Intended for
Sakhalin Energy Investment Company Limited

On behalf of
Sakhalin-2 Phase 2 Project Finance Parties

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UK22-17081

SAKHALIN-2 PHASE 2 LENDERS' INDEPENDENT ENVIRONMENTAL CONSULTANT

LEVEL 1 AUDIT: PA-A PLATFORM

RAMBOLL ENVIRON

SAKHALIN-2 PHASE 2 LENDERS' INDEPENDENT ENVIRONMENTAL CONSULTANT
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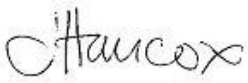
Approved by:	

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APPENDICES

LIST OF ABBREVIATIONS

ACM	Asbestos Containing Material
BOP	Blow-out Preventer
CAP	Chemicals Approval Panel
CAP	Competence Assurance Process
CRI	Cuttings Reinjection (Well)
ESDV	Emergency Shut-down Valve
FWCC	Federal Classificatory Catalogue of Waste
GHG	Greenhouse Gas
GLMS	Global Logistics Management System
HRA	Health Risk Assessment
HSE	Health, Safety and Environment
HSE-MS	Health, Safety and Environmental Management System
HSESAP	Health, Safety, Environmental and Social Action Plan
HUET	Helicopter Underwater Escape Training
IEC	Independent Environmental Consultant
IRP	Incident Review Panel
LTI	Lost Time Incident
MSDS	Material Safety Data Sheets
MPE	Maximum Permissible Emissions
MPQ	Molikpaq
NORM	Naturally Occurring Radioactive Materials
NOx	Oxides of nitrogen
OBM	Oil based mud
ODS	Ozone Depleting Substance
OE	Operational Excellence Engineer
OFI	Opportunity for Improvement
OGM	Oil & Gas Module
OIM	Offshore Installation Manager
OSRP	Oil Spill Response Plan
OSS	Offshore Services Supervisor
PA-A	Piltun-Astokhskoye-A Platform
PCB	Polychlorinated Biphenyl
PGM	Power Generation Module
PM	Particulate Matter
PPE	Personal Protective Equipment
PTW	Permit to Work
RF	Russian Federation
Sakhalin Energy	Sakhalin Energy Investment Company Ltd
SE	Sakhalin Energy Investment Company Ltd
STP	Sewage Treatment Plant
WCC	Work Control Certificates
WFM	Water Flood Module
WHRU	Waste Heat Recovery Unit
YTD	Year to date

EXECUTIVE SUMMARY

Ramboll Environ UK Limited (Ramboll Environ) is the Independent Environmental Consultant (IEC) acting on behalf of the Lenders to the Sakhalin-2 Phase 2 project (the 'Project'). Under the Terms of Reference of our engagement, Ramboll Environ and Lender representatives undertake periodic monitoring visits and audits of the Project.

This report provides the findings of a Level 1[1] environmental audit of Sakhalin Energy's Piltun-Astokhskoye-A ('Platform', 'PA-A', 'Molikpaq' or 'MPQ') undertaken by Andrew Snow of Ramboll Environ in September 2017. It forms Appendix 2 of the main September 2017 Monitoring Report. The environmental audit assessed the Company's compliance with material environmental law and the Sakhalin Energy Health, Safety, Environment and Social Action Plan (HSESAP).

The auditor would like to thank the auditees for their assistance during the audit.

Overall, Ramboll Environ identified that environmental performance at PA-A was good and that managers, platform workers and working practices on the Platform indicated a strong HSE culture. Clear leadership was evident from the OIM and management team, responsibility for HSE is shared by all, and it was evident that there was a strong team ethic and desire for continual improvement.

Further positive observations:

- The 'Boots on Deck' programme (encouraging managers to spend a minimum of two hours per day walking and observing the Platform and personnel) appears to be well implemented, with valuable HSE Observations being identified, shared at the daily Heads of Department Meeting and actioned.
- A good standard of housekeeping was observed despite the recent production shut-down and during the drilling rig renovation work.
- Proactive identification of HSE-related improvements / upgrades / capital projects, prioritised on the basis of detailed risk assessment.
- Good provision and maintenance of oil spill response equipment and good programme of emergency drills involve loss of containment elements.

During the course of the audit, the Auditor focused on management systems and more specifically the management of wastes, hazardous materials, air emissions, aqueous discharges and emergency response.

There was a good level of compliance with environmental law and the requirements of the HSESAP and no Findings were identified. However, a number of Opportunities for Improvement were identified, as follows:

- Whilst the previous version of the Platform HSE Case had been available in both Russian and English, the latest version of the document (2016) was only available in English. The 2016 updates had not yet been translated. The necessary technical resources should be provided in a timely manner to ensure an up-to-date Russian version of this important document is available.
- There appears to be a significant discrepancy between the HSESAP Project Specifications for air emissions from the main combustion plant on the Platform and the permit emission limits for the same units, which Company uses for its compliance checks and regulatory reporting. The Company should look into this discrepancy, taking into account relevant IFC standards as

[1] As defined in the HSESAP "HSE Assurance Standard Overview" document 0000-S-90-04-O-0015-00-E
http://www.sakhalinenergy.ru/media/user/libraryeng/healthsocial/2015/88-0000-S-90-04-O-0015-00-E%20Appendix%201.pdf

well, and revise the Project Specifications in the HSESAP where appropriate (noting that all updates to the HSESAP would need to be agreed by Lenders).

- Ramboll Environ noted that there appears to be discrepancies between the discharge limits referenced in the current version of the HSESAP for discharges of treated sewage effluent from PA-A and the discharge limits stated in the Platform's latest discharge permit. It is also stated that "*Existing treatment plants were installed before 1st January 2010*"; this is no longer the case following the installation of STP3 on PA-A. These disparities should be investigated and clarified in a timely manner and the HSASAP and monitoring programme adjusted accordingly (noting that all updates to the HSESAP would need to be agreed by Lenders).
- The Auditor noted approximately five spent batteries stored temporarily outside of the storage area for waste lamps. The batteries were not in a container and were not protected from the elements (in contravention with RF waste law and HSESAP requirements for hazardous waste storage). Once identified, the batteries were immediately removed and reportedly transferred to shore for recycling the same day. It was reported that electrical technicians had placed the batteries at the location that day as they were unsure where else to store them. The Platform's Waste Management Procedure states that spent batteries should have been stored in Compartment A7 of the box girder deck in a contained area. Therefore, it is recommended that a toolbox talk (or similar) be provided to electrical technicians to remind them of appropriate waste disposal practices.
- There appeared to be a general lack of understanding as to the purpose of the waste limits, the Platform's performance YTD against its limits, what actions should be taken when a potential or actual exceedance is flagged by Central HSE, and lastly, what the consequences were of exceeding the limits. It was evident that key individuals in including the HSE Supervisor, OSS and Stores Supervisor would benefit from some training in this area.
- Whilst the provision of MSDSs was generally very good and in accordance with the HSESAP (including in dual language), two minor deficiencies were noted that should be easily and quickly rectified:
    - In the Power Generation Module, the MSDSs at one location were only available in English.
    - In the main chemical storage container on deck, the MSDS register indicated two substances, a grease and an adhesive, present in the store did not have MSDS available. It was not clear if the substances were still present in the store, or if the record in the register was out of date. A thorough review of the register is recommended.
- The routine WCC template for bunkering activities should include a written reminder to deploy drip trays and to empty both the drip trays and the secondary containment system of rainwater prior to commencement of bunkering.
- In the absence of documentary evidence, and given the date of construction of the original platform structure as well as the open comment in the HSE Case (2016), the potential presence of asbestos containing materials (ACM) on-board PA-A cannot currently be discounted. Therefore, efforts should be made to track down all relevant documentation, including the previous ACM survey report which is thought to exist. The Company should review the survey report once recovered and check the scope and methodology against current international standards, taking due account of any survey limitations (e.g. areas not accessed / plant not inspected by the surveyor). In the event that relevant documentation cannot be found, or the recovered documentation is not comprehensive (e.g. scope limitations in the original survey raise concerns), then the Company should seek specialist advice and give consideration to a fresh survey to current GIIP standards.

- Following the identification of two trip hazards during the Audit related to an ongoing OBM tank cleaning project, it is recommended that PA-A places additional emphasis on checking for potential trip hazards prior to commencement of maintenance tasks and during routine workplace HSE inspections and walk-arounds.

Follow-up Item: A sample of stack emissions monitoring data from July 2017 relating to the main combustion units on the Platform (i.e. gas compressors and main generators) was provided to the Auditor and reviewed following the audit. The data indicated a good level of compliance with permit emission limits for NOx CH4 and CO, however indicated exceedances in relation to CO and CH4 on the GT5501X unit. Clarification of any exceedances or details of action taken could not be obtained at the time of writing; this topic will therefore be followed-up via email.

1. INTRODUCTION

1.1 Background

Ramboll Environ UK Limited (Ramboll Environ) is the Independent Environmental Consultant (IEC) acting on behalf of the Lenders to the Sakhalin-2 Phase 2 Project (the 'Project'). Under the Terms of Reference of our engagement, Ramboll Environ undertakes annual monitoring visits and biennial audits of the Project.

This report provides the findings of an environmental audit of Sakhalin Energy's Piltun-Astokhskoye-A ('Platform', 'PA-A', 'Molikpaq' or 'MPQ') undertaken by Ramboll Environ between the 12th and 14th September 2017.

1.2 Audit Scope

Ramboll Environ has conducted a Level 1 audit in accordance with paragraph 4.6.3 of the Common Terms Agreement which, amongst others, allows for biennial audits of the project facilities. In accordance with the Terms of Reference agreed with Sakhalin Energy in July 2017 "*the audit shall review the Company's compliance with material Environmental Law, Environmental Consents, Project Expansion Environmental Consents and/or Interim Environmental Permissions and the HSESAP*".

The audit was planned and executed in accordance with the requirements of the relevant international standard (Guidelines for Quality and/or Environmental Management Systems Auditing, ISO 19011:2011).

The time on the PA-A Platform was used to complete the following tasks:

- Platform Inspection: Inspections of areas of interest including:
  - Deck areas (including waste storage areas, chemical storage areas, bunkering points, spill response equipment).
  - Utilities (including power generation units, boilers, compressors, waste heat recovery units (WHRUs), water maker units, sewage treatment plants (x3), diesel generators, diesel-fired firewater pumps, and various fuel storage tanks).
  - Core Area (including contractor operated 'Frack & Pack' equipment, chemical storage area, seawater abstraction wells and pumps and oil and gas export lines).
  - Drilling Module (including the drill deck, Blow-out Preventer (BOP), shale shakers and Cuttings Re-injection (CRI) Well).
  - Process Module (including three-phase separation process areas).
  - Oil and Gas Module (including process areas and export pipeline pigging equipment).
  - Accommodation block (including accommodation, canteen, offices and toilets).

  A selection of photographs taken during the inspection are presented in Appendix 1.
- Interviews: Discussions were held with a number of Platform personnel and Central personnel during the course of the audit, including the Offshore Installation Manager (OIM), HSE Supervisor, Operational Excellence (OE) Engineer, Offshore Services Supervisor (OSS), Stores Supervisor, MPQ Operations Manager and Offshore HSE Manager (Central HSE) (via video conference call). A full listing of interviewees is provided in Appendix 2.
- Document Review: Several documents were reviewed on the Platform and others were scrutinised after the site audit. These included, but were not limited to: the Platform HSE Case, Platform Oil Spill Response Plan (OSRP), HSE audit programme and reports, inspection records, Observation & Intervention cards, incident records, corrective action trackers, monthly HSE/performance reports, material safety data sheets (MSDS), training records,

Permits to Work (PTW)/ Work Control Certificates (WCC), environmental permitting documents, waste records and environmental monitoring data. A full listing of the documents considered during this audit is provided in Appendix 3.

Specific attention was given to:

- Adequacy and implementation of HSE Management Systems
- Air emissions
- Water usage and wastewater management
- Waste management
- Hazardous materials management
- Incidents and emergency response

While health and safety was considered outside of scope, where health and safety issues were observed Ramboll Environ has nonetheless provided high level commentary.

Elements of the HSESAP considered outside of the scope of this audit are summarised below:

- Road Transport HSE Management
- Loss Prevention in Design and Construction Specification
- Land Management
- Social Performance

2. OVERVIEW OF THE PA-A PLATFORM

2.1 Overview and description of the PA-A Platform

The PA-A Platform (also known as 'Molikpaq') was the first offshore oil production platform in Russia and was brought on stream by Sakhalin Energy as a seasonal oil producing platform in 1999.

Year-round oil production from the PA-A platform was launched in October 2008. Oil and associated gas from the Platform is transferred to shore via the Sakhalin Energy pipeline system.

The platform comprises the following key facilities and modules:

- Process Module – a single separator train production system, with gas compression and water treatment, with a flare tower located on the module roof.
- Oil & Gas Module (OGM) - containing oil and gas treatment and export facilities.
- Power Generation Module (PGM).
- Water Flood Module (WFM) – to restore and maintain reservoir pressure.
- Drilling Module – containing the well bay, drilling facilities and associated equipment including a BOP stack with a Koomey Control System.
- The 'Core' – containing the oil and gas export lines and associated emergency shut-down valves (ESDVs), water injection supply wells and ring-main, 'Frack & Pack' equipment, seawater lift pump, hypochlorite generation package and chemical storage.
- Accommodation Module – containing offices, accommodation cabins, galley, medical facilities and recreation areas.
- Lifeboats, Skyscape, helipad and deck cranes.

Figure 1 Photo of PA-A Platform[2]

The drilling rig was originally constructed in 1984 to operate in ice conditions within Canadian Arctic waters. The Platform has since undergone significant upgrade and alteration and today has a design capacity of 90,000 bbl/d oil and 100MMscf/d of gas. According to the PA-A Platform HSE Case (Rev.06, 2016), the Platform has a design life of 43 years (from installation in 1998).

[2] Photo acknowledgement: Sakhalin Energy, 2007

In addition to the HSESAP, the Platform is required to comply with, and is periodically inspected against, the following relevant HSE statutory rules, regulations and internationally recognised standards and codes of practice:

- SOLAS 1974, including the latest amendments;
- International Convention for the Prevention of Pollution of the Seas by Oil 1954, as amended 1961 and 1969;
- MARPOL 1973-1978 (and latest amendments);
- Russian Federation (RF) Sanitary Epidemiological Welfare of the Population 1999 (relating to chemical use);
- Licence to operate oil & gas processing facilities, including drilling;
- Air emissions permits (three permits covering the Platform's stationary sources and the high and low pressure flares, Refs. 29-005(1)/16, 29-005(2)/17 and 29-005(3)/18);
- Waste Disposal Licence (for Hazard Class I-IV waste decontamination and disposal, Ref. License 065 №00076, 1000-LIN-0022-001-MNR-R-A);
- Waste Generation Norms and Disposal Limits - Offshore Platform PA-A 2015-2019, No.13-195/640011015456 (Doc Ref. 2000-HSE-0039-001-MNR-R-A);
- Water Use Agreement (Ref. No. 00-20.05.00.002-M-DZVO-T-2016-02038/00);
- Water Use Licences (for wastewater discharges from PA-A Platform for East and North Sluices, and the West Sluice); and
- Re-injection of Mud and Cuttings Licence.

2.2 Location

The Platform is one of three offshore platforms located in the Sea of Okhotsk to the East of Sakhalin Island that is operated by Sakhalin Energy Investment Company Limited ('Sakhalin Energy'). It is located 17.5 km from the within the Piltun-Astokhskoye Field.

2.3 Environmental Setting

The Platform sits upon a concrete and steel gravity based structure ('Caisson') in 30m depth of seawater. Temperatures fluctuate significantly throughout the year ranging from approximately +30 ºC in the summer months to -30 ºC in the winter. The cold winter temperatures result in the formation of sea ice in the waters surrounding the Platform, typically between December and May. An icebreaker vessel is used when necessary to provide navigable channels for support and supply vessels.

The Platform's ice resistant structure is filled in its base with 350,000 cubic metres of sand, permanently anchoring it to the seabed and is further stabilised by 27,000 tonnes of rock deposited around it perimeter.

The surrounding sea provides an important habitat for sea life, including summer feeding grounds for the critically endangered Western Gray Whale population.

2.4 Current Activities

At the time of the audit, the Platform had 16 wells in production, plus five water injection wells and one cuttings reinjection (CRI) well in operation. The Platform was producing oil at a rate of approximately 60,000 barrels per day (bpd) and gas at a rate of approximately 40 MMscf/d.

The Platform had recently completed a major production shut-down (oil – 13 days 18.5 hours, gas – 28 days 18 hrs). It was reported that no injuries or environmental incidents occurred during the shutdown.

As a Drill Rig refurbishment project was ongoing at the time, no drilling activity was taking place during the audit. Platform management reported that the plan was to re-commence drilling in January 2018.

The number of Persons on Board at the time of the audit was 207. The Platform has beds to accommodate 164 people, with remaining contractor personnel being accommodated on the nearby accommodation vessel, *Makarov*, and transferring by 'air bridge' to and from the Platform on a daily basis.

3. AUDIT FINDINGS

The detailed audit findings presented below contain extracts from, or references to the HSESAP. These extracts and references are not intended to be exhaustive, but rather used as examples to demonstrate compliance or otherwise against HSESAP requirements.

3.1 HSE Management Systems

Sakhalin Energy has an integrated Health, Safety and Environmental Management System (HSE-MS) that has been certified to the relevant international standards:

- ISO 14001:2004[3] (environmental).
- OHSAS 18001:2007 (occupational health and safety).

The HSE-MS has also been designed to align with Shell Group HSE requirements.

The scope of these system certifications includes PA-A.

The Platform has a dedicated HSE Case[4] that is integrated within the corporate HSE-MS. A brief review of the HSE Case indicated that a detailed identification of environmental aspects and impacts and relevant controls has been carried out (as required by ISO 14001).

Opportunity for Improvement: Whilst the previous version of the Platform HSE Case had been available in both Russian and English, the latest version of the document (2016) was only available in English. The 2016 updates had not yet been translated. The necessary technical resources should be provided in a timely manner to ensure an up-to-date Russian version of this important document is available.

The auditor noted that there was generally good integration of the HSE-MS with the requirements of the HSESAP.

At the time of the audit, the Company was focussed upon achieving its corporate objective of 'Goal Zero – no harm, no leaks', which appeared to be well integrated into continual improvement programmes and compliance assurance processes.

Furthermore, the following positive observations were made during the audit that are indicative of a well-designed and well-implemented HSE-MS:

- Positive HSE culture – Clear leadership was evident from the OIM and management team, responsibility for HSE is shared by all, it was evident that there was a strong team ethic and pride in the Platform's appearance and performance, as well as a desire for continual improvement.
- The 'Boots on Deck' programme (encouraging managers to spend a minimum of two hours per day walking and observing the Platform and personnel) appears to be well implemented, with valuable HSE Observations being identified, shared at the daily Heads of Department Meeting and actioned.
- A good standard of housekeeping was observed despite the recent production shut-down and during the drilling rig renovation work.
- Proactive identification of HSE-related improvements / upgrades / capital projects, prioritised on the basis of detailed risk assessment.
- Good provision and maintenance of oil spill response equipment and good programme of emergency drills involve loss of containment elements.

[3] Certificate issued by Russian Register, valid until May 2018 (at which time SEIC will seek certification to ISO 14001:2015).
[4] Verified as available on the Platform and subject to a formal review in 2016.

Certain generic elements of the HSE-MS relevant to PA-A are further discussed below with further description of management systems provided throughout this report where applicable.

3.1.1 Roles and Responsibilities

Overall management of offshore HSE matters is the responsibility of the Offshore HSE Manager reporting directly to the Offshore Asset Manager. Each offshore asset, including PA-A has a permanent (back-to-back) HSE Supervisor reporting to the Offshore Installation Manager (OIM) with a dotted line to the Offshore HSE Manager.

The PA-A HSE Supervisor is supported by those in "HSE critical positions"[5] and others with HSE responsibilities, including individuals responsible for the issuance of permits to work, waste shipments, procurement of chemicals, Contractors' HSE representatives and management on the Platform, including notably the OIM.

The PA-A HSE Supervisor stated during the audit that he felt very well supported, particularly by the OIM and Offshore HSE Manager.

The Auditor noted that it was made clear to all visitors and personnel on the Platform that HSE was a shared responsibility. The Observation & Intervention Card and Hazard Identification systems were well communicated and appeared to be well implemented. An incentive scheme is in place to further encourage personnel to implement these systems and generally contribute to the continual improvement of HSE performance on the Platform.

Over the course of the audit, the Auditor found a good level of co-operation between individuals with direct and indirect responsibility for HSE matters. The Auditor found individuals with HSE responsibilities to demonstrate a high level of HSE awareness.

3.1.2 Contractor Management and Integration

Sakhalin Energy employees are supplemented by staff from a range of specialist contactors, including KCAD (drilling contractors), OIC (catering), SMNM (construction/deck crew/maintenance) and Baker Hughes ('Frack & Pack' unit operator).

These contractors have a long term presence on the Platform, working closely with Sakhalin Energy representatives. KCAD and SMNM have their own HSE Supervisors who co-ordinate activities with the Sakhalin Energy HSE Supervisor on a daily basis and provide specific HSE inductions and toolbox talks in addition to those provided by Sakhalin Energy.

Notably, contractors were found to be working in accordance with Sakhalin Energy's HSE-MS and there was a common understanding of HSE requirements throughout the Contractors. For example, the 'permit to work' (PTW) system[6], which applies to everybody on the Platform, includes Sakhalin Energy safe working practices.

According to the HSE Supervisor and MPQ Operations Manager, contractor HSE performance is formally reviewed every month and subject to audit in accordance with the HSES-SP Management of Contracts Standard (part of HSESAP).

3.1.3 Compliance Assurance

Sakhalin Energy operates a tiered HSE audit programme. The various levels of audit are described in the HSESAP and Sakhalin Energy's internal compliance assurance procedures (HSE Audit Procedure). In summary these include:

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[5] As defined in the HSE Case.

[6] The permit to work system was not formally audited, but was witnessed in operation during the visit.

- Level 1 – Facility audits undertaken by 3rd parties e.g. Lenders' IEC and ISO14001 and OSHAS 18001 surveillance audits.
- Level 2 – Audit of an asset or activity performed by the Company e.g. Corporate HSE team.
- Level 3 – Self-assurance activities managed by the asset, often with a system or process focus.
- Level 4 – Self-assurance activity to identify specific non compliances. These are often referred to as inspections.

The audits are scheduled within an Offshore Asset Goal Zero Plan, the 2017 version of which was viewed by the Auditor. The plan identified the following external audit activities for PA-A in 2017:

- ISO 14001 & OHSAS 18001 surveillance audit – February 2017
- KCAD HSE Audit – April 2017
- Corporate Industrial Environmental Control Audit – June 2017
- Lenders IEC Audit – September 2017
- Corporate Industrial Safety Audit – October 2017; and
- Permit-to-Work Level 3 Audit – October 2017.

According to Sakhalin Energy personnel and the Offshore Operations & Maintenance HSE Presentation for August 2017, the Platform is on track to achieve its target for audits and inspections in 2017 and no significant non-compliance have been identified to date.

As an example, the Auditor reviewed the report pertaining to the ISO 14001 & OHSAS 18001 surveillance audit conducted by certifier, Russian Register, in February 2017 (Ref. MS Surveillance Audit Report № 17.00200.321). The report concluded that the HSE-MS is maintained and developed according to the continual improvement principle. No Major Non-conformances were raised. A small number of Minor Non-conformances were raised against PA-A, however, these are not considered by Ramboll Environ to be significant within the scope of this audit.

The Level 4 Site HSE Audit (inspection) checklist and report template used on PA-A was also viewed.

The Project-wide 'Fountain' Compliance Assurance System is used to track Level 1 and 2 audit findings through to close-out. Findings from lower level assurance exercises, including daily walk-arounds, are tracked through an asset-specific HSE Action Tracker (MS Excel spreadsheet), which was observed to be adequately maintained by the HSE Supervisor.

In summary, Ramboll Environ did not identify any significant concerns regarding the adequacy of the PA-A specific audit and inspections programme, or the associated corrective action processes.

3.1.4 Incident Management

Sakhalin Energy has developed a formal Incident Management System. The system requires incidents (including near miss incidents) to be reported and investigated where necessary. Incidents are logged on the 'Fountain' system, which allows users to log incidents, report incident details and assign actions to specific individuals which must be satisfactorily completed before an incident can be closed.

In the event of a health, safety or environmental incident, affected/involved workers are required to report to the PA-A HSE supervisor. The HSE Supervisor is required to conduct an initial investigation and enter his findings into Fountain identifying action(s) for named individuals. All actions are captured in Fountain and the incident remains 'open' until all actions have been satisfactorily addressed.

Serious incidents are elevated to the Incident Review Panel (IRP), which then requires that the Central HSE Department is involved. Platform-level incident review occurs at least monthly, led by the OIM. Progress made towards addressing incidents is also tracked by the Central HSE team.

The Auditor was shown examples of incidents records, relating to the following two recent incidents:

- Fountain Ref. 1780011 – Minor sewage Leak from STP, locally contained and cleaned.
- Fountain Ref. 188836 – Minor (5 litre) coolant leak from radiator on Deck Crane No.3, locally contained and cleaned.

Both incidents appeared to have been well managed, well documented and investigated. Where incidents remained open on Fountain at the time of the audit, corrective actions had been implemented but preventative actions were pending (e.g. a work order had been raised or the next maintenance opportunity was awaited).

The HSE Supervisor reported that there had been no oil or chemical spills overboard since he joined the Platform in 2015. A brief review of Fountain records indicated some 20 records from the last two years related to minor loss of containment events (e.g. leaks of water, coolant, oils, etc.) but all were reportedly contained locally and investigated.

Overall, the Fountain database/incident management software was found to be an effective tool that is being used by the PA-A asset.

3.1.5 HSE Meetings and Reporting

HSE management and reporting is an important daily consideration on the Platform. For example, there is a daily Heads of Department meeting (including the HSE Supervisor and Doctor) where HSE matters are raised as the first agenda item. The OIM also has a daily call with the Offshore Asset Manager where HSE matters are discussed.

The PA-A HSE Supervisor holds a two-weekly conference call with the Offshore HSE Manager and other HSE supervisors, which includes sharing good practice and lessons learned from incidents.

There is a periodic HSE Forum meeting involving the OIM, HSE Supervisor and other supervisors and contractor representatives. These meetings are used to discuss any HSE and welfare issue raised by workers via their supervisors.

The PA-A HSE Supervisor provides a detailed monthly report to the Offshore HSE Manager, who combines it with reports from the other offshore assets to produce the Monthly Offshore HSE Presentation. Environmental reporting includes flaring volumes, water intake and discharge volumes, water analysis results, waste volumes by category against permitted volumes, and an action plan.

Overall, it appeared that HSE reporting from PA-A was integrated with overall HSE reporting requirements and in line with HSESAP requirements.

3.1.6 Competency Assessment, Training and Awareness

Upon arrival at the Platform it is mandatory that all new arrivals receive the Platform specific HSE induction training (provided in Russian and English). The Auditor was required to take this training and it was found to be fit-for-purpose. On completion, the Auditor was provided with an information booklet on the Company's Life Saving Rules. Refresher courses are reportedly given to all individuals every six months regardless of rotational pattern.

Competency and training needs were discussed during the audit and there appeared to be comprehensive training programme in place. The training matrix for Sakhalin Energy personnel

was seen and it was reported that contractors have their own learning and development programmes, but are also subject to mandatory Sakhalin Energy training requirements such as emergency response training.

PA-A applies the corporate Competence Assurance Process (CAP) and job profiles have been generated for all personnel subject to CAP assessment to identify competency elements and identify the level of skill required for each role.

Central competency and training records held by the Learning and Development Office in Yuzhno-Sakhalinsk could not be reviewed. However, post-audit, the Auditor was provided with certificates of mandatory waste management training for the OSS.

The Company has a number of ongoing HSE campaigns to raise awareness of specific issues amongst staff and contractors. Following the Platform HSE induction, the Auditor was provided with an information booklet on hand protection, one of the current health campaigns.

3.2 Emissions to Atmosphere

The Platform operates under three Air Emissions Permits issued by Russian regulatory bodies.

In comparison with the other Sakhalin Energy offshore assets, the PA-A Platform is considered to have a relatively large number of air emissions sources due to the fact that the platform has to generate its own power and as a result of the additional modules that have been added to the original platform structure over the years.

The Platform's notable emission sources include, but are not limited to: the flare, power generation units, gas compressors, water injection pump turbines, boilers, diesel generators, WHRUs and diesel-fired fire water pumps.

As stated in the HSESAP, Platform personnel confirmed that the Piltun-Astokhskoye Field is "sweet", (i.e. no inherent H_2S). However, as a safeguard, detection systems are in place within the Drilling Module (adjacent to the shale shakers).

3.2.1 Flaring

The HSESAP includes a number of requirements relating to flaring and venting.

The Air Emissions and Energy Management Standard Appendix 1 (0000-S-90-04-O-0257- 00-E) details Sakhalin Energy's commitment to 'no continuous flaring or venting' (Requirement #5), and the Company maintains a Greenhouse Gas and Energy Management Plan (Requirement #4). Sakhalin Energy applies good industry practice and technologies in line with the IFC guidelines. For example, installation of knock out drums to remove condensate, flare metering on all facilities, and flares designed to achieve smokeless flaring during normal operations. Venting is provided only for emergency situations (e.g. from relief valves on atmospheric pressure storage tanks) or on Booster Station 2 during abnormal conditions.

A copy of the Company Flaring Commitment was posted above the PA-A OIM's desk and provided to the Auditor. The volume of flared gas is monitored continuously with daily volumes recorded. In line with good practice, the PA-A Platform continually aims to reduce its flaring, however flaring is necessary, for example during major shut-downs (planned or unplanned) or in the event of downstream issues.

The majority of produced gas at PA-A is re-injected to the production stream through re-injection wells (as 'lift gas'), thus minimising flaring. Gas is also used as a primary fuel in several of the combustion plants on the Platform.

The Platform does not have a smokeless flaring system installed, but manages to achieve relatively smokeless flaring by minimising liquid carry-over and entrainment within the gas stream. The Platform is fitted with knock out drums.

In 2012, new legislation governing the permitted volume of associated gas that can be flared came into effect (RF Government degree #7, dated 8th January 2009). The legislation set the maximum permissible volume at 5% of associated gas.

Across the Project, since 2011, it was reported that the Company has achieved a significant reduction in the total volume of gas that has been flared (2011; 124.9 ktons, 2016; 78.7 ktons, 2017 YTD; 53.1ktons) and has met the 5% regulatory target as a business every year since 2013. At the time of the audit, the business was again predicted to meet the target.

At the time of the audit and according to the PA-A Morning Call Report for 13/09/2017, the PA-A Platform was flaring 0.4 MMscf/d. The OIM and MPQ Operations Manager reported that as a single asset, PA-A achieves very high critical equipment performance and routinely comes well below the 5% flaring target. It was further reported that despite a significant spike in flaring activity during the major production shutdown in August 2017[7], which was planned, the Platform forecast was to meet its flaring target by year end. Based on performance data presented to the Auditor for January to July 2017, this seemed a reasonable forecast.

3.2.2 Combustion Plant & Equipment

The PA-A comprises multiple gas-fired, diesel-fired and dual-fuel combustion units, ranging from generator turbines, compressor turbines, water injection turbines, diesel generators, pumps, and boilers, heaters and deck cranes.

The HSESAP - Air Emissions & Energy Management Standard, Rev.05, Appendix 04 Air Emissions Standards Comparison, requires compliance with air emission standards ('Project Specification') for each item of plant. These are presented in Table 3.1 below. However, according to Central HSE, the Company compares its stack emissions monitoring data against a different set of parameters (see third column of Table 3.1). These are derived from the Air Permit application package (so-called Maximum Permissible Emissions Report (MPE Report)), which is the document that justifies the standards for MPEs, based on which the Company obtains annual total mass limits (tonnes) and maximum single emission limits (gram/sec) from the environmental authorities.

Table 3.1. PA-A Air Emission Standards for Combustion Plant

PA-A Component	**Project Specification** *(as stated in current HSESAP)*	**Permitted Emission Limits**	
H.P. gas and Injection Gas compressor package Gas Turbine driven Tornado Twin Shaft 06MV7A 2 x 6.6 MW shaft power CT-0203/4X	NO_x 25.8 mg/m^3	NO_x 379.91 mg/m^3 CO 31.25 mg/m^3 CH_4 7.14 mg/m^3	
Turbine engine water injection pump package PT-0601A/B Dual fuel Typhoon Twin Shaft 4.9 MW	PT-0601A NO_x 206 mg/m^3 PT-0601B NO_x 170 mg/m^3	NO_x	379.91 mg/m^3 (gas fuel)/ 677.68 mg/m^3 (diesel fuel)
		CO	31.25 mg/m^3 (gas fuel)/ 37.5 mg/m^3 (diesel fuel)

[7] Monthly Environmental Performance Overview Report for August 2017 indicates PA-A to have a Flaring Factor of 9.3% YTD.

PA-A Component	**Project Specification** *(as stated in current HSESAP)*	**Permitted Emission Limits**	
		CH_4	7.14 mg/m^3 (gas fuel and diesel)
Single Shaft Typhoon DLE 4.9MW Duel fuel electric turbine generator GT-5501X	NO_x 33.68 mg/m^3	NO_x	379.91 mg/m^3 (gas fuel)/ 677.68 mg/m^3 (diesel fuel)
		CO	31.25 mg/m^3 (gas fuel)/ 37.5 mg/m^3 (diesel fuel)
		CH_4	7.14 mg/m^3 (gas fuel and diesel)
Typhoon 5.25 MW (ISO) Turbine generator package Duel fuel GT-5511X	NO_x 159.06 mg/m^3	NO_x	379.91 mg/m^3 (gas fuel)/ 677.68 mg/m^3 (diesel fuel)
		CO	31.25 mg/m^3 (gas fuel)/ 37.5 mg/m^3 (diesel fuel)
		CH_4	7.14 mg/m^3 (gas fuel and diesel)
Main engine generators EG-70-001 A/B/C/D and one stand by engine generators EG-70-001 E Model Caterpillar D399 CPTAJWAC 1.67 MW	NO_x 4.507 g/Nm^3 PM 0.055 g/Nm^3	Not considered during the audit.	
Various pumps (for cuttings injection, cement, etc.), emergency generators, heaters, compressors and cranes	Equipment <3MW - not applicable (see HSESAP)	Not considered during the audit.	
Various boilers and heaters	Various (see HSESAP)	Not considered during the audit.	

Opportunity for Improvement: Based on the table above, there appears to be a significant discrepancy between the Project Specifications for air emissions from the main combustion plant on the Platform and the permit emission limits for the same units, which Company uses for its compliance checks and regulatory reporting. The Company should look into this discrepancy, taking into account relevant IFC standards as well, and revise the Project Specifications in the HSESAP where appropriate.

3.2.3 Air Emissions Monitoring

For the larger gas compressors and main generators, the Company commissions a minimum of annual stack emission testing for NO_x, CH_4, CO, as well as for SO_2 for those units burning liquid fuel. In addition, equipment runtime and fuel consumption is monitored daily and emissions are calculated in accordance with RF calculation rules, and these emissions are reported.

Follow-up item: A sample of stack emissions monitoring data from July 2017 relating to the main combustion units on the Platform (i.e. gas compressors and main generators) was provided to the Auditor and reviewed following the audit. The data indicated a good level of compliance with permit emission limits for NO_x CH_4 and CO, however indicated exceedances in relation to CO

and CH_4 on the GT5501X unit. Clarification of any exceedances or details of action taken could not be obtained at the time of writing; this topic will therefore be followed-up via email.

For the smaller combustion units (such as pumps, boilers, heaters, etc.), the calculation method is the only monitoring required.

3.2.4 Low NO_x Burners

As described in the HSESAP - Air Emissions & Energy Management Standard, Rev.05, Appendix 04 Air Emissions Standards Comparison, the Company has agreed with the Lenders a Deviation from International Standards in relation to the control of NO_x from Platform PA-A. In summary, not all of the Platform's turbine units are fitted with low NO_x burners. The design, installation and running of all of the units is however reported to be approved by the relevant Russian authorities.

Justification, accepted by the Lenders IEC, is presented in the HSESAP, however, in summary low NO_x machines are considered more complex with respect to equipment and software and they are generally more unreliable to operate.

3.2.5 Sulphur Content of Fuel

According to the HSESAP, the sulphur content of the diesel fuel oil used on offshore assets (e.g. in PA-A diesel generators) should have a maximum sulphur content of 0.2% (in accordance with the applicable RF GOST standard). A review of a recent oil analysis certificate provided to the Auditor indicated that the sulphur content was less than 0.015%.

3.2.6 Greenhouse Gas Emissions

To support Company-level GHG reporting, Platform level performance and GHG data is captured on the Shell PMR system. Data was provided to the Auditor showing annual production data, energy consumption, as well as emissions of a range of GHGs from PA-A (including CO_2, CH_4, N_2O and HFCs). No verification of this data was conducted as part of this audit.

3.2.7 Fugitive (Hydrocarbon) Emissions

The fugitive emission of hydrocarbons (gas leaks) would represent a very serious risk to the Platform and consequently significant effort is made to prevent gas leaks through visual inspection, periodic testing and continuous monitoring. To detect gas leaks at the earliest opportunity, multiple gas detectors are positioned in many locations across the Platform (observed by the Auditor in the Drilling Module and Process Module). The detection of elevated gas levels would result in an automatic alarm and shutdown of the plant.

3.2.8 Ambient Air Quality Monitoring

Ambient air quality monitoring is reportedly conducted in accordance with the HSESAP for parameters including carbon monoxide, sulphur dioxide, NO_x, hydrocarbons, dust and particulates. No compliance issues were reported (not verified during this audit). We note that the resulting reports are also shared by Sakhalin Energy with the Lenders' IEC as part of the periodic review of local monitoring programmes.

3.3 Water and Wastewater Management

The Platform operates under a Water Use Agreement and a Water Use License issued by Russian regulatory bodies. This section considers water abstraction and the discharge of aqueous effluents.

3.3.1 Water Abstraction and Usage

Seawater is used for generation of potable freshwater, for ballasting (historic), as process water (process cooling water and for water reinjection purposes) and for firefighting.

The water intakes are located within the base of the platform and measured by flowmeters to ensure volumes are in compliance with the Water Use Agreement. The intakes are reportedly fitted with fish protection devices as per RF law. According to the Monthly Environmental Performance Overview report for August 2017, PA-A's water intake year to date (YTD) was within the approved limit for 2017.

The potable water generated by the Platform's water makers is sampled regularly by the Platform's Doctor with being samples delivered to an approved laboratory on-shore for analysis. The Monthly Environmental Performance Report for August 2017 indicated the latest samples were in compliance. The HSE Supervisor reported that there had been no exceedances for the last two years. However, bottled water is delivered to the Platform and is the clear preference of those on board.

3.3.2 Wastewater Management

The Platform has the following wastewater streams:

- deck drainage;
- process area drainage;
- cooling water;
- sewage effluent (including grey water e.g. laundry effluents);
- fire-fighting water;
- bilge oily water; and
- produced water.

Depending on the type of wastewater, it is separately collected within one of four separate wastewater systems:

- process / deck drainage;
- sanitary wastewater;
- formation water (produced water); and
- Drilling Module process water.

Treatment routes for these systems are discussed below:

Process/ Deck Drainage

According to the Platform HSE Case and Platform personnel, the Platform is designed with drainage systems which achieve zero overboard discharge. Two main subsystems are:

- Process Module Drains –
  - Closed Drain (Hazardous) System – closed system for recovery of fluids from process equipment and piping following a shutdown. Discharge fluids are directed to the Slop Oil Tank for processing by the Platform's oily water system.
  - Open Drain (Hazardous) System – drain headers, a reject oil vessel and reject oil pump, connected to Platform's oily water system.
  - Process deluge drains (for disposal of firewater when firewater pumps are operating, the network of drain boxes segregate the deluge drains from the floor drains – discharged directly overboard but only in an emergency.

- Floor drains are provided in the drain boxes for disposal of small amounts of liquids (e.g. wash-down, minor leaks) linked to the Slop Oil Tank.

- Platform Drains –
  - During drilling, the drains from the drilling area, drilling support area, the well bay and east alleyway are routed to Cuttings Re-Injection (CRI) Well.
  - When not drilling, drains in these areas are directed to Slop Oil Tank.

Sanitary Wastewater

The PA-A platform operates three sewage treatment plant (STP) units. At the time of the audit, two were operating and one was providing back-up capacity. The treatment process comprises maceration and electrostatic disinfection technology. Platform and Central HSE personnel reported that with the three units, PA-A has sufficient capacity to serve the needs of the Platform and generally has a good compliance record in terms of discharges of treated sewage effluent. According to the Monthly Environmental Performance Overview Report for August 2017, PA-A's STP treatment efficiency has been between 99% and 100% throughout 2017 (i.e. consistently above the 95% compliance target). Furthermore, the sewage water discharge volumes YTD are reported to be comfortably within the permit limit.

Sludge, generated only during cleaning activities, is transported back to shore for disposal.

Formation/Produced Waters

Produced waters (water separated from the oil and therefore containing residual oil content) are re-injected via the CRI well after processing through a hydrocarbon separation system. The Platform is therefore designed to have zero discharge of produced waters.

Drilling Module Process Water

In accordance with the HSESAP Water Use Management and Groundwater Protection Standard (Appendix 6 – Offshore Aqueous Discharges), all drilling mud, drilled cuttings, residual cement slurry and completion fluids from the wells are re-injected into the dedicated CRI well. The CRI Wells of the other two Sakhalin Energy platforms provide back-up.

3.3.3 Wastewater Monitoring

The HSESAP[8] outlines the following Project Specification for PA-A treated effluent discharges to sea, based on MARPOL requirements (for STPs installed after 1 January 2010 – which Ramboll Environ notes is the case for STP3):

- Thermotolerant coliforms: <100 coliforms/100 ml
- Total suspended solids: 35 mg/l
- BOD: 25 mg/l
- COD: 125 mg/l
- pH: 6-8.5

However, based on discussions with Central HSE personnel these do not align with the latest limits imposed by the Platform's Water Use Licence, which lists the limits as follows:

- Oil products daily average: 0.31 mg/l
- Total suspended solids: 323 mg/l
- BOD: 155.3 mg/l

In addition, the permit sets out the following additional limits:

[8] HSESAP - Water Use Management and Groundwater Protection Standard – Appendix 4 Water Use Standards Comparison

- Phosphates: 31.56 mg/l
- Detergents: 3.7 mg/l
- Ammonia Nitrogen: 55.8 mg/l
- Ammonia Nitrite: 0.08 mg/l
- Ammonia Nitrate: 0.33 mg/l
- Phenols: 0.13 mg/l
- Sodium hypochlorite: 0.005mg/l

Based on the information provided to the Auditor by Central HSE, it is the permit limits above that the Company is tracking compliance against, not the International Standard (MARPOL).

Opportunity for Improvement: Ramboll Environ noted that there appears to be discrepancies between the discharge limits referenced in the current version of the HSESAP for discharges of treated sewage effluent from PA-A and the discharge limits stated in the Platform's latest discharge permit. It is also stated that "*Existing treatment plants were installed before 1st January 2010*"; this is no longer the case following the installation of STP3 on PA-A. These disparities should be investigated and clarified in a timely manner and the HSASAP and monitoring programme adjusted accordingly.

The HSESAP also requires monitoring as follows:

Location	**Parameter**	**Frequency**
PA-A Northern Sluice	Sodium hypochlorite Temperature	Monthly (internal monitoring of temperature performed on Platform)
PA-A Eastern Sluice (conditionally clean water from desalination plants and power generation cooling systems)		
PA-A Western Sluice (final treated effluent from STP)	TSS, hydrocarbons, BOD, ammonia nitrogen, nitrite, nitrate, phosphates, surfactants, phenols, Sodium hypochlorite	Monthly
	Total coliform biogens, thermotolerant biogens, fecal biogens, coliphage	Quarterly

Volumes of cooling water discharged is metered and reported. According to the Monthly Environmental Performance Overview for August 2017, PA-A is compliant with the relevant permit limit YTD.

Independent analysis of raw sewage, treated effluent and cooling water quality is performed on a monthly basis. Samples are collected by a nominated individual on the Platform and dispatched for analysis by an approved laboratory; ANO SakhMeteo. All results are sent from ANO SakMeteo to Corporate HSE Department in Yuzhno-Sakhalinsk.

According to a summary of monitoring results for 2017 YTD, as well as the analytical test certificate ('Protocol') for treated sewage discharges for August 2017, PA-A was well within its permit limits on all chemical parameters. Reportedly, no concerns have been identified regarding biological parameters (although this was not verified during the audit).

3.3.4 Seawater, Sediment & Other Monitoring

Seawater

Central HSE personnel reported that surface water samples are taken by the support vessel on a quarterly basis (during ice-free conditions) to the north, east, south and west of the Platform at specified distances. Samples are sent ashore for chemical, hydrology and biota analysis.

Furthermore, seawater temperature measurements are taken to confirm compliance with permit limits related to cooling water temperature (which must be <3 ºC at 250 m from the Platform).

According to Central HSE personnel, this ambient environmental monitoring has identified no compliance issues in relation to PA-A in recent years. Monitoring results provided to the Auditor for Q4 2016 and Q2 2017 indicated compliance with relevant standards. We note that the resulting reports are also shared by Sakhalin Energy with the Lenders' IEC as part of the periodic review of local monitoring programmes.

Sediments

As per the HSESAP, the Central HSE personnel reported that seabed sediments continue to be subject to annual environmental sampling and analysis (for parameters such as petroleum hydrocarbons, heavy metals, phenols, detergents and benthos at specified distances and directions from the Platform). We note that the resulting reports are shared by Sakhalin Energy with the Lenders' IEC as part of the periodic review of local monitoring programmes.

Other Monitoring

As well as daily walk-arounds by the HSE Supervisor and periodic inspections, the Platform's designated Weather Observer conducts daily observations of the sea surface below the Platform to check that no waste materials, dust or debris have accidentally been released into the marine environment, as well as checking for evidence of spills (e.g. oily sheens) and the presence birds and marine mammals (records observed by the Auditor).

3.4 Waste Management

3.4.1 Waste Management Procedures

Waste management procedures and the implementation of those procedures for the Platform were reviewed by Ramboll Environ. Wastes are collected on the Platform and returned by supply vessel to Kholmsk port where the waste is then managed in accordance with Sakhalin Energy's broader waste management strategy and procedures. This audit only considers waste management practices up to the point where it is loaded on to a vessel for dispatch to Kholmsk.

The storage, transport (off-loading) and disposal of waste arising from Platform operations is carried out in accordance with written waste management documentation, including:

- Production Directorate PA-A (Molikpaq) Platform Procedure: Waste Management and Minimisation (Doc Ref. 2000-S-00-N-P-0010-00-E, Rev06); and,
- Company Waste Management and Tracking System (part of the Global Logistics Management System (GLMS)).

As per the procedures and in accordance with the HSESAP, Facility personnel confirmed that no waste incineration takes place on-board the platform and no waste materials are discharged overboard (see below regarding use of the CRI well).

The Auditor was provided with a copy of the Platform's Waste Register detailing the different types of waste that it may generate, the relevant RF Waste Code (FWCC), the Hazard Class, the disposal limit for the year and the method of utilisation/disposal.

3.4.2 Waste Generation, Segregation and Storage

The main non-hazardous wastes generated by the Platform include:

- organic food waste;
- plastic and metal containers (clean);
- glass;
- metals;
- paper and cardboard; and
- wood (primarily from pallets).

The main hazardous wastes generated by the Platform include:

- machine oils and hydraulic fluids;
- oily sludge;
- sewage sludge;
- contaminated filters, rags and absorbent pads;
- spent/unused chemicals (and contaminated containers);
- spent accumulators/ batteries;
- mercury lamps;
- clinical wastes;
- drill muds and cuttings; and,
- produced sand (relatively small quantities – not currently an issue).

Segregation of waste, labelling, classification in accordance with Russian Hazard classes, temporary storage prior to its shipment to shore were generally found to be good, with one exception related to waste accumulators (see below). Compactors are present on the main deck for compaction of non-hazardous waste (i.e. paper and cardboard, plastic and solid domestic waste).

Opportunity for Improvement*:* During the Platform inspection, the Auditor noted approximately five spent batteries stored temporarily outside of the storage area for waste lamps. The batteries were not in a container and were not protected from the elements (in contravention with RF waste law and HSESAP requirements for hazardous waste storage). Once identified, the batteries were immediately removed and reportedly transferred to shore for recycling the same day. It was reported that electrical technicians had placed the batteries at the location that day as they were unsure where else to store them. The Platform's Waste Management Procedure states that spent batteries should have been stored in Compartment A7 of the box girder deck in a contained area. Therefore, it is recommended that a toolbox talk (or similar) be provided to electrical technicians to remind them of appropriate waste disposal practices.

According to the Platform personnel, no wastes are stored on the Platform for more than six months (as per the HSESAP) and in most cases wastes are typically removed from the Platform within three or four days of being generated.

3.4.3 Waste Tracking & Reporting

The Platform's waste is managed by the Platform's Offshore Services Supervisor (OSS), supported by Stores Supervisor. Actual weights of waste shipments are recorded by Platform personnel. Waste records are kept via the GLMS system that captures the volume and classification of all wastes. This system helps to control compliance with the Platform's Waste

Generation Norms and Disposal Limits in order to avoid their exceedance, as well as to generate documents required by RF law. The GLMS system replaced the use of hardcopy Waste Transfer Notes (WTN) (although a stock is maintained by PA-A in case of a problem with the electronic system and e-WTNs can be generated from GLMS if needed).

Waste manifests are maintained electronically for all shipments of waste, and waste volumes generated by PA-A are tracked via GLMS by the Central HSE Department in Yuzhno-Sakhalinsk. It then reports back to PA-A and other assets on performance against waste limits on a monthly basis, using a traffic light colour coding system to flag where assets are getting near to or exceeding their limits YTD.

In the latest monthly report, it was flagged that PA-A needed to be aware that the YTD volume of oily rags generated was nearing the limit and that the YTD volume of metal tare contaminated with paint (i.e. waste paint containers) had exceeded the limit (by 0.4 tonnes). Central HSE personnel reported that whilst the Platform should target compliance with the limits, financial penalties from the authorities would not be applied in the cases of these two waste streams because ultimately they are sent for recovery/recycling rather than disposal to landfill. Furthermore, the high volumes of these waste streams can be directly connected to the recent spike in maintenance activities during the production and drilling shut-downs.

Opportunity for Improvement: When discussed with Platform personnel, there appeared to be a general lack of understanding as to the purpose of the waste limits, the Platform's performance YTD against its limits, what actions should be taken when a potential or actual exceedance is flagged by Central HSE, and lastly, what the consequences were of exceeding the limits. It was evident that key individuals in including the HSE Supervisor, OSS and Stores Supervisor would benefit from some training in this area.

3.4.4 Use of the CRI Well

The HSESAP[9] specifies that:

> *Sakhalin Energy will not dispose drilling cuttings or residual muds or completion and workover fluids into the sea or other surface waters.*
>
> *a. Oil Based Muds (OBM) shall not be discharged to the sea.*
>
> *b. All platforms shall dispose of used drilling cuttings, muds, completion and workover fluids by injection down their dedicated cuttings reinjection (CRI) well. Each platform's CRI well is each other's backup.*

The Platform's dedicated CRI well, used for disposal of muds and cuttings was viewed and reported to be operational in accordance with the HSESAP. The CRI wells on Sakhalin Energy offshore assets have been listed on the State Register of Waste Storage Facilities (GRORO) (Ref. 65-00040-З-00592-250914). Data was provided to demonstrate that the volume of materials returned to the CRI is being tracked (required for regulatory reporting).

Note: The issue of payment of regulatory fees in relation to drilling waste re-injection has already been reported to the Lenders and as a Company-level issue is not discussed in this report. It is noteworthy to record here however, that as of 1st July 2017, cutting re-injection technology was officially included in the RF best available technologies reference (ITR-17, 2016) and that in a letter (Ref. No. МЯ-05-31/2612) dated 28th June 2017, the regulator (RPN)

[9] Water Use Management and Groundwater Protection Standard – Appendix 6 Offshore Aqueous Discharge

confirmed the absence of negative environmental impact based on the results of monitoring of waste disposal facilities in 2016.

3.5 Management of Hazardous Materials

Numerous hazardous chemicals are stored and used on the Platform, including but not limited to diesel fuel oil, lubricants and greases, glycol, water treatment chemicals (biocides, inhibitors), paints, solvents, refrigerant gases and fire-fighting foam concentrate (AFFF). Sakhalin Energy has various standards, procedures and guidelines in place as part of the HSE-MS for the management of hazardous materials, including but not limited to: the Chemical Management Standard (which forms part of the HSESAP) and the SE Guidelines on chemical warehousing (Doc ID. 1000-S-90-01-P-0396-00-E).

3.5.1 Chemical Management Systems

The procurement of chemicals is the responsibility of the OSS, supported by the Stores Supervisor. Chemicals can only be procured via the SAP system which contains the list of approved chemicals and is used to minimise the amount of excess stock held on the Platform. In accordance with the HSESAP, approved chemicals can only be uploaded to the SAP system by the Chemical Approval Panel (CAP) based in Yuzhno-Sakhalinsk, thus preventing the procurement of chemicals that have not been approved.

The characteristics of approved chemicals, including hazard information, are captured on the 'Dolphin' chemical database. Material Safety Data Sheets (MSDS) are held on the Dolphin database and at the point of storage.

***Opportunity for Improvement**:* Whilst the provision of MSDS was generally very good and in accordance with the HSESAP (including in dual language), two minor deficiencies were noted that should be easily and quickly rectified:

i. In the Power Generation Module, the MSDSs at one location were only available in English.

ii. In the main chemical storage container on deck, the MSDS register indicated two substances, a grease and an adhesive, present in the store did not have MSDS available. It was not clear if the substances were still present in the store, or if the record in the register was out of date. A thorough review of the register is recommended.

3.5.2 Fuel & Chemical Storage, Handling and Use

The Platform has total capacity of approximately 3,000m^3 of diesel fuel oil, which can be stored in seven bulk storage tanks installed within the caisson structure. It is distributed via the Fuel Oil Distribution System to multiple smaller tanks (serving various utilities), firewater pumps and deck cranes.

Diesel fuel, OBM, cement and slurry are received in bulk from vessels via two bunkering points. Inspection of both bunkering points during the audit indicated good standards of housekeeping and maintenance. It was reported that the deck drainage in both locations connects to the Slop Oil Tank. In addition, the bunkering point used to receive diesel fuel is provided with a secondary containment system ('bund' or 'save-all') and both locations are provided with drip trays. Ramboll Environ observed that the save-all and drip trays deployed at the diesel bunkering water contained a significant quantity of rainwater). A Work Control Certificate (WCC) Routine Template (akin to a bunkering checklist) is completed for each bunkering activity.

Opportunity for Improvement: The routine WCC template for bunkering activities should include a written reminder to deploy drip trays and to empty both the drip trays and the secondary containment system of rainwater prior to commencement of bunkering.

The Platform's principal chemical storage locations were inspected as part of the audit. In general, labelling, the provision of dual language MSDSs and the use of secondary containment was good. The main Toxic & Flammable Chemical Store is situated within a purpose-designed shipping container located on the deck is installed with integral secondary containment, forced ventilation, fire and gas detection and a dry powder fire extinguishing system.

Additional personal protective equipment (PPE) and emergency provisions in the form of eye wash bottles (all in date) and emergency showers were also noted to be available at the storage locations.

The following minor deficiencies were noted to hazardous material during the walkover:

- The secondary containment system (bund) below the chemical injection skid (comprising two bulk storage tanks holding water treatment chemicals) appeared to have extensive surface corrosion.
- A section of secondary containment installed within the Core for the storage of drums of hydraulic oils, drilling fluids and chemicals (including those related to the 'Frack and Pack' unit) was observed to be temporary and makeshift (comprising overlapping plastic sheets and wooden beams).

Ramboll Environ has not raised these two items as Opportunities for Improvement because Platform management were able to demonstrate that both had already been identified prior to the audit and plans were in place to address them. An integrity assessment had recently been undertaken on the chemical injection skid and a maintenance task had been raised to clean, inspect and recoat the bund at the next shut-down in 2018. Further, replacement of the entire skid appeared on the Platform's list of key capital projects (to be completed before end of 2021). Further, a project to design and install a permanent purpose-built chemical store in the Core also appeared on the Platform's list of key capital projects. The OIM reported that it was planned to be implemented in the next 12 months and involved installation of a more robust secondary containment system and local fire suppression.

3.5.3 Deleterious Materials

According to the Platform's Environment Aspects Register (part of the HSE Case), there are no polychlorinated bi-phenyls (PCBs) present on PA-A. All transformers are reported to be 'dry-type' or filled with mineral oil.

The HSE Case also states that there is no halon or other Ozone Depleting Substances (ODS) present on-board the Platform. All original air conditioning and refrigeration systems were reported by the Head of Maintenance to replaced or retrofitted several years ago and contain hydrofluorocarbon-type (non-ODS) gases. The gas agent used in fire suppression systems is Inergen (a mix of nitrogen, argon and CO_2).

In relation to asbestos containing materials (ACM), both the OIM and HSE Supervisor reported verbally that the Company had confirmed via a specialist survey in the past that the PA-A Platform was asbestos-free. However, no documentary evidence was available to verify this. In fact, within Appendix 4A (Hazard & Effects Register) of the Platform's HSE Case (2016), the Auditor noted an action on the Company to confirm if any ACMs are present on PA-A and if so where they were located. Platform personnel were not aware of this action or its status. In 2014, a structural surveyor identified a suspected ACM (lagging material). A sample was taken but it was confirmed not to be ACM.

Opportunity for Improvement: In the absence of documentary evidence, and given the date of construction of the original platform structure as well as the open comment in the HSE Case (2016), the potential presence of ACM on-board PA-A cannot currently be discounted. Therefore, efforts should be made to track down all relevant documentation, including the previous ACM survey report which is thought to exist. The Company should review the survey report once recovered and check the scope and methodology against current international standards, taking due account of any survey limitations (e.g. areas not accessed / plant not inspected by the surveyor). In the event that relevant documentation cannot be found, or the recovered documentation is not comprehensive (e.g. scope limitations in the original survey raise concerns), then the Company should seek specialist advice and give consideration to a fresh survey to current GIIP standards.

3.5.4 NORM

The issue of naturally occurring radioactive materials (NORM) was briefly discussed. No NORM has been identified during the drilling activities undertaken to date. As a result, at this stage of the Project, NORM is not considered a risk.

3.6 Emergency Preparedness and Response

The scope of the audit included oil/chemical spill and a brief consideration of medical emergencies. Fire-fighting and other emergencies were excluded.

3.6.1 Oil and Chemical Spill Response

Oil spills represent one of the greatest environmental and reputational risks to the Project. The risk of an oil spill is minimised through mitigation measures in the Platform design, such as closed drainage systems and the use of the BOP. However, should these measures fail, Sakhalin Energy has a suite of oil spill response plans.

The Piltun Astokhskoye oil spill response plan jointly covers the activities of PA-A and PA-B. This plan has been extensively reviewed by the IEC under a separate scope of work and was not reviewed during this audit. This audit focused on emergency preparedness of the Platform and its ability to deal with oil spill contained on the Platform, including knowledge and capability of the PA-A workforce to respond. Spills to sea require additional clean-up resources in the form of response vessels, which were excluded from the audit (although it was confirmed by PA-A personnel that an Oil Spill Response Vessel is available and is equipped with booms and skimming equipment to recover oil spills). Similarly, response actions performed by the Emergency Crisis Team based in Yuzhno-Sakhalinsk, for example the use of oil spill trajectory models, were also excluded.

The Platform's Oil Spill Response Handbook, as well as a manual for responding to oil spills on ice, was observed by the Auditor in the Incident Control Room on-board. In the event of a spill, the 'Site Controller' would be the OIM, supported by 'On-scene Commanders' which for PA-A would generally include the HSE Supervisor.

The Platform appeared to be equipped with sufficient response equipment to deal with relatively small spills contained on the Platform. Approximately 15 spill kits as well as a shipping container of additional response equipment (for larger spills) were observed.

The localised spill kits are sealed with a plastic tag to prevent misuse and allow quick checks on status to be made by the HSE Supervisor. The Auditor inspected numerous oil spill kits throughout the Platform and all were found to be complete.

The Platform also conducts regular emergency drills (typically twice per month) including spill response exercises, as well as Platform muster drills, Platform abandonment drills,

Skyscape/lifeboat drills, man overboard drills, fire training and first aid. The Platform also participates in the annual Company-level Oil Spill Response Exercise.

The latest Platform level drill was conducted two days before the audit and the scenario involved a chemical leak from a biocide tank storage and a medical response. Preliminary records from the incident were available and the lessons learnt had already been discussed and identified by the OIM and HSE Supervisor.

3.6.2 Medical Emergencies

Medical emergency training drills occur regularly and include simulated medical evacuations. Exercises involve role play with casualties, stretcher parties etc. Sakhalin Energy also has a helicopter on stand-by at all times for medical emergencies.

3.7 Occupational Health and Safety

The primary focus of the audit was environmental compliance and health and safety was considered outside of scope. However, where health and safety issues were observed, a high level commentary is provided below.

3.7.1 General

Overall and as noted above, there is a strong health and safety culture on the Platform. Various safe systems of work were observed during the Platform walkover. Hazard identification and reporting cards were observed to be located around the platform in both English and Russian and the cards are directed to the HSE Supervisor.

At the time of the audit, the number of days since the last Lost Time Incident (LTI) was 490 days and 428 days since the last Recordable Case.

A Health Risk Assessment (HRA) has been conducted and the HSE Supervisor reported that all major recommendations had been implemented. This was not verified by the Auditor. At the same time as the audit, an occupational health specialist was on-board taking measurements as part of the Platform's occupational health monitoring programme (which covers noise, vibration, air quality and light).

3.7.2 Signage and PPE

The Platform has safety information in the form of leaflets, posters and safety stickers that are appropriate and relevant to the hazards on the Platform.

In accordance with the HSESAP, the standard basic PPE required for working at Sakhalin Energy's offshore assets comprises: flame resistant (FR) clothing; safety helmets (green helmets are given to visitors and new starters); safety toe-protective footwear; eye protection; and gloves. Each of these requirements was observed without exception during the Platform visit.

Hearing protection is also required in operational areas, and on PA-A certain plant areas have been designated double hearing protection areas (requiring ear plugs and ear defenders).

3.7.3 Slips, Trips & Falls

In general, potential trip, slip and fall hazards appeared to well controlled (through signage, non-slip surfacing, barriers and rules such as three points of contact on stairs, etc). However, during the Platform walkover, Ramboll Environ noted two potential trip hazards (a temporary hose across a walkway and absorbent matting not secured to the deck) associated with a maintenance activity to clean-out and inspect one of the OBM tanks.

Opportunity for Improvement: Place additional emphasis on checking for potential trip hazards prior to commencement of maintenance tasks and during routine workplace HSE inspections and walk-arounds.

3.7.4 Medical Facilities

The Platform has a well-equipped medical bay and a permanent fully trained and experienced doctor. The doctor is supported by a team of additional trained first aiders. In addition, all staff on the Platform have basic first aid training.

3.7.5 Fitness to Work

Fitness to work in managed via the GLMS database that contains records of all personnel wishing to work on the Platform (including HUET and Fitness to Work certificates). The Auditor was requested to provide the necessary documentary evidence prior to the audit to ensure appropriate registration on the database.

3.7.6 Grievance Procedure

The Auditor was informed that any worker (Sakhalin Energy employee or contractor) could raise a grievance with their supervisor to be subsequently raised with the OIM either at the next appropriate daily/weekly operations meeting or the next dedicated HSE meeting. Furthermore, tools such as the Observation & Intervention Cards could be used and customer satisfaction feedback can be given via a drop-box in the canteen in relation to catering, cleaning and laundry services. Grievances could reportedly be raised anonymously via these processes if a worker preferred.

Discussions with Platform personnel suggest that the Platform has reasonable mechanisms for raising and addressing grievances.

4. CONCLUSIONS AND RECOMMENDATIONS

Overall, Ramboll Environ considers that environmental performance at PA-A is good and that management, Platform workers and working practices on the Platform demonstrate a strong HSE culture. During the course of the audit the Auditor focused on Management Systems and more specifically the management of wastes, hazardous materials, air emissions and aqueous discharges and emergency response (spill response).

There was a good level of compliance with environmental law and the requirements of the HSESAP. No Findings were identified. However, a number of Opportunities for Improvement to improve performance have been highlighted in this audit report, including:

- Whilst the previous version of the Platform HSE Case had been available in both Russian and English, the latest version of the document (2016) was only available in English. The 2016 updates had not yet been translated. The necessary technical resources should be provided in a timely manner to ensure an up-to-date Russian version of this important document is available.
- There appears to be a significant discrepancy between the HSESAP Project Specifications for air emissions from the main combustion plant on the Platform and the permit emission limits for the same units, which Company uses for its compliance checks and regulatory reporting. The Company should look into this discrepancy, taking into account relevant IFC standards as well, and revise the Project Specifications in the HSESAP where appropriate (noting that all updates to the HSESAP would need to be agreed by Lenders).
- Ramboll Environ noted that there appears to be discrepancies between the discharge limits referenced in the current version of the HSESAP for discharges of treated sewage effluent from PA-A and the discharge limits stated in the Platform's latest discharge permit. It is also stated that "*Existing treatment plants were installed before 1st January 2010*"; this is no longer the case following the installation of STP3 on PA-A. These disparities should be investigated and clarified in a timely manner and the HSASAP and monitoring programme adjusted accordingly (noting that all updates to the HSESAP would need to be agreed by Lenders).
- The Auditor noted approximately five spent batteries stored temporarily outside of the storage area for waste lamps. The batteries were not in a container and were not protected from the elements (in contravention with RF waste law and HSESAP requirements for hazardous waste storage). Once identified, the batteries were immediately removed and reportedly transferred to shore for recycling the same day. It was reported that electrical technicians had placed the batteries at the location that day as they were unsure where else to store them. The Platform's Waste Management Procedure states that spent batteries should have been stored in Compartment A7 of the box girder deck in a contained area. Therefore, it is recommended that a toolbox talk (or similar) be provided to electrical technicians to remind them of appropriate waste disposal practices.
- There appeared to be a general lack of understanding as to the purpose of the waste limits, the Platform's performance YTD against its limits, what actions should be taken when a potential or actual exceedance is flagged by Central HSE, and lastly, what the consequences were of exceeding the limits. It was evident that key individuals in including the HSE Supervisor, OSS and Stores Supervisor would benefit from some training in this area.
- Whilst the provision of MSDSs was generally very good and in accordance with the HSESAP (including in dual language), two minor deficiencies were noted that should be easily and quickly rectified:

  - In the Power Generation Module, the MSDSs at one location were only available in English.
  - In the main chemical storage container on deck, the MSDS register indicated two substances, a grease and an adhesive, present in the store did not have MSDS available. It was not clear if the substances were still present in the store, or if the record in the register was out of date. A thorough review of the register is recommended.
- The routine WCC template for bunkering activities should include a written reminder to deploy drip trays and to empty both the drip trays and the secondary containment system of rainwater prior to commencement of bunkering.
- In the absence of documentary evidence, and given the date of construction of the original platform structure as well as the open comment in the HSE Case (2016), the potential presence of ACM on-board PA-A cannot currently be discounted. Therefore, efforts should be made to track down all relevant documentation, including the previous ACM survey report which is thought to exist. The Company should review the survey report once recovered and check the scope and methodology against current international standards, taking due account of any survey limitations (e.g. areas not accessed / plant not inspected by the surveyor). In the event that relevant documentation cannot be found, or the recovered documentation is not comprehensive (e.g. scope limitations in the original survey raise concerns), then the Company should seek specialist advice and give consideration to a fresh survey to current GIIP standards.
- Place additional emphasis on checking for potential trip hazards prior to commencement of maintenance tasks and during routine workplace HSE inspections and walk-arounds.

Follow-up Item: A sample of stack emissions monitoring data from July 2017 relating to the main combustion units on the Platform (i.e. gas compressors and main generators) was provided to the Auditor and reviewed following the audit. The data indicated a good level of compliance with permit emission limits for NOx CH_4 and CO, however indicated exceedances in relation to CO and CH_4 on the GT5501X unit. Clarification of any exceedances or details of action taken could not be obtained at the time of writing; this topic will therefore be followed-up via email.

APPENDIX 1
PHOTOGRAPHIC LOG

Photo 1. PA-A Platform (general view including drilling rig and helideck)

Photo 2. Flare

Title: Photographic Log	**Client:** Sakhalin-2 Project Finance Parties
Site: PA-A Platform	**Date:** September 2017

Photo 3. Deck areas (including deck crane) with WHRU in background

Photo 4. Chemical injection skid (secondary containment planned for renovation)

Photo 5. Temporary secondary containment for chemical storage in the Core (planned for upgrade)

Photo 6. Sewage Treatment Plant (one of three units on-board PA-A)

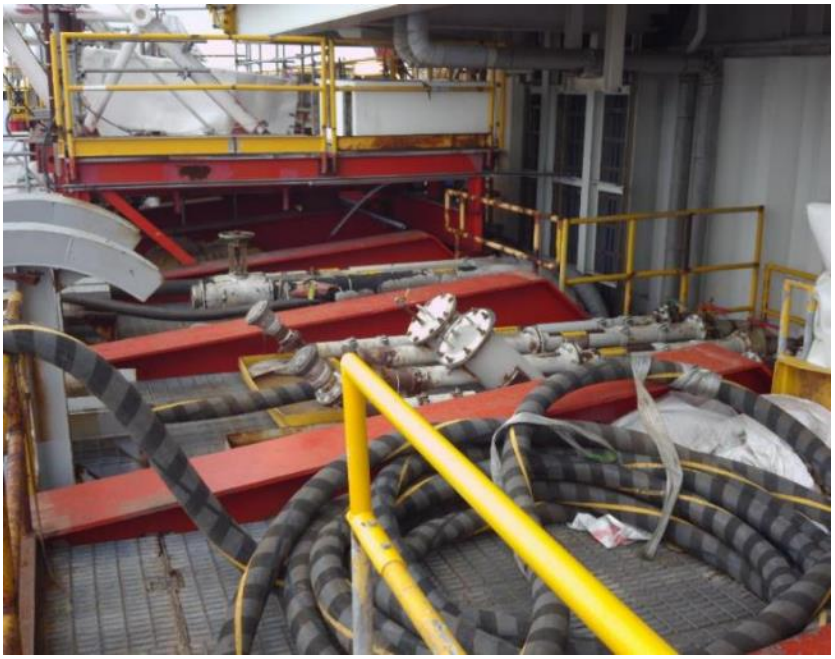

Photo 7. Bunkering point for diesel fuel and OBM (provided with secondary containment system and drip trays)

Photo 8. Cordoned work area for OBM tank clean-out and inspection (trip hazards were noted – temporary hose and absorbent matting)

Photo 9. Low pressure separator in Process Module (part of 3-phase process)

Photo 10. Example of multiple local oil spill response kits present in deck and process areas (well signed and well stocked)

Photo 11. Container for storage of drums for oily rags (when full, entire container will be transferred to shore)

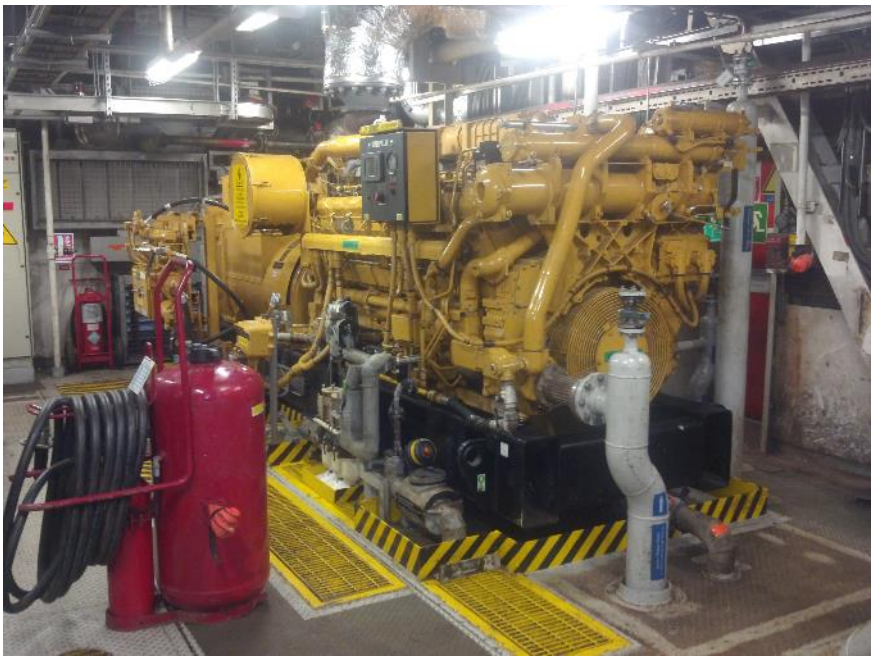

Photo 12. Fire water pump (diesel-fired and provided with secondary containment)

Photo 13. Waste compactor (deck)

Photo 14. Contractor operated 'Frack and Pack' plant located in Core

APPENDIX 2
DOCUMENTATION

LIST OF KEY DOCUMENTATION REVIEWED

- The Sakhalin-2 Phase 2 Project Health, Safety, Environment and Social Action Plan, 'HSESAP'
- PA-A Platform HSE Case (2000-S-00-N-T-0039-00), Rev.06, approved 01/12/2016, Sakhalin Energy (including Environmental Aspects Register annex).
- Platform Oil Spill Response Handbook (3000-S-90-04-P-0019-00E), Rev.02, approved 28/01/08, Sakhalin Energy.
- IEC Audit Report – Environmental Audit of Platform PA-A (Molikpaq) October 2013, 11th November 2013 (Ref. UK22-17081), Ramboll Environ.
- Oil analysis certificate for Gasoil EVRO Type C, 2017-09-06 (sampled at RN-Sea terminal Nakhodka, Sample ID 5620131, Saybolt Laboratories.
- Work Control Certificate: 00537986 Routine Template – Breaking Containment Approved Routine, ID: 00537986, for bunkering diesel fuel from marine support vessel, Petrotechnics Ltd.
- PA-A Firefighting Equipment / Life Saving Appliance Plan (FFELSA), Doc ID. 2000-S-99_N-D-3000-01, Rev.XC, May 2016, Sakhalin Energy.
- PA-A Process Flow diagram, Doc ID. 2020-E-99_O-1099-21, 30/06/06, Sakhalin Energy.
- PA-A Morning Call Report for 13/09/2017 (email from MPQ OIM), Sakhalin Energy.
- HSE information booklets on Life Saving Rules and Hand Protection, undated, Sakhalin Energy.
- Material Safety Data Sheet for Shell GTL Saraline 185V – Synthetic drilling base fluid, 28/06/2010, Version 1.3, Shell.
- Hazard ID Card template, Sakhalin Energy.
- Observation & Intervention Card template, Sakhalin Energy.
- Offshore Asset Goal Zero Plan 2017, Rev.01, Doc. ID 1000-S-90-04-P-0262-00_E, Section 07 – External Audits, Sakhalin Energy.
- Corporate Flaring Agreement, originally published November 2012, Sakhalin Energy.
- Fountain Incident Report, Ref. 1780011 – Minor sewage Leak from STP, Sakhalin Energy.
- Fountain Incident Report, Ref. 188836 – Minor (5 litre) coolant leak from radiator on Deck Crane No.3, Sakhalin Energy.
- Monthly Environmental Performance Overview Report for August 2017 – Offshore Environmental Team, September 2017, Sakhalin Energy.
- HSE Performance in July 2017 – HSES MC (presentation to Lenders), July 2017, Sakhalin Energy.
- Offshore Operations & Maintenance HSE Presentation – July 2017, Sakhalin Energy.
- Offshore Operations & Maintenance HSE Presentation – August 2017, Sakhalin Energy.
- Level 4 Site HSE Audit, template report, undated, Sakhalin Energy.
- MS Excel spreadsheet entitled 'PAA sewage results & protocols 2017', undated, Sakhalin Energy.
- Air Emissions Permit Ref. No.13-025_640011015456 for PA-A, dated 12th February 2014, valid until 31st December 2018.
- Production Directorate PA-A (Molikpaq) Platform Procedure: Waste Management and Minimisation, September 2016, Rev.06, Doc ID. 2000-S-00-N-P-0010-00-E, Sakhalin Energy.
- Waste Disposal Limits document for PA-A, Ref. No.13-195_640011015456, RPN.

- HSE Audit Report 2017 – Combined OHSAS 19001:2007 and ISO14001:2004 Surveillance Audit, Russian Register (SEIC Doc ID. 1000-S-90-04-T-0845-00-01, 18th May 2017).
- Daily Weather Observer Log for PA-A.

APPENDIX 3
ITINERARY AND AUDITEES

ITINERARY

12th September 2017	Helicopter transfer to PA-A
	HSE Induction
	Opening meeting with OIM, HSE Supervisor and MPQ Operations Manager
	Auditing (15:00 – 18:00)
13th September 2017	Auditing (06:30 – 18:30)
14th September 2017	Auditing (06:30 – 16:00)
	Closing meeting with OIM, HSE Supervisor and MPQ Operations Manager
15th September 2015	Helicopter transfer to Nogliki

LIST OF KEY AUDITEES

Role	**Location**
PA-A Offshore Installation Manager	PA-A
MPQ Operations Manager	PA-A
Offshore HSE Manager	Yuzhno-Sakhalinsk *(via video conference)*
PA-A HSE Supervisor	PA-A
PA-A Operational Excellence Engineer	PA-A
PA-A Head of Maintenance	PA-A
PA-A Offshore Services Supervisor	PA-A
PA-A Stores Supervisor	PA-A
PA-A Weather Observer	PA-A
PA-A Rig Superintendent (Contractor - KCAD)	PA-A