be reported to the Agency as per Conditions 13.10 and 13.11, respectively.
- 4.5 The Permit Holder shall submit to the Agency within **seven (7) calendar days** of the commencement of the drilling campaign, a list of all anticipated additives, and the estimated quantities therefor, to be used in the drilling fluids.
- 4.6 The Permit Holder shall notify the Agency at least **seven (7) calendar days** prior to making any changes in the type of drilling fluid to be used, and outline the disposal/recycle/treatment methods to be applied. Notice given after the 7 days period required herein shall only be accepted where the Agency is satisfied that the notification period was not feasible due to flow assurance or safety risks.
- 4.7 The Permit Holder shall ensure that the concentration of mercury and cadmium does not exceed **1 mg/kg dry weight** in stock barite, and **3 mg/kg dry weight** in stock barite, respectively. The Permit Holder shall prepare a report on the concentrations of cadmium and mercury in stock barite and suspended particles, contained in the discharge, and submit the report as a component of the End of Well Report.
- 4.8 The Permit Holder shall not utilise drilling mud fluids for which diesel is the principal component.
- 4.9 The Permit Holder shall not discharge drilling fluids which contain used or waste engine oil, cooling oil, gear oil or lubricants.
- 4.10 The Permit Holder shall maintain an inventory of all drilling fluid constituents added down-hole for each well and submit the information as part of the End of Well Report.



- 4.11 The Permit Holder shall only utilise low-toxicity International Oil and Gas Producers (IOGP) Group 3 base fluid for well sections requiring non-aqueous drill fluid (NADF).
- 4.12 The Permit Holder shall take appropriate measures, in accordance with GIIP, to eliminate the occurrence of free oil resulting from the discharge of NADF drill cuttings.
- 4.13 The Permit Holder shall not discharge cuttings generated using drilling fluids, which contain conventional mineral oil (IOGP Group 1), except when the mineral oil is used as a carrier fluid (transporter fluid), lubricity additive, or pill.
- 4.14 The Permit Holder shall utilise solids control and cuttings dryer systems to treat cuttings so that the end of well maximum weighted mass ratio averaged over well sections drilled using IOGP Group 3 non-aqueous fluids (polycyclic aromatic hydrocarbons <0.001% by weight and total aromatic content <0.5% by weight) does not exceed **6.9 grams of non-aqueous based fluids per 100 grams of wet drill cuttings**.
- 4.15 The Permit Holder shall determine the end of well maximum weighted mass ratio of wet weight base fluid retention on cuttings averaged over all well sections drilled using non-aqueous fluids using an internationally recognised and Agency approved method.
- 4.16 The Permit Holder shall not discharge completion and well work-over fluids that have not been neutralized to attain a **pH of five (5) or more**. The Permit Holder shall prepare a report on completion and well work-over fluids (including the pH of the fluids in the discharge), and submit the report as a component of the End of Well Report.
- 4.17 The Permit Holder shall ensure that the temperature within the thermal plume of cooling water discharge is within **three (3) degrees Celsius** of ambient seawater temperature within 100 meters of the discharge point(s).
- 4.18 The Permit Holder shall monitor and report the temperature of the cooling water discharged, daily as part of the daily Production Summary Report, required by Condition 13.11.
- 4.19 The Permit Holder shall abide by the International Convention for the Prevention of Pollution from Ships (MARPOL), the International Maritime Organization (IMO) Guidelines including the International Convention for the Control and

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Management of Ship's Ballast Water and Sediments (2004), with the exception of Regulation D-2 (Ballast Water Performance Standard) while the FPSO is on station.

- 4.20 The Permit Holder shall treat bilge water in accordance with MARPOL 73/78 requirements to achieve an oil in water content of **<15 ppm** (parts per million).
- 4.21 The Permit Holder shall not discharge wastewater from the on-board Sewage Treatment Plant unless it complies with the aquatic discharge standards as set out in MARPOL 73/78 regulations.
- 4.22 The Permit Holder shall ensure that the residual chlorine concentration of each treated sewage discharged from the FPSO is below **0.5 mg/L** in accordance with MARPOL 73/78 regulations.
- 4.23 The Permit Holder shall ensure that all discharge from the oily/bilge separator is in accordance with Annex IV of MARPOL 73/78 requirements.
- 4.24 The Permit Holder shall perform daily inspections to ensure that there are no floating solids or discolouration of the surrounding waters and shall submit to the Agency a report detailing its observations as part of the Daily Production Summary Report, required by Condition 13.11.
- 4.25 The Permit Holder shall ensure that there is no oil sheen from any effluent discharge stream originating from the FPSO, drillships, support/supply and installation vessels.
- 4.26 The Permit Holder shall adhere to operational controls regarding material storage, wash-downs and drainage systems.
- 4.27 The Permit Holder shall not discharge diesel oil, halogenated phenol compounds, or chrome lignosulfonate.
- 4.28 The Permit Holder shall ensure that leak detection mechanisms and monitoring, in accordance with GIIP, are in place for the equipment, treatment and storage facilities (fuel, chemical, etc.) on the FPSO, drillships, support/supply and installation vessels.
- 4.29 The Permit Holder shall utilize leak detection controls and monitoring during the installation and operation of Subsea Umbilicals, Risers and Flowlines (SURF)



equipment (e.g., pigging and pressure testing of lines, periodic ROV surveys of subsea trees, manifolds, flowlines and risers).

5.0 HAZARDOUS AND NON-HAZARDOUS WASTE MANAGEMENT

- 5.1 The Permit Holder shall ensure effective management and disposal of waste and recoverable materials generated by the project in accordance with GIIP and the Environmental Protection Act, Cap. 20:05, Laws of Guyana and the most recently Agency approved Waste Management Plan.
- 5.2 The Permit Holder shall seek the Agency's Approval prior to deviating from any measure required by GIIP, the Environmental Protection Act, Cap. 20:05, Laws of Guyana and the most recently Agency approved Waste Management Plan.
- 5.3 The Permit Holder shall implement best practices and best available techniques (BAT) as outlined in the World Bank Group Environmental, Health and Safety (EHS) General Introduction Guidelines (2007) and Environmental Health and Safety Guidelines for Offshore Oil and Gas Development (2015) with respect to the prevention of the spillage of hazardous materials from offshore facilities.
- 5.4 The Permit Holder shall record any accidental release of waste into the marine environment and corrective actions implemented. The notification as required herein shall be submitted to the Agency within **twenty-four (24) hours** of the release.
- 5.5 The Permit Holder shall implement lifting and transfer procedures to cater for the retrieval of any waste accidentally released overboard, if reasonably practical.
- 5.6 The Permit Holder shall ensure that the person(s) responsible for the FPSO, each drillship, support/supply and installation vessel, maintain a Garbage Management Plan and Garbage Record Book detailing the manner in which waste is managed and disposed. The Garbage Management Plan shall include all information as per Annex V of MARPOL regulations (including waste type, quantity stored on-board, waste delivered ashore, amount of waste generated, and waste discharged at sea) and be kept on the FPSO, each drillship and each support/supply and installation vessel.
- 5.7 The Permit Holder shall ensure that weekly inspections of the waste storage areas and container(s) aboard the FPSO, each drillship, support/supply and installation

vessel, are conducted. A log detailing the findings of these inspections shall be maintained and submitted to the Agency upon request.

- 5.8 The Permit Holder shall ensure that the transport of all hazardous waste offsite for treatment and/or disposal is accompanied by a manifest which includes the name and address of waste generator, name and description of the waste and hazard class and type of containers, quantity transported and name and address of receiving facility, and the signatures of the hazardous waste generator and transporter. The manifest required herein shall be submitted to the Agency in the monthly report required by Condition 13.10.
- 5.9 The Permit Holder shall manage and dispose of putrescible waste in accordance with Annex V of MARPOL 73/78, Regulations for the Prevention of Pollution by Garbage from Ships.
- 5.10 The Permit Holder shall not dispose of equipment, cables, chains, containers, or other like materials in the marine environment.
- 5.11 Materials, equipment, tools, chains, containers, spools, reels, drums and other items used which are of such shape or configuration that they are likely to snag or damage fishing devices shall be:
- a. kept in a suitable storage area or a marked container when not in use, or prior to transport;
 - b. recovered after use and securely stored until suitable disposal is accomplished; and
 - c. tracked during transport and disposal using the appropriate manifest form.
- 5.12 The Permit Holder shall keep a record of any of the items described in Condition 5.11 that are lost overboard and shall submit said record to the Agency, in the monthly report required by Condition 13.10.
- 5.13 The Permit Holder shall handle, store, and dispose sewage and sullage in accordance with Annex IV of MARPOL 73/78, Regulations for the Prevention of Pollution by Sewage from Ships.
- 5.14 The Permit Holder shall require that the person(s) responsible for the FPSO, each drillship, support/supply and installation vessel, maintain an Oil Record Book to document the manner in which sludge, oil, bilge water, waste oil, etc., are disposed, in accordance with MARPOL 73/78 requirements.



- 5.15 The Permit Holder shall manage and dispose of all food waste in accordance with MARPOL 73/78 requirements prior to discharge.
- 5.16 The Permit Holder shall operate incinerators in accordance with the best available control technology (BACT) and manufacturers' operating manuals.
- 5.17 The Permit Holder shall ensure that the incinerators are operated only by trained personnel.
- 5.18 The Permit Holder shall ensure that all radioactive sources that are no longer in use are returned to their suppliers.
- 5.19 The Permit Holder shall ensure that all radioactive wastes are handled and disposed of in accordance with the most recently Agency approved Waste Management Plan, and as directed by the Agency.
- 5.20 The Permit Holder shall steward and audit the activities of all midstream and downstream subcontractors handling project waste streams.
- 5.21 The Permit Holder shall contractually require all waste management contractors handling project waste streams to conduct the treatment and disposal of such waste streams in keeping with the most recently Agency approved Waste Management Plan.
- 5.22 The Permit Holder shall ensure that waste management companies contracted by the Permit Holder to manage waste are authorized by the Agency.

6 CHEMICAL HANDLING & MANAGEMENT

- 6.1 The Permit Holder shall apply the OSPAR Harmonized Mandatory Control System (HMCS) for use and reduction of discharges of offshore chemicals, as soon as reasonably practicable.
- 6.2 The Permit Holder shall submit to the Agency for review and approval, a Chemical Use and Management Plan specifying the chemicals to be used and discharged offshore, including details of chemical composition and environmental properties of the products (e.g. toxicity to aquatic organisms, fate and effects of component substances), as soon as reasonably practicable. In accordance with OSPAR, the details of the chemical composition and environmental properties of the products shall be submitted according to the Harmonised Offshore Chemical Notification



Format (HOCNF) and associated guidelines, as soon as reasonably practicable. The Chemical Use and Management Plan shall also include an Environmental Risk Assessment to determine the risks posed by chemicals of key concerns.

- 6.3 The Permit Holder shall implement lifting and/or pumping procedures for all transfers onto and off the FPSO from supply vessels.
- 6.4 The Permit Holder shall ensure the utilization of certified third party contractors in all chemical transport, transfer, handling and storage operations.
- 6.5 The Permit Holder shall implement chemical storage procedures which include the storage of chemicals and chemical waste in separate labelled containers/drums.
- 6.6 The Permit Holder shall provide bunded areas with adequate drainage for emptying of transportable tank containers.
- 6.7 The Permit Holder shall ensure that incompatible chemicals are kept separately during transportation and storage.
- 6.8 The Permit Holder shall ensure that transportable tanks containers in the bunded area are securely fixed.
- 6.9 The Permit Holder shall maintain, at the facility, an updated log detailing the amounts, trade names, major hazardous components and toxicity information of each chemical used. A consolidated report with this information shall be submitted to the Agency as a component of the Annual Report required by Condition 13.9.
- 6.10 The Permit Holder shall submit the types and quantities of chemicals stored in offshore facilities as part of reporting requirements stipulated in Condition 13.10 of this Permit.
- 6.11 The Permit Holder shall manage fuel, oils and chemicals in accordance with the respective Safety Data Sheet.
- 6.12 The Permit Holder shall transport spent oils, used oils, lubes and chemicals that cannot practically and safely be recycled through the FPSO process to shore for treatment and disposal in keeping with the most recently Agency approved Waste Management Plan.



7 FPSO OFFLOADING OPERATIONS

- 7.1 The Permit Holder shall conduct all offloading operations in accordance with the most recently updated International Safety Guide for Oil Tankers and Terminals (ISGOTT).
- 7.2 The Permit Holder shall ensure that offloading operations are supervised by the designated Mooring Master.
- 7.3 The Permit Holder shall utilize a Mooring Master from the FPSO located on-board the offloading tanker to support safe tanker approach or departure and offloading operations.
- 7.4 The Permit Holder shall ensure that only properly registered and well-maintained double-hull vessels are utilized.
- 7.5 The Permit Holder shall utilize support tugs to aid tankers in maintaining station during approach to or departure from the FPSO, and during offloading operations.
- 7.6 The Permit Holder shall utilize a hawser with a quick release mechanism to moor the FPSO to the tanker at a safe separation distance during offloading operations.
- 7.7 The Permit Holder shall determine an environmental operating limit, in accordance with international petroleum practice standards, within which the FPSO can safely offload crude to tankers, and inform the Agency of the said environmental operating limit, within **sixty (60) calendar days** of receipt of this Permit.
- 7.8 The Permit Holder shall ensure that FPSO offloading to tankers occurs within the environmental operating limit that is established to ensure safe operations, pursuant to Condition 7.7.
- 7.9 In the event that adverse weather occurs during offloading operations, the Permit Holder shall ensure that the tanker ceases offloading operations, disconnects and safely maneuvers away from the FPSO.
- 7.10 The Permit Holder shall utilize a certified marine-bonded, double-carass floating hose system that complies with the recommendations of Oil Companies International Marine Forum (OCIMF) Guide to Manufacturing and Purchasing Hoses for Offshore Moorings (GMPHOM) 2009 Edition or later.

- 7.11 The Permit Holder shall utilize breakaway couplers on offloading hoses that would stop the flow of oil from FPSO during an emergency disconnect scenario.
- 7.12 The Permit Holder shall utilize a load monitoring system in the FPSO control room to support FPSO offloading.
- 7.13 The Permit Holder shall ensure that the load monitoring system consists of fixed and portable equipment that allows for continuous monitoring of the hawser tension between the FPSO and Export Tanker.
- 7.14 The Permit Holder shall utilize leak detection controls during FPSO offloading that include:
 - a. leak detection for breach of the floating hose; and
 - b. instrumentation/procedures to perform volumetric checks.
- 7.15 The Permit Holder shall implement procedures, in accordance with GIIP, for loading, storage, processing, and offloading operations, either for consumables (i.e., fuel, drilling fluids, and additives) or for liquid products, to minimise the risks of a spill.
- 7.16 The Permit Holder shall ensure that pumps, hoses, and valves used for loading, storage, processing, and offloading operations, either for consumables (i.e., fuel, drilling fluids, and additives) or for liquid products, are inspected or maintained in accordance with manufacturers' specifications and GIIP.

8 MARINE ECOSYSTEMS MANAGEMENT

- 8.1 The Permit Holder shall ensure that monitoring of marine mammals and marine turtles are undertaken on board all offshore vessels. The Permit Holder shall maintain a record of all detections of marine mammals and marine turtles, and submit same to the Agency in the Annual Report required by Condition 13.9.
- 8.2 The Permit Holder shall ensure that support vessels travel no faster than idle or 'no wake' speed within **300 metres** of observed Marine Mammals and Marine Turtles.
- 8.3 The Permit Holder shall ensure no support vessel moves within **100 metres** of marine mammals and marine turtles.



- 8.4 The Permit Holder shall ensure that seawater intake on each vessel (including FPSO and Drill Ships) is appropriately outfit with screens to avoid entrainment and impingement of marine flora and fauna.
- 8.5 The Permit Holder shall ensure that lighting on the FPSO and major vessels are directed to required operational areas, rather than to the sea surface or skyward, where practicable.
- 8.6 The Permit Holder shall ensure that the lighting on each vessel (including FPSO and drill ships) adheres to maritime safety regulations/standards and GIIP, as appropriate.
- 8.7 The Permit Holder shall seek approval from the Agency for the commencement of seismic-related activities (e.g. Vertical Seismic Profiling (VSP), site investigations or monitoring surveys, etc.) at least **thirty (30) calendar days** prior to the commencement of activities. An Approval granted in accordance with this condition shall be subject to such terms and conditions as may be required by the Agency, and shall be considered as forming part of the present Permit so that any breach or contravention thereof, shall be considered a breach or contravention of the Permit.

9. WELL BLOWOUT PREVENTION (BOP)

- 9.1 The Permit Holder shall ensure the installation of BOP systems that:
 - a. can be closed rapidly in the event of an uncontrolled influx of formation fluids; and
 - b. allows the well to be circulated to safety by venting the gas at surface and routing oil.
- 9.2 The Permit Holder shall ensure that the BOP system(s) is tested at installation, and at regular intervals (at least every **twenty-one (21) days**), and after the disconnection or repair of any pressure containment seal in the BOP system, in accordance with the American Petroleum Institute (API) Recommended Practice (RP) 53 for Blowout Prevention Equipment Systems for Drilling Wells.
- 9.3 The Permit Holder shall ensure that the subsea BOP stack is tested to the maximum anticipated wellhead pressure for the current well program.



- 9.4 The Permit Holder shall ensure that annular preventers do not exceed a working pressure that is **seventy percent (70%)** of the preventer.
- 9.5 The Permit Holder shall inform the Agency, in the End of Well Report, of tests conducted with the BOP equipment, detailing occasions where there was an influx of formation fluids, the well control methods applied, and their effectiveness.
- 9.6 The Permit Holder shall ensure that its facility personnel undergo well-control drills, on a bi-weekly basis (every **two (2) weeks**) or as frequently as operations allow. The Permit Holder shall document these activities and make the records available to the Agency upon request.
- 9.7 The Permit Holder shall ensure that the BOP system design as well as its maintenance and repair are undertaken in accordance with GIIP as appropriate.
- 9.8 The Permit Holder shall ensure that, at minimum, subsea BOP systems consist of one annular preventer, two shear ram preventers (one of which must be sealings) and two pipe ram preventers, equipped with choke and kill lines and failsafe choke and kill close valves.
- 9.9 The BOP must be able to close on the maximum outside diameter (OD) of the drill pipe string used for the drilling operations.
- 9.10 The Permit Holder shall ensure that the BOP systems operate (failsafe) in the event of a loss of control signal and hydraulic supply from the surface.
- 9.11 The Permit Holder shall ensure that, at the minimum, should automatic systems fail, subsea BOP systems can allow for the closure of one set of pipe rams and all blind-shearing type rams by Remotely Operated Vehicle (ROV) intervention.
- 9.12 Within **sixty (60) calendar days** of the issuance of this Permit, the Permit Holder shall submit for the Agency's approval, relevant safety case information, including a risk assessment and management plan for the well drilling operations.
- 9.13 The Permit Holder shall maintain access to at least one (1) subscription service, in a location outside of Guyana, to allow mobilization of a Capping Stack to the Liza Phase 1 Project location within **nine (9) calendar days or less** of an uncontrolled well event.



10. OIL SPILLS AND EMERGENCY MANAGEMENT

- 10.1 The Permit Holder, in the event of a discharge or spill of any contaminant into the water or on land must comply with the polluter pays principle and is therefore responsible for eliminating or controlling the discharge/spill, cleaning up to the extent practicable, and remediating any resulting damage, and monitoring of the impact and taking appropriate measures to prevent, reduce and or mitigate impacts, consistent with the National Oil Spill Contingency Plan, the OSRP, and the Environmental Protection Act.
- 10.2 The Permit Holder shall notify the Agency **within twenty-four (24) hours** of the occurrence of any emergency, which emergency shall include but not be limited to:
- i. the accidental or unintended discharge of contaminants greater than five (5) imperial gallons;
 - ii. sudden onset disaster;
 - iii. an accident; or
 - iv. any other occurrence, whether induced by natural, technological or human factors, which causes or threatens to cause severe environmental damage and harm to human health and livelihood.
- 10.3 The Permit Holder shall submit an "*Incident Notification Form for Spills in Offshore Operations*" using the most recent template to the Agency, **within forty-eight (48) hours** of any discharge of contaminants amounting to **five (5) imperial gallons or more**. A follow-up incident notification form shall be submitted within **seventy-two (72) hours** of the submission of the initial notification form (**a total of five days after the discharge of contaminants**).
- 10.4 The Permit Holder shall record and report to the Agency, on a monthly basis, all near misses, spills and unwanted or accidental discharges, amounting to less than five (5) gallons.
- 10.5 The Permit Holder shall provide the finances, equipment and technical capacity to adequately and, in accordance with International Petroleum Industry Environmental Conservation Association (IPIECA), API Standards and Recommended Practices, or GIIP, appropriately, respond to any emergency that may occur as a result of the execution of the Project.

- 10.6 The Permit Holder shall bear all costs of the restoration, rehabilitation and compensation required as a result of damage incurred due to an oil spill or other emergency resulting from the execution of the Project. The costs herein referred to shall be independently assessed and evaluated by a third party determined by the Agency. Nothing contained herein shall prejudice the right of public and private actors to pursue criminal and/or civil action against the Permit Holder.
- 10.7 The Permit Holder shall maintain a Main Emergency Shutdown Device (ESD) on the FPSO to initiate automatic shutdown actions if any unsafe condition is observed.
- 10.8 The Permit Holder shall provide notification of the Main Emergency Shutdown to the Agency **within twenty-four (24) hours** of its initiation, in addition to any other relevant information requested by the Agency thereafter.
- 10.9 The Permit Holder shall provide notification to the Agency, within **twelve (12) hours**, of resuming operations after an Emergency Shutdown event.
- 10.10 The Permit Holder shall simulate the entire Oil Spill Response Plan (OSRP) with relevant stakeholders as approved by the Agency, on at least **two (2) occasions**, no later than **three (3) years** after the issuance of this Permit. In satisfying this requirement, on at least one (1) occasion, the Permit Holder shall simulate the entire OSRP all at once, and on at least one (1) occasion, the individual parts of the OSRP shall be simulated separately.
- 10.11 At least **thirty (30) calendar days** before the conduct of the exercises referred to in Condition 10.10, the Permit Holder shall inform all approved stakeholders, in writing, of the dates of the exercises. The Agency reserves the right to attend any exercise organised in accordance with this condition.
- 10.12 In satisfying Condition 10.10, the Permit Holder shall, at a minimum:
- a) simulate conditions in the area of operations, including but limited to, seasonal weather variations;
 - b) cover a range of scenarios including, but not limited to, responses to large continuous spills, spills of a short duration and limited volume, and worst case discharge scenarios;
 - c) conduct a spill management team “table top” exercise. The exercise must test the spill management team's organization, communication, and decision making in managing a response. The spill scenario must not be revealed to team members before the exercise starts;



- d) conduct a deployment exercise of response equipment identified in the OSRP. Each type of equipment must be deployed and operated although it is not necessary to deploy and operate each individual piece of equipment.
 - e) conduct a notification exercise for each facility that is manned on a 24-hour basis. The exercise must test the ability of facility personnel to communicate pertinent information in a timely manner to the qualified individual;
 - f) conduct a deployment exercise of any response equipment which the Permit Holder is required to maintain at the FPSO or on dedicated vessels. Each type of this equipment must be deployed and operated; and
 - g) comply with any further requirement which the Agency may request.
- 10.13 In satisfying Condition 10.10, the Permit Holder shall initiate the exercises or have an Oil Spill Removal Organization (OSRO) initiate the exercise.
- 10.14 The Permit Holder shall produce appropriate documentation, to the Agency, evidencing the conduct of the exercises required by Condition 10.10, which documentation must be submitted no later than **thirty (30) calendar days** following their conduct, and include information concerning the:
- a. type of exercises;
 - b. date and time of the exercises;
 - c. description of the exercise;
 - d. objectives met; and
 - e. lessons learned.
- 10.15 The Permit Holder shall continuously build capacity in key areas, including but not limited to Oil Spill Response, where applicable, and upon requests made by the Agency and other key national Agencies, Community Based Organizations, Regional Democratic Councils, Neighbourhood Democratic Councils and relevant stakeholders in Regions 1, 2, 3, 4, 5, and 6.
- 10.16 The Permit Holder shall implement a corrosion management system to monitor risks and identify corrective actions in the atmospheric zone, splash zone, submerged zone and internal zones.
- 10.17 The Permit Holder shall implement appropriate preventative maintenance and monitoring programs, in accordance with IPIECA, API Standards and Recommended Practices or GIIP, as appropriate to ensure the integrity of well field equipment.

- 10.18 The Permit Holder shall inspect, maintain and operate in-country spill response and containment equipment in accordance with the most recently Agency approved OSRP, which inspection and maintenance shall include monthly inspections of oil spill response equipment and annual preventive maintenance program execution.
- 10.19 The Permit Holder shall conduct a Net Environmental Benefit Analysis (NEBA) and a Spill Impact Mitigation Assessment (SIMA), in accordance with international petroleum industry standards, and include the findings therefor, in its application for an Approval under Condition 10.20. The Permit Holder shall ensure that findings detail whether in-situ burning and the use of chemical dispersant(s) is necessary in the circumstances.
- 10.20 *In-situ* burning and the use of chemical dispersant(s) shall not be used, unless approved by the Agency prior to application. An Approval granted in accordance with this condition shall be subject to such terms and conditions as may be required by the Agency, and shall be considered as forming part of the present Permit so that any breach or contravention thereof, shall be considered a breach or contravention of the Permit.

11. EMPLOYEES AND PERSONAL SAFETY

- 11.1 The Permit Holder shall ensure that onshore and offshore contractors contracted by the Permit Holder are duly authorised by the Agency to conduct any activities related to the purposes for which this Permit is granted.
- 11.2 The Permit Holder shall ensure that adequate quantities of required personal protective equipment (PPE) are available, worn, and maintained in good condition for all personnel hazards.
- 11.3 The Permit Holder shall ensure that respiratory protection equipment are available in adequate quantities, worn, and maintained in good condition; and that employees are trained to use the equipment.
- 11.4 The Permit Holder shall ensure that employees engaged in an activity where there is a hazard of falling ten (10) or more feet are wearing a safety belt or harness secured by a lanyard to a lifeline, drop line, or fixed anchorage.



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- 11.5 The Permit Holder shall ensure that each person wears an approved personal flotation device (PFD) when there is a hazard of falling into the water.
- 11.6 The Permit Holder shall ensure that eyewash equipment/stations are immediately available near areas where there is a reasonable probability that eye injury may occur.
- 11.7 The Permit Holder shall ensure that all staging areas and other work surfaces, and all ramps, stairways and other walkways are clear of all tripping and slipping hazards.
- 11.8 The Permit Holder shall ensure that floors, decks, catwalks, and stairways are protected with suitable guards and rails or wire mesh fence.
- 11.9 The Permit Holder shall ensure that the helicopter landing deck on each vessel is equipped with perimeter protection.
- 11.10 The Permit Holder shall ensure that all openings in decks that are accessible to employees are covered, guarded, or otherwise made inaccessible when not in use.
- 11.11 The Permit Holder shall ensure that each vessel is equipped with an adequate number of operational obstruction lights and fog horns.
- 11.12 The Permit Holder shall ensure that the FPSO is equipped with at least two (2) life floats and an adequate number of alternatives to the life floats such as lifeboats, inflatable life raft, etc.
- 11.13 The Permit Holder shall ensure that a person is assigned to each life float, lifeboat, life raft, or survival capsule on each vessel who is responsible for launching the life float, lifeboat, life raft, or survival capsule in the event of an emergency.
- 11.14 The Permit Holder shall ensure that a well-maintained Type I Life Preserver is available for each person on board and that it is stored in an easily accessible location.
- 11.15 The Permit Holder shall ensure that well-maintained buoyant work vests are available for use by employees.
- 11.16 The Permit Holder shall ensure that a first aid kit is available and readily accessible on all vessels.

- 11.17 The Permit Holder shall ensure that stokes litter or other suitable safety litter capable of being safely hoisted with an injured person are available and readily accessible on all vessels.
- 11.18 The Permit Holder shall ensure that all vessels are equipped with operational Emergency Communications Equipment (ECE).
- 11.19 The Permit Holder shall ensure that the adequate number and type of portable and semi-portable fire extinguisher are available to all employees.
- 11.20 The Permit Holder shall ensure that all vessels are equipped with an operable general alarm system.
- 11.21 The Permit Holder shall implement and document training for all employees and contractors on the conditions of the Environmental Permit and good environmental management practices. The documentation compiled in accordance with this Condition shall be submitted to the Agency, upon request.
- 11.22 The Permit Holder shall staff a Health Safety and Environmental Officer with responsibility for the implementation of the Health, Safety, Environmental and Social Management Plan and the terms and conditions of this Permit, and establish a Health and Safety Committee focusing on employee engagements and driving Safety and Health culture within the Project workforce.
- 11.23 The Permit Holder shall conduct the necessary operational and preventative routine maintenance activities on the facility, and submit a tentative schedule outlining the planned maintenance activities on request by the Agency.
- 11.24 The Permit Holder shall employ a Safety Management System for its operations which system shall include, but shall not be limited to, regular inspection and maintenance of the FPSO, sewage plant, pipes, storage tanks. All maintenance activities shall be logged, documented and submitted in the annual compliance report.
- 11.25 The Permit Holder shall conduct a Hazard and Operability (HAZOP) Analysis and a Hazard Identifications (HAZID) Study which identify potential hazards or operability problems in all systems that can lead to a process upset and submit reports of same on request by the Agency.
- 11.26 The Permit Holder shall implement safeguards to prevent, control and mitigate all hazards which accompany operations.



12. PRODUCTION OPERATIONS AND SAFETY

- 12.1 The Permit Holder shall ensure that the FPSO is equipped with a basic and ancillary Surface Safety System designed, analyzed, installed, tested, and maintained in operating condition in accordance with the provisions of the International Standards Organization (ISO) 10418: Petroleum and Natural Gas Industries – Offshore Production Installations.
- 12.2 The Permit Holder shall ensure that each surface or subsurface safety device, which is bypassed or blocked out of service, out of service due to start-up, testing, or maintenance is flagged and continuously monitored by personnel.

Emergency Shut-down (ESD) System

- 12.3 The Permit Holder shall ensure that an operable ESD station is located as required by ISO 10418.
- 12.4 The Permit Holder shall ensure that the surface safety valve (SSV) and shut-down valves (SDV) on all process components close within **forty-five 45 seconds** after the signal from the ESD or fire-detection system has commanded the SSV or SDV to close.
- 12.5 The Permit Holder shall ensure that the surface-controlled subsurface safety valve (SSSV) close within **two (2) minutes** after the signal from the ESD or fire-detection system has commanded the SSSV to close.
- 12.6 The Permit Holder shall ensure that each ESD system is tested for operation as identified by the Safety Integrity Level (SIL) and GIIP, but at no time shall more than **twelve (12) months** elapse between tests.

Gas-detection System

- 12.7 The Permit Holder shall ensure that continuous monitoring gas-detection systems are installed in all inadequately ventilated, enclosed classified areas, that signals an alarm at no greater than twenty-five (25) percent of the lower explosive limit (LEL), initiating a shut-in sequence when levels reach no more than sixty (60) percent LEL.

- 12.8 The Permit Holder shall ensure that a fuel-gas odorant or an automatic gas-detection and alarm system is installed in enclosed, continuously manned areas of the FPSO which are provided with fuel gas.
- 12.9 Permit Holder shall ensure that each gas-detection system is installed in accordance with API RP 14C and API RP 14F.
- 12.10 The Permit Holder shall ensure that each combustible gas-detection system is tested for operation and recalibrated at least once every three (3) months.

Fire-detection System

- 12.11 The Permit Holder shall ensure that continuous monitoring fire (flame, heat, or smoke) sensors are installed in all enclosed classified areas.
- 12.12 The Permit Holder shall ensure that each fire-detection system is installed in accordance with API RP 14C, API RP 14G, and API RP 14F.
- 12.13 The Permit Holder shall ensure that each fire-detection system is tested for operation and re-calibrated at least once every three (3) months.
- 12.14 The Permit Holder shall ensure that the fire-detection system is located in accordance with API RP 14 J APPENDIX B.1.1.2 for electric motors.

Firewater System

- 12.15 The Permit Holder shall ensure that an appropriate firewater system, consisting of rigid pipe with fire-hose stations or fixed firewater monitors, or an operable chemical system, is installed to provide protection in all areas.
- 12.16 The Permit Holder shall ensure that a fixed water spray system is installed in enclosed areas where hydrocarbon vapors may accumulate.
- 12.17 The Permit Holder shall ensure that fuel or power for firewater pump(s) is available for at least **thirty (30) minutes** of run time during a shut-in.



13. COMPLIANCE MONITORING AND REPORTING

- 13.1 The Permit Holder shall monitor the implementation of the conditions of this Permit, insofar as they involve adherence by employees and all other third parties under the Permit Holder's direction.
- 13.2 The Permit Holder shall sign all information submitted to the Agency.
- 13.3 All submissions on analyses, contaminant reports, discharges or any other environmental data shall be submitted in both a printed copy and in an editable electronic copy.
- 13.4 The Permit Holder shall ensure that the Agency has "real-time" remote access to available environmental monitoring data from the FPSO's operation.
- 13.5 The Permit Holder shall retain records of all monitoring information, including, all calibration and maintenance records and all original strip chart records for continuous monitoring instrumentation, and copies of all reports required by this Permit, for a period of at least **three (3) years** from the date of the sample, measurement, report or application.
- 13.6 The Permit Holder shall report to the Agency, any non-compliance with the Permit, within **twenty-four (24) hours** of the time the Permit Holder (or third parties) becomes aware of the said non-compliance, outlining the anticipated manner in which it may endanger human health or the environment.
- 13.7 Within **seventy-two (72) hours** of the awareness of the non-compliance, the Permit Holder shall submit to the Agency, a written report containing a description of the non-compliance, its causes, the period of non-compliance including exact dates and times known at the time of reporting, and the anticipated time it is expected to continue if the non-compliance has not been corrected within seventy-two (72) hours.
- 13.8 The Permit Holder shall monitor and report on the effects of effluent discharges from the Liza Destiny FPSO within the Project's AOI. The effluent streams to be monitored shall include but not be limited to the following:
- a) Cooling water;
 - b) Bilge Water;
 - c) Sulfate removal and potable water processing brines;

- d) Grey water/black water;
- e) Slop tank; and
- f) Produced water.

13.8.1 The Permit Holder shall submit the report prepared in accordance with Condition 13.8 every **six (6) months**, which report shall include but not be limited to:

- a) An assessment of the changes to the marine water quality (for the relevant parameters associated with the various effluent streams being monitored) against the baseline information indicated in the approved EIA conducted for the Liza Phase 1 Project;
- b) An assessment on the effects of effluent on marine biodiversity, including fish and other key indicator species; and
- c) Indication of prevention, mitigation and management measures applied to address any change(s) to the baseline and/or effects on the marine environment within the Project's AOI.

13.8.2 The Permit Holder shall assess changes related to Ecosystems Services and Coastal Sensitivity at appropriate intervals during the life of this permit. Reports of these assessments are to be submitted to the Agency for review and approval.

13.9 The Permit Holder shall submit an Annual Report to the Agency **on or before March 31 every year** regarding its compliance with this Permit. The Annual Report shall include, but may not be limited to, activities for the previous year and contain:

- a. the identification information of the facility;
- b. a summary of hazardous materials used in operation. This must include but may not be limited to the following information:
 - i. Name and description;
 - ii. Hazard Classification e.g. code or class;
 - iii. Quantity used per month; and
 - iv. Characteristic(s) that make(s) the material (s) hazardous e.g. flammability, toxicity.
- c. the types and quantities of waste including hazardous waste generated, treatment and disposal (both onshore and offshore);
- d. the report on generation, treatment and disposal of wastewater generated on all vessels associated with the project;
- e. notwithstanding the obligation to immediately report any accidents and non-compliances with this Permit, a summary of any accidents and non-



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compliances that may have occurred and any action(s) taken shall be provided;

- f. a report on all routine marine species observations on vessels, and any mitigation measures implemented to avoid injury or harm;
- g. a consolidated record of all flaring events, regardless of size and duration, including begin times, end times and volumes, meter calibration and maintenance records commencing from commissioning and throughout the duration of the Permit;
- h. an inventory of prior years' aggregate emissions including but not limited to particulate matter, sulphur dioxide, volatile organic compounds, carbon monoxide, carbon dioxide, carbon dioxide equivalent, nitrogen dioxide, and other greenhouse gases. The information along with the methodology employed to calculate the emissions must be provided;
- i. a record of all detections of Marine Mammals and Marine Turtles Report;
- j. a report on the number of environmental grievances received, types of environmental grievances received, the percentage of environmental grievances resolved via the Project Community Grievance Mechanism and the average time within which the environmental grievances are processed and resolved;
- k. any other matter this Permit requires to be concluded in this Report; and
- l. any other matter the Agency may require.

13.10 The Permit Holder shall submit a Monthly Report to the Agency on the activities of the previous month, progress of the operation and compliance with the conditions under which this Permit was granted on or before **the 10th day of each month**. The Monthly Report shall be submitted in both printed and electronic copies and must include but may not be limited to:

- a. a report to demonstrate compliance with the limits set out in Condition 4.4;
- b. a consolidated report on the daily inspections required by Condition 4.24;
- c. a report of wastes stored aboard the FPSO, drill ships, and support and installation vessels;
- d. copies of waste manifests and chain of custody forms for all waste (including hazardous waste) generated and transported from the FPSO, drill ships, and support and installation vessels;
- e. a report on any of the items described in Condition 5.11 that are lost overboard;
- f. a report on spills amounting to less than five (5) gallons;



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- g. a record of all inspections and maintenance conducted on the in-country spill response and containment equipment;
 - h. any other matter this Permit requires to be concluded in this Report; and
 - i. any other matter the Agency may require.
- 13.11 The Permit Holder shall submit a Daily Production Summary Report to the Agency, using an Agency approved standardized reporting template. The report shall include but may not be limited to a summary of the following:
- a. Operational Safety, Health and Environment;
 - b. Key Operational and Maintenance;
 - c. Production and Injection;
 - d. Oil Inventory Tankage;
 - e. Gas and Water Balance;
 - f. Water Overboard;
 - g. Production Wells;
 - h. Gas Injection Wells;
 - i. Water Injection Wells;
 - j. Volume loss Events;
 - k. Individual Well Test;
 - l. Equipment Status;
 - m. Any other parameter deemed necessary by the Agency.
- 13.12 The Permit Holder shall submit a report on the progress of Project activities and compliance with conditions in the Project's Environmental Permit within **thirty (30) days** of completion of the following Project stages: Drilling, Installation, Commissioning/Start-up, Production Operations, and Decommissioning.
- 13.13 The Permit Holder shall notify the Agency in writing of the estimated spud date of each well at least **seven (7) days** prior to the commencement of the drilling campaign.
- 13.14 The Permit Holder shall submit the exact location of each well to be spudded at **least seven (7) calendar days** prior to spudding.
- 13.15 The Permit Holder shall submit an End of Well Report at least **forty-five (45) calendar days** following the completion of drilling operations for each well with estimated quantities of fluids, additives and cuttings discharged, duration of discharges, and estimated maximum concentration of each constituent in the discharged drilling fluid.



- 13.16 The Permit Holder shall submit Geodata/shapefile information for each well drilled within **forty-five (45) calendar days** of the completion of drilling operations at the well. The information must be compatible with ArcMap Version 10.3 and must include:
- i. well information, including well depth, size, surrounding water depth; and
 - ii. any other information the Agency may require.
- 13.17 The Permit Holder shall notify the Agency in writing to obtain approval, at least **seven (7) calendar days** prior to well abandonment (save and except where mechanical issues or safety concerns are encountered that will affect the integrity of the well to continue operations).
- 13.18 Upon receipt, the Permit Holder shall submit certified copies of all appropriate certifications regarding the FPSO's functionality, in accordance with International Maritime Organization (IMO) requirements.
- 13.19 The Permit Holder shall submit a copy of the International Oil Pollution Prevention (IOPP) Certificate for the FPSO.
- 13.20 The Permit Holder shall use an effective Environmental Management System with policies and procedures for environmental compliance and improvements, and shall perform internal audits on at least an annual basis. The Permit Holder shall submit the results of the internal audits to the Agency in the Annual Report required under Condition 13.9. All areas of shortcomings identified by the audit must be addressed by the Permit Holder before the next year's audit.
- 13.21 The Permit Holder shall perform independent external compliance audits on all embedded controls, including the Operation Integrity Management System (OIMS) and the Oil Spill Response Plan (OSRP), on at least an annual basis, especially controls relating to critical drilling and production operations. Within **thirty (30) calendar days** of receipt, the Permit Holder shall submit the Final Audit Report to the Agency. All areas of shortcomings identified by the independent external audit must be addressed by the Permit Holder before the next year's audit. The Agency reserves the right to partake in all independent external audits.
- 13.22 The Permit Holder shall bear the cost of all environmental audits and compliance monitoring requested and conducted at the instance of the Agency in relation to this Permit.

- 13.23 The Permit Holder shall notify the Agency in writing and obtain its approval for **ANY** proposed changes to the operation at least **twenty-one (21) calendar days** prior to making the change. The notification shall contain a description of the proposed change in operation. It is not necessary to make such a notification if an application to vary this permit has been made and the application contains a description of the proposed change. In this condition 'change in operation' means a change in the nature or functioning of the facility, or an extension, or any additional installation, which may have consequences for the environment. Changes to operation may include but not be limited to the following:
- a. changes in vessels, equipment, or technology;
 - b. installation of new equipment, machines, apparatus, mechanisms, systems or technologies serving the facility or operation (excluding those installed for the purpose of routine maintenance);
 - c. changes to equipment, machines, apparatus, mechanisms, systems or technologies serving the facility or operation (excluding those changes conducted for the purpose of routine maintenance);
 - d. changes in activities not stipulated in this Permit, including but not limited to side-tracking of a well; and
 - e. any variance prescribed by Regulation 20(3) of the Environmental Authorisations Regulations, 2000.
- 13.24 At least **three (3) years** prior to planned decommissioning of the Liza Phase 1 Project, the Permit Holder shall submit to the Agency for approval a Comparative Assessment for Decommissioning. The Assessment must at a minimum:
- a. Compare the potential impacts on safety, environment, stakeholders, and technical feasibility, in an effort to select the appropriate decommissioning option;
 - b. Ensure management of risks to people and the environment, in line with OSPAR Decision 98/3 on the Disposal of Disused Offshore Installations;
 - c. Be carried out using decision support tools (e.g. multicriteria analysis) which are rational, transparent and retraceable; and allow the management of conflicting objectives; and
 - d. Consider the plugging and abandonment of each well, facility decommissioning operations, and the management of facilities infrastructure returned to shore.
- 13.25 At least **two (2) years** prior to planned decommissioning of the Liza Phase 1 Project, the Permit Holder shall submit to the Agency for approval a Decommissioning Plan in keeping with the Agency approved Comparative Assessment for Decommissioning. The Decommissioning Plan shall at a minimum:



- a. Collect environmental data to establish the pre-decommissioning baseline, in a similar manner to the Environmental Baseline Studies;
- b. Evaluate the long-term environmental, social and financial risks, and means of addressing these risks;
- c. Consider the plugging and abandonment of each well, the removal of topside structures, removal of the FPSO, the management of subsea (e.g. infrastructure including pipeline and bundle assemblies, umbilicals, etc.), shipping of used infrastructure, and the management of facilities infrastructure returned to shore; and
- d. Include a risk-based programme for post-decommissioning environmental monitoring and aftercare.

13.26 The Permit Holder shall notify the Agency in writing, at least **thirty (30) calendar days** prior to planned decommissioning of the Liza Phase 1 Project.

14. FINANCIAL ASSURANCE AND LIABILITY FOR POLLUTION DAMAGE

- 14.1 The Permit Holder is liable for all costs associated with clean up, restoration and compensation for any damages caused by any discharge of any contaminant, including the cost of all investigations into pollution incidents or discharge of contaminants, conducted at the instance of Agency.
- 14.2 The Permit Holder shall provide and/or declare within a reasonable time following the signing of this permit a combination of the following forms of financial assurance to cover all its legitimate liabilities under this permit.
- a) Insurance in accordance with Condition 14.5 and shall cover well control, and/or clean up and third-party liability on terms that are market standard for the type of coverage;
 - b) A Parent Company/Affiliate (of Operator and Co-Venturers (CoVs)) undertaking that provides indemnification for liabilities under this Permit.
- 14.3 The forms of financial assurance shall be guided by an estimate of the sum of the reasonably credible costs, expenses, and liabilities that may arise from any breaches of this permit. Liabilities are considered to include costs associated with responding to an incident, clean-up and remediation and monitoring. The estimation is not expected to address unidentifiable or inestimable costs which may be associated with compensation for loss and ongoing damage to other parties, and which are able to be pursued through civil action.
- 14.4 Notwithstanding the above, the Agency may require such further forms of financial assurance, and coverage as it considers appropriate.

- 14.5 The Permit Holder shall have valid and effective environmental liability insurance, of such type and in such amount as is customary in the international petroleum industry, for petroleum operations in relation to this Permit, which insurance shall be procured from an Insurance Company assigned grade A+ by the Better Business Bureau (BBB) or equivalent as deemed appropriate by the Agency, and shall include, but may not be limited to insurance in respect of:
- i. loss or damage to all assets used in Project;
 - ii. environmental damage caused in the course of the Project for which EEPGL will be, jointly and severally, held responsible;
 - iii. loss or damage to property or bodily injury suffered by any third party in the course of the Project for which EEPGL is liable to;
 - iv. the cost of removal of wreckage and clean-up operations required as a result of an accident occurring in the course of permitted activities;
 - v. EEPGL's liability to its employees engaged in the Project; and
 - vi. any other requirement(s) made by the Agency.
- 14.6 Notwithstanding Condition 14.5, the Agency may require such further amounts, types and coverage of insurance as is customary in the international petroleum industry or required by applicable law.
- 14.7 Condition 14.5 shall not be interpreted to mean the Permit Holder, its Parent Company, Servants and/or Agents will not be liable to any other existing or forthcoming applicable laws, rules and regulations related to financial assurance for Petroleum Operations within or out the jurisdiction of Guyana.
- 14.8 This Permit is issued subject to the fulfillment of the obligations outlined in Condition 14.5 above. Failure to fulfill such obligations or commitments is in breach of this Permit and will result in its immediate cancellation.
- 14.9 The Permit Holder shall submit to the Agency, as soon as reasonably practicable upon its request:
- i. the Environmental Liability Insurance policies in both a printed and electronic copy;
 - ii. a summary of the Environmental Liability Insurance policies detailing the insurer, the type of insurance, the amount of coverage provided by each policy, key terms of the insurances policies, what types of environmental damage the policies cover, what types of environmental damage the policies do not cover, and the duration of each policy;



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- iii. evidence that the insurer is authorised to provide the insurance in Guyana;
 - iv. evidence of authorisation of the institution or parent (insurers) to provide insurance;
 - v. evidence of the insurer's financial strength; and
 - vi. evidence of the insurer's BBB grade.
- 14.10 The Permit Holder must, as soon as reasonably practicable, provide from the Parent Company or Affiliate Companies of Permit Holder and its Co-Venturers ("Affiliates") one or more legally binding agreements to the Agency, in which the Parent Company or Affiliate Companies of Permit Holder and its Co-Venturers undertake to provide adequate financial resources for Permit Holder and its Co-Venturers to pay or satisfy their respective environmental obligations regarding the Stabroek Block, if Permit Holder and/or its Co-Venturers fail to do so, and to so indemnify and keep indemnified the Agency and the Government of Guyana, against all such environmental obligations regarding the Stabroek Block.
- 1) Provide evidence of the following:
 - a) That the Affiliate(s) are authorised to provide that guarantee or agreement in this jurisdiction.
 - b) That the Affiliate(s) have sufficient financial strength for the amount of the potential liability.
 - c) That the Affiliate(s) have the corporate legal capacity to enter into the agreement.
 - 2) Agree to the following:
 - a) To provide notification of cancellation, expiration, renewal or non-renewal and expiry dates of the Agreement.
 - b) As well as, to provide annual audited financial statements and notification if the Affiliate(s) are no longer likely to be able to meet specified financial obligations.
- 14.11 The Permit Holder shall compensate any person who suffers any loss or damage as a result of any contravention of section 19(1), in accordance with section 19(3)(e) of the Environmental Protection Act Cap. 20:05, Laws of Guyana.
- 14.12 The Permit Holder, his Servants and/or Agents shall be liable for any material or serious environmental harm caused by their pollution of the environment in accordance with section 39 (2) and (4) of the Environmental Protection Act, Cap. 20:05, Laws of Guyana.

- 14.13 The Permit Holder, his Servants and/or Agents shall be jointly and severally liable for any negligence or wilful misconduct which causes harm to the environment, biodiversity, protected species and natural habitat.
- 14.14 The Permit Holder, his Servants and/or Agents shall be liable jointly and/or severally for any gross negligence or willful misconduct to the marine environment, biodiversity, protected species and natural habitat with respect to any release or discharge, spill, contaminant fluids, oil or lubricants any facilities permitted under this project.
- 14.15 The Permit Holder, his Servants and/or Agents shall be liable jointly and/or severally for environmental damage due to pollution from its activities within Guyana, its territorial waters, contiguous zones, continental margins continental shelf, and Exclusive Economic Zone, inclusive of damage to the marine environment, biodiversity, protected species and natural habitat with respect to any release or discharge, spill, or contamination which is attributable to the Permit Holder and his agents or contractors. This is in accordance with Section 49 (1) of the Maritime Zones Act 2010 and is subject to any other existing or forthcoming laws, regulations and standards governing the protection of the marine environment.
- 14.16 The terms and conditions of this Permit are binding upon the Permit Holder and the Permit Holder is responsible for any violations hereunder. The Permit Holder shall make such agent(s) or contractors (and their sub-contractors) aware of the Conditions of this Permit.
- 14.17 The Permit Holder shall restore and rehabilitate the environment.
- 14.18 Where it appears to the Agency that the Permit Holder is engaged in any activity that may pose a serious threat to natural resources or a risk of serious pollution of the environment or any damage to public health, the Agency shall issue to the Permit Holder a Prohibition Notice in accordance with section 27 of the Environmental Protection Act Cap. 20:05, Laws of Guyana.
- 14.19 Should the Permit Holder contravene or be likely to contravene any condition of this Permit, the Agency may issue an Enforcement Notice in accordance with section 26 of the Environmental Protection Act Cap. 20:05, Laws of Guyana.



15 INSTITUTIONAL AUTHORITY

- 15.1 The Agency reserves the right to conduct regular inspections of the permitted operation(s) as part of its monitoring and enforcement requirements under the Environmental Protection Act, Cap. 20:05, Laws of Guyana, the Environmental Protection (Amendment) Act, 2005, and the Environmental Protection (Authorisations) Regulations, 2000, and any forthcoming regulations, best practices, guidelines and standards made under this Act.
- 15.2 The Permit Holder shall at all times, allow entry to the permitted facility to any Officer designated by the Agency for the purposes of conducting inspections or any other legitimate business of the Agency. Pursuant to Section 38 of the Environmental Protection Act, Cap 20:05, Laws of Guyana, it is an offence to assault, obstruct or hinder an authorised officer in the execution of his/her duty under the said Act or its regulations and the Permit Holder shall be liable to penalties prescribed under paragraph (c) of the Fifth Schedule for doing so.
- 15.3 This Environmental Permit is not the final development consent. Permission from the other relevant regulatory bodies must be obtained prior to Project implementation as required.
- 15.4 The Permit shall be governed by, interpreted and construed in accordance with the Laws of Guyana including but not limited to the Environmental Protection Act and Regulations and such rules of International Law as may be applicable and appropriate, including the generally accepted customs and usages of the international petroleum industry.
- 15.5 The Agency reserves the continuous and irrevocable right to order the sampling and analysis of any discharges, effluent or waste emanating from the Project, for analysis by an independent certified laboratory or other institution Agency, approved by the Agency, at the expense of the Permit Holder.
- 15.6 The Agency reserves the right to suspend, modify or cancel this Permit, in consideration of:
- a. any changes in fee structure as determined by the Agency for projects of this nature;
 - b. improvement in environmental best practices, and best available techniques which consider economic and technological feasibility; and
 - c. any other information arising from compliance monitoring, including the successful completion of an independent third-party audit of the facility.

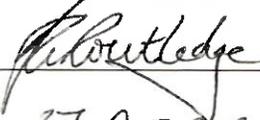
- 15.7 This Permit is effective for the period stipulated herein (**June 1, 2022 – May 30, 2027**) noting however, this Permit and conditions herein, and applicable fees will be reviewed annually in consideration of the previous year's annual audit required by Condition 13.20, and any other matters which the Agency considers appropriate.
- 15.8 The Permit Holder shall notify the Agency in writing, within **twenty-one (21) days** in event of death, bankruptcy, liquidation or receivership of the Permit Holder or if the Company becomes a party to an amalgamation.
- 15.9 The Permit Holder shall inform the Agency in writing prior to or within **twenty-one (21) days** of any change of name or ownership of the Project.
- 15.10 The Permit Holder shall not assign or transfer the Environmental Permit to any person without prior consent from the Agency.
- 15.11 This Permit must be renewed by submitting a completed Application Form for Renewal of Environmental Authorisation to the Agency at least **six (6) months** before this Permit expires, that is, no later than **November 30, 2026**.
- 15.12 This Environmental Permit shall remain valid until **May 30, 2027**, unless otherwise revised, amended, suspended, or revoked in accordance with its provisions or the Environmental Protection Act, Cap 20:05, Laws of Guyana, the Environmental Protection (Amendment) Act, 2005, and the Environmental Protection (Authorisations) Regulations, 2000.
- 15.13 Failure to comply with the requirements of this Permit or with applicable laws and regulations, whether existing or forthcoming, shall render the Permit Holder liable to prosecution and to penalties prescribed under the Environmental Protection Act, Cap. 20:05, Laws of Guyana, the Environmental Protection Regulation, 2000 and other applicable Laws of Guyana.

Signed by  on behalf of the Environmental Protection Agency.
Kemraj Parsram
Executive Director

Date: 27.10.2022



Esso Exploration and Production Guyana Limited (EEPGL), hereby accepts the above terms and conditions upon which this Environmental Permit is granted and agree to abide by the Environmental Protection Act, Cap. 20:05, Laws of Guyana, the Environmental Protection (Amendment) Act, 2005, and the Environmental Protection (Authorisations) Regulations, 2000, and any existing or forthcoming regulations, best practices, guidelines and standards made under this Act.

NAME: ALISTAIR G. ROUTLEDGE
DESIGNATION: PRESIDENT
SIGNATURE: 
DATE: 27 OCTOBER 2022

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