Intended for
Sakhalin Energy Investment Company Limited

On behalf of
Sakhalin-2 Phase 2 Project Finance Parties

Date
February 2016

Project Number
UK22-17081

SAKHALIN-2 PHASE 2 LENDERS' INDEPENDENT ENVIRONMENTAL CONSULTANT

LEVEL 1 AUDIT: LUN-A PLATFORM

RAMBOLL ENVIRON

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Project No.	**UK22-17081**
Issue No.	**2**
Date	**03/02/2016**
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Checked/Approved by:	

Version Control Log

Revision	Date	Made by	Checked by	Approved by	Description
01	17/11/15	AJS	HY	JH	Issue 1 for SE/lender review
02	03/02/16	AJS	HY	JH	Issue 2 Final

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APPENDICES

LIST OF ABBREVIATIONS

ALARP	As Low As Reasonably Practicable
BOP	Blow-out Preventer
CAP	Chemicals Approval Panel
CLP	Classification, Labelling and Packaging
CRI	Cuttings Reinjection (Well)
DSV	Drilling Supervisor
HRA	Health Risk Assessment
HSE	Health, Safety and Environment
HSEMS	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
LTIF	Lost Time Injury Frequency
LUN-A	Lunskoye-A Production Platform
MSDS	Material Safety Data Sheets
NORM	Naturally Occurring Radioactive Materials
NOx	Oxides of nitrogen
OBM	Oil based mud
ODS	Ozone Depleting Substance
OFI	Opportunity for Improvement
OIM	Offshore Installation Manager
OPF	Onshore Processing Facility
OSRP	Oil Spill Response Plan
PNOOLR	Waste Generation Standards & Waste Disposal Limits
PM	Particulate Matter
PPE	Personal Protective Equipment
PSS	Platform Services Supervisor
PTW	Permit To Work
RF	Russian Federation
STP	Sewage Treatment Plant
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 an environmental audit of Sakhalin Energy's Lunskoye-A production platform (the 'Platform' or 'LUN-A) undertaken by Andrew Snow of Ramboll Environ in October 2015. 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 LUN-A is good and that managers, platform workers and working practices on the Platform indicated 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. There was a good level of compliance with environmental law and the requirements of the HSESAP with the following exceptions:

- A known issue exists in relation to the Sewage Treatment Plant (STP) on LUN-A and compliance with the Platform's Wastewater Discharge Licence (Lenders' Finding WATER.12 from October 2013). The Platform's STP has struggled to meet the limits for ammonia nitrogen, phenols and phosphates again in 2015, with multiple exceedances recorded and financial penalties imposed by the authorities. The Company has provided a business case to lenders demonstrating that replacement of the STP is not cost-effective (Fountain Action #848242 under the above Finding). Sakhalin Energy has instead developed and submitted an application package to the authorities to review the Water Use Permit and increase the pollutant concentration limits; the results of this application are pending. Lenders have accepted this approach.
- As of August 2015, the Platform's cooling water discharge year-to-date had exceed the relevant licence limit by 60%. An application package to obtain a new water discharge permit (within increased limits) has been developed and submitted to the authorities for approval. Sakhalin Energy expects to have the new permit in place by the end of 2015.
- Potable water quality test results reported in August 2015 indicated a non-compliance in relation to chloroform in the Platform's hot water supply. An internal investigation concluded that the non-compliance was most likely caused by the use of incorrect sampling containers and that new specifically-designed glass containers were to be used to resample in mid-October 2015. The issue was not only isolated to LUN-A, but also affected other Sakhalin Energy assets. As a precaution, the Platform's fresh water treatment system was subjected to a non-routine inspection.

In addition, a number of Opportunities for Improvement have been highlighted in this audit report, as follows:

- Due to space restrictions, chemical storage practices in the main storage area for drilling-related chemicals in the Drilling Module include storing chemical drums on wooden pallets stacked two or three pallets high and two pallets deep. Such arrangements are not considered to constitute "*good site practices… to minimise the risk of accidental spills occurring*" as required by the HSESAP. Reportedly, the Platform has considered several

options to improve the situation, including racking systems, however no solution had been identified to date. Further research into racking systems and/or specialist advice is recommended in order to identify a solution to this issue (based on the principle of ALARP).

- It is recommended that all reports generated from audit and inspection activities clearly state the level of audit/inspection that was conducted, an audit reference (taken from the annual assurance plan) and the scope and purpose of each exercise.
- The Water Use Standard within the HSESAP states that "*Oil Based Muds (OBM) shall not be used*". It is clear that OBM are being used at LUN-A (albeit in sections from 22 inches and below). The wording within the HSESAP should be reviewed and clarified accordingly at the next update (noting that all updates to the HSESAP would need to be agreed by lenders).
- The Auditor noted approximately four small-volume former oil and paint tins (i.e. less than 25 litres) within a scrap metal container awaiting transfer to shore. As per the HSESAP and RF law, the Platform HSE Supervisor reported that tins that are "cleaned-out" and confirmed as "empty" (i.e. content less than 5% - Hazard Class 4). However, firstly, it was unclear as to whether there was an operating procedure/ work instruction in place to cover this de-contamination process. Secondly, from a post-visit review of the Platform's Waste Generation Standards & Waste Disposal Limits (PNOOLR) document and Waste Disposal Limits, it was noted that containers formally containing mineral oils or refrigerants (both of which are listed in the PNOOLR document), do not appear in the Waste Disposal Limits as separate entries (unlike old paint containers). Sakhalin Energy should to confirm whether or not these are therefore unrecorded waste streams and then revise the Waste Disposal Limits accordingly in order to avoid the risk of potential sanctions being applied.
- It is recommended that the known and potential environmental impacts of the CRI situation at LUN-A (i.e. the potential fracking event) and the subsequent inter-platform transfer of cuttings and other fluids (i.e. additional vessel fuel use and emissions and potential for spills during transfer activities) be appropriately assessed and the outcomes and lessons learned documented and shared through Sakhalin Energy's knowledge sharing system. The Auditor was not able to ascertain for example, whether the inter-platform transfer could have been prevented with earlier identification of the need for a replacement CRI well for LUN-A.
- The reference in the HSESAP to EU Council Directive 67/548/EEC is now outdated as of 1st June 2015, when it was replaced in full by Regulation (EC) No 1272/2008, on classification, labelling and packaging of substances and mixtures (referred to as the CLP Regulation). Furthermore, when raised by the Auditor, the PSS was not aware of Directive 67/548/EEC or the CLP Regulation indicating a potential knowledge gap and training need (e.g. in relation to potential changes to hazard classification, hazard pictograms and MSDS). The HSESAP should be revised at the next opportunity to reflect this change, and awareness training provided to staff.

Note: Due to impending severe weather and sea conditions offshore and the need to transfer the auditor back to shore before crew transfer operations were suspended for several days, the audit duration was shortened to approximately eight hours (over two days).

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 and Lender representatives undertake periodic monitoring visits and audits of the Project.

This report provides the findings of an environmental audit of Sakhalin Energy's Lunskoye-A production platform (the 'Platform' or 'LUN-A') undertaken by Andrew Snow of Ramboll Environ between the 7th and 8th October 2015.

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 October 2015 "*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).

Due to impending severe weather and sea conditions offshore and the need to transfer the Auditor back to shore before crew transfer operations were suspended for several days, the audit duration was shortened to approximately eight hours (over two days).

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

- Platform Inspection: A brief orientation tour of the facility, followed by inspections of areas of interest including:
  - Waste management area
  - Drilling module (including the drill deck, blow-out preventer (BOP), shale shakers and Cuttings Re-injection (CRI) Well)
  - Areas housing oil spill response equipment
  - Storage areas for chemicals and oils
  - Wastewater treatment facilities
  - Diesel-fired emergency generator and fire-water pumping equipment
  - Accommodation block. Notable areas not inspected due to time restrictions included: medical facilities, catering facilities, helideck, crane systems, certain diesel-fired equipment, and the primary diesel storage tank and associated diesel delivery system[1].
- Interviews: Meetings were held with Offshore Installation Manager (OIM), Drilling Supervisor (DSV), Platform Services Supervisor (PSS) and HSE Supervisor. Insufficient time was available to interview other Sakhalin Energy and contractor staff.
- Document Review: Several documents were reviewed on-site and others were scrutinised after the site audit. These included HSE plans, monthly reports and various environmental records. Insufficient time was available to conduct a review of waste manifests or environmental monitoring data held on the Platform.

[1] The Auditor understands that this tank is installed within one of the platform legs and is not readily accessible.

Specific attention was given to:

- The adequacy and implementation of HSE Management Systems
- Air emissions
- Water usage and wastewater management
- Waste management
- Hazardous materials
- 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 LUN-A PLATFORM

2.1 Overview and Description of the LUN-A Platform

The LUN-A Platform, which was the first offshore gas production platform in Russia, was brought on stream in December 2008 with a design capacity of 51 million m^3/day of gas and 50,000 b/d (8,000 m^3/day) of condensate.

Figure 1 Photo of LUN-A Platform

(Photo acknowledgement: Sakhalin Energy)

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 the most southerly of the three Sakhalin Energy offshore assets, located 15 km off the eastern coast of Sakhalin Island and based in shallow water in the Lunskoye Field.

2.3 Environmental Setting

The Platform sits upon a four legged gravity based structure in 48 m 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 November and May.

2.4 Current Activities

At the time of the audit, the Platform had 13 wells in production and was producing gas at a maximum production rate of 1600 million scf/d (45.3 million m^3/d). No drilling activity was taking place at the time of the audit and maintenance works were ongoing within the drilling module. The Offshore Installation Manager (OIM) reported that the plan was to re-commence drilling in mid-October 2015.

The Platform can accommodate 140 people. During the audit, all 140 beds where occupied.

3. AUDIT FINDINGS

The detailed audit findings presented below contain extracts from the HSESAP. These extracts 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 (HSEMS) that has been certified to the relevant international standards:

- ISO 14001:2004 (environmental)
- OHSAS 18001:2007 (occupational health and safety)

The scope of these systems include LUN-A[2].

The Platform has a dedicated HSE Safety Case[3] and is fully integrated within the corporate HSEMS as documented in the Health Safety Environment and Social Performance Management System Manual[4]. The manual details the Company's approach/provisions for:

- Leadership and commitments
- Roles responsibilities and HSE structures
- Risk assessment
- Training and competency needs
- Communications
- Performance monitoring
- Operational controls including management of change, emergency preparedness and response, monitoring and reporting
- Management of non-conformance, incident management
- Assurance.

The auditor noted that there was generally good integration of the HSEMS with the requirements of the HSESAP.

Certain generic elements of the HSEMS relevant to LUN-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 LUN-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.

Through the Annual HSE Plan for the Platform, heads of departments are assigned responsibilities, objectives, targets in terms of active participation in HSE activities, including audits and inspections.

The LUN-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

[2] Certificate issued by Russian Register, valid until March 2016, Ref. 02722
[3] Verified as available on the Platform in Russian and English and subject to a formal HSE Safety Case Review in September 2015 (minutes available).
[4] Health Safety Environment and Social Performance Management System Manual Doc no. 0000-S-90-04-P-0006-00-E.
[5] As defined in the HSE Safety Case.

shipments, procurement of chemicals, Contractors' HSE representatives and management on the Platform, including notably the OIM.

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 system 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 and shared responsibility.

3.1.2 Contractor Management and Integration

Of the 140 persons on the Platform at the time of the audit, approximately 35 were Sakhalin Energy employees while the remainder were workers from specialist contactors including KCAD (drilling contractors), Schlumberger (sub-contractors to KCAD), IoCa (catering) and SMNM (construction/deck crew/maintenance).

The contractors have a long term presence on the Platform, working closely with Sakhalin Energy representatives. KCAD has its own HSE Supervisors (covering day and night shifts) who co-ordinate activities with the Sakhalin Energy HSE Supervisor on a daily basis and provide specific HSE inductions in addition to those provided by Sakhalin Energy. Joint HSE workarounds are reportedly conducted daily and the Sakhalin Energy HSE Supervisor is involved in the development of HSE Plans for all contractor projects.

Notably, contractors were found to be working in accordance with Sakhalin Energy's HSEMS 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.

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:

- Level 1 – Facility audits undertaken by 3rd parties e.g. lenders' IEC
- 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 a rolling HSE Assurance Five Year Plan.

The current Sakhalin Energy Integrated Audit & Assurance Plan 2015 for audits of LUN-A was observed by the Auditor. According to Sakhalin Energy personnel, the Platform is on track to achieve its target for audits and inspections in 2015. This was confirmed via review of recent Monthly Offshore HSE Reports (for July and August 2015), which show 100% completion of planned audits and inspections year to date for LUN-A.

[6] The permit to work system was not formally audited, but was witnessed in operation whilst interviewing the Sakhalin Energy HSE Supervisor.

A sample of recent audit reports relating to LUN-A was reviewed by the Auditor and no significant issues were identified. The reports reviewed related to:

- "Level 2 Offshore HSE Audit", May-August 2014, conducted by an audit team comprising Sakhalin Energy Central HSE personnel and an auditor from Shell, and focussed upon the adequacy of the Offshore HSE-MS and adequacy of HSE risk control at offshore assets. No significant deficiencies were reportedly identified. We note that due to weather restrictions, only PA-B Platform was actually visited as part of the audit. It is understood that the system-level findings were shared with and considered applicable to all three Sakhalin Energy offshore assets.
- "IEC Inspection", March 2014, conducted by Sakhalin Energy Central HSE Department assessing compliance with water protection legislation. The report identified deficiencies in relation to the Platform's Sewage Treatment Plant (STP) (see further discussion below). It was not clear from the report whether this was a Level 3 or 4 assurance exercise.
- "LUN-A Field Visit", May 2013, conducted by the TD HSE Advisor. The inspection was mainly focused upon lifting and work at height safety within the drilling module (the "DROPS" Programme). No significant findings were identified. It was not clear from the report whether this was a Level 3 or 4 assurance exercise.

Platform personnel reported that a waste focussed audit conducted by Sakhalin Energy's Central HSE Department staff had been undertaken in mid-September 2015. The report was not yet available. It was not clear what level this audit was classified as.

In summary, Ramboll Environ did not identified any significant concerns regarding the adequacy of the LUN-A specific audit and inspections programme.

Opportunity for Improvement: It is recommended that all reports generated from audit and inspection activities clearly state the level of audit/inspection that was conducted, an audit reference (taken from the annual assurance plan) and the scope and purpose of each exercise.

The Project-wide 'Fountain' Compliance Assurance System is used to track Level 1 and 2 audit findings through to close-out. Platform personnel demonstrated to the Auditor that no audit items pertaining to LUN-A were currently open on Fountain.

Findings from lower level assurance exercises, including daily walkarounds, are tracked through an asset-specific HSE Action Tracker (MS Excel Spreadsheet), which was observed to be adequately maintained by the HSE Supervisor.

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 Fountain, 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 LUN-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. A meeting is held weekly and chaired by the OIM to review new incidents and progress towards closing out actions related to incidents that have occurred.

Progress made towards addressing incidents is also tracked by the Central HSE team, who sends out a weekly action status email. According to the latest available action status email shown to the Auditor, the LUN-A Platform had no open actions.

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

- An incident occurred at LUN-A on in March 2013 while filling up Well LA-510 with light mud (an oil based mud (OBM)), resulting in the loss of approximately 250m^3 of drilling mud to the subsurface. The cause was identified as being related to surge pressures generated by running the liner and a broken conductor shoe. An unspecified proportion of the mud lost reportedly migrated to the shallow seabed sediment and water column, and minor surface sheens were observed at the time (estimated oil loss based on sheen was 15 litres). The Auditor was provided with an incident report presentation prepared by Head of Central HSE.

  We note that this incident had previously been reported to the Lenders IEC and to the relevant authority. A full investigation was reportedly conducted, corrective and preventative actions taken and lessons learnt shared. The Sakhalin Energy investigation and subsequent monitoring concluded no significant environmental impact as a result of this incident. Daily observation of the sea surface for oil sheens continues as well as periodic environmental monitoring of water quality and marine sediments.

  While Sakhalin Energy believes that the occurrence of oily sheens have peaked and should now lessen in frequency, events continue to be recorded in the Daily Environmental Log. These events are not treated as new incidents. The Platform HSE Supervisor reported that the sheens are so minimal and short-lived that clean-up using oil spill response equipment on the stand-by vessel would not be practicable. General vessel manoeuvring around the base of the Platform is now thought to be causing seabed disturbance and the release of residual hydrocarbons to sea surface. Further seabed sediment contamination and bottom biota monitoring is planned before the end of 2015.
- A hydraulic oil leak occurred on the 6th October 2015[7]. According to the initial report entered into Fountain by the HSE Supervisor, the hydraulic oil leak originated from a slewing mechanism fault from a pedestal crane. The total amount leaked was estimated as 25 litres. Following detection, the hydraulic oil supply valves were closed immediately and it was reported that the vast majority of this volume was contained on deck and cleaned up using spill kits, with only 22.5 millilitres lost overboard[8]. The stand-by vessel was informed but no sheen was identified.

Overall, the Fountain database/incident management software was found to be an effective tool that is being used by the LUN-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 meeting at 7am with all senior managers (and HSE Supervisor) where HSE matters are raised. The OIM also has a daily call with the Offshore Asset Manager where HSE matters are discussed.

There is a monthly 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. Issues can include those related to leisure facilities and the quality of catering, and cleaning and laundry services on the Platform. An example of

[7] This incident was not reported to the Auditor whilst on the Platform as the HSE Supervisor understood that the audit focus was on more significant incidents. Full details, including the initial Fountain incident report, were shared with the Auditor within 24 hours of the Platform visit.

[8] It is not clear to the Auditor how such a precise number for the volume lost overboard could be obtained in this case.

minutes (and agreed actions in an action tracker) from the last meeting conducted at the end of September was shared with the Auditor.

A 'Townhall Meeting' is held weekly on a Saturday to which all personnel on the Platform are invited. It is understood that HSE topics are regularly discussed at such meetings (e.g. HSE risks and controls associated with winter weather conditions).

More detailed monthly HSE reports are produced by the LUN-A HSE Supervisor, reporting to the Central HSE function and Offshore Asset Manager. Environmental reporting includes flaring volumes and air emissions (actual versus permitted), 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 LUN-A is integrated with overall HSE reporting requirements and in line with HSESAP requirements.

3.1.6 Competency Assessment and Training

Although the time spent on the platform was limited, the Auditor was able to establish that a strong HSE culture is practiced at LUN-A. Upon arrival at the Platform it is mandatory that all new arrivals undertake comprehensive induction training (provided separately in Russian and English). The Auditor was required to take this training and it was found to be fit-for-purpose (training video followed by a test). Refresher courses are 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 given to those interviewed. 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. The Platform HSE Supervisor interviewed stated that he was due to go onshore for a full week of required Company and HSE-specific training in late October 2015. Central competency and training records held by the Learning and Development Office in Yuzhno-Sakhalinsk could not be reviewed.

3.2 Emissions to Atmosphere

In comparison with the other Sakhalin Energy offshore assets, the LUN-A Platform is considered to have a relatively limited number of significant air emissions sources as electricity is supplied to the Platform by sub-sea cable from the Onshore Processing Facility (OPF).

The Platform's notable emission sources include:

- The flare
- Two 1.5 MW diesel fire water pumps
- One 1.7MW standby generator
- One 0.1MW start-up generator.

Facility personnel reported that they were not aware of any chilling equipment or fire-fighting systems on the Platform containing ozone depleting substances (ODS).

As stated in the HSESAP, Platform personnel confirmed that the Lunskoye Field is "sweet", (i.e. no inherent H_2S). However, detection systems are in place within the Drilling Module.

3.2.1 Flaring

Through discussions with the OIM, it was established that there is no venting from LUN-A in accordance with the HSESAP (and good industry practice). Furthermore, given the nature of the Platform (i.e. gas production, with no on-platform processing), the use of the flare is not

continuous (except for the pilot flare) and relatively limited compared to other Sakhalin Energy assets (e.g. for well clean-up, start-up and emergencies). During the audit, only the pilot flare was observed to be operating (Photo 2).

The flow of gas to flare is continuously metered, recorded daily and reported to Central HSE in order to calculate and report totalised flare emissions to air on a monthly basis.

In line with the HSESAP and Sakhalin Energy Flaring Strategy, the Platform continually aims to reduce its flaring. It has reportedly made significant improvements in recent years and consistently meets the targets set by Sakhalin Energy (based upon the Project target of 95% utilisation of gas). The LUN-A Platform reportedly employs knock-out drums to remove condensate and ultrasonic continuous flow metering systems.

The monthly Offshore HSE Reports for July and August 2015 indicate that at LUN-A, 0.2 tonnes of total hydrocarbons went to flare each month. The OIM reported that these numbers were influenced by shut-down and maintenance activities in this period.

3.2.2 Generators & Fire Water Pumps

This equipment is not operational except during periodic short-term testing (weekly) and during abnormal conditions. They therefore contribute little to the Platform's air emissions.

The HSESAP specifies Project emission standards for this diesel-fired equipment in relation to oxides of nitrogen (NOx) and particulate matter (PM):

- NOx – 4.507 g/Nm^3
- PM – 0.055 g/Nm^3

Devices are installed to record the run-time of the equipment and records are reportedly maintain by Shift Supervisors of fuel consumption (not verified during the audit). Based on this data, emissions are calculated and reported to Central HSE and then relevant authorities accordingly.

It was reported that the Platform is supplied with low sulphur diesel in compliance with RF standards (i.e. <0.2% sulphur), although this was not verified through records review.

3.2.3 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. 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). The detection of elevated gas levels would result in an automatic shutdown of the plant. Emission of fugitive hydrocarbon emissions are considered to be minor in nature.

3.2.4 Occupational Air Quality Monitoring

In the workplace, air quality is monitored by occupational hygienists, including Sakhalin Energy's internal resource and 3rd party specialists. Workplace assessments are understood to be undertaken every three years in accordance with national legislative requirements. A Health Risk Assessment was undertaken in 2014.

Dust and aerosols have previously been identified to be a concern close to the shale shakers and respirators were mandatory PPE in proximity to the shakers. However, the Auditor noted that Sakhalin Energy has recently invested significant capital in replacing the shale shakers in the Drilling Module with brand new state of the art systems (Photo 10). This new equipment includes

a number of dust and aerosol control measures but are not yet in use and so the improvement in air quality has not yet been quantified.

3.3 Water and Wastewater Management

The Platform operates under 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 freshwater, ballasting of the gravity based structure, process water (process cooling water and for water reinjection purposes) and for firefighting. There are four intakes on the Platform, located approximately 3 m above the seabed.

Water intake is measured by flowmeters and the main intakes are reportedly fitted with fish protection devices as per RF law.

The majority of abstracted water is for cooling processes and is discharged back into the sea. A small proportion is used for generation of fresh water on the Platform. Despite the quality of fresh water, bottled water is delivered to the Platform and is the clear preference of those on board.

FINDING: From a review of the Monthly Environmental Performance Overview for August 2015, the Auditor identified that potable water quality test results indicated a non-compliance in relation to chloroform in the hot water supply. Sakhalin Energy further explained that following an investigation, it was concluded that the non-compliance was most likely caused by the use of incorrect sampling containers and that new specifically-designed glass containers were to be used to resample in mid-October. The issue was not only observed at LUN-A, but other Sakhalin Energy assets as well. As a precaution, the Platform's fresh water treatment system was subjected to a non-routine inspection.

Note: Also from a review of the Monthly Environmental Performance Overview for August 2015, the Auditor noted that the year-to-date (YTD) water intake limit was shown as exceeded at LUN-A by 8%. The report then stated that Sakhalin Energy had recently obtained a new water agreement for LUN-A and that as a result, it was confirmed the actual water intake volume would be compliant with the licence going forward (i.e. 825,660 m^3 actual YTD versus a new limit of 1,390,763 m^3 in the licence).

3.3.2 Wastewater Management

The Platform generates the following waste water streams:

- Sewage effluent – including sanitary wastewater and grey water (e.g. laundry effluents), and is treated in the onboard Sewage treatment Plant (STP) before being discharged to sea. The STP uses ultraviolet (UV) disinfection technology rather than chlorination to avoid potential discharge of residual chlorine. Sludge is transported back to shore for disposal (see Waste section). Effluent quality from the STP is monitored regularly (see below).
- Cooling water – discharged untreated to the sea but monitored for temperature and sodium hypochlorite (see monitoring section below).
- Uncontaminated deck drainage – The Platform is designed with two contained drainage systems for potentially contaminated and uncontaminated run-off each being directed to separate holding tanks. The uncontaminated run-off is discharged to sea, whilst the contents of the potentially contaminated tank are sent for reinjection via the CRI well (see Produced Water).
- Super saline water – following reverse osmosis to generate freshwater.

- Produced water – sent for reinjection via the CRI well. The Platform is therefore designed to have zero discharge of produced waters. See Waste section below regarding the current status of CRI on the Platform.

FINDING: From a review of the Monthly Environmental Performance Overview for August 2015, the Auditor noted that the YTD cooling water discharge limit was shown as exceeded at LUN-A by 60%. When raised with Sakhalin Energy following the platform visit, it was reported that an application package to obtain a new water discharge permit (within increased limits) has been developed and submitted to Authorities for approval. The reported target to have the new permit in place was end of 2015.

Opportunity for Improvement: The Water Use Standard within the HSESAP (Appendix 6) (Doc. No. 0000-S-90-04-O-0255-00-E) states that "*Oil Based Muds (OBM) shall not be used*". Following discussion with Platform personnel and review of the Platform's Environmental Aspects Register (Doc. No. 4000-S-(0-04-T-0001-00), it is clear that OBM is being used at LUN-A (albeit in sections from 22 inches and below). The wording within the HSESAP should be reviewed and clarified accordingly at the next update (noting that all updates to the HSESAP would need to be agreed by lenders).

3.3.3 Wastewater Monitoring

The HSESAP outlines the following project specification for LUN-A wastewater.

- *"Existing treatment plants were installed before 1st January 2010 [including at LUN-A]. MARPOL 73/78 does not set the regulation for the level of contaminants in sewage water after treatment for STPs older than those installed after January 1, 2010, excluding oil products."*
- *"Treated wastewater discharges must meet Water Use Decision conditions, allowable discharge norm (based on calculation of environmental sensitivities and assimilative capacity of receiving waters) and established wastewater standards. These are: Oil products daily average: 1.68 mg/l for LUN-A."*

An issue exists in relation to the STP on LUN-A and compliance with criteria set out in the Platform's Wastewater Discharge Licence. The Platform's STP has struggled to meet the limits for ammonia nitrogen, phenols and phosphates again in 2015, with multiple exceedances recorded and financial penalties imposed by the authorities. This is a known issue that has previously been reported and discussed with the Lenders' IEC (Lenders' Finding WATER.12 from October 2013).

Platform personnel reported that the design capacity of the plant was for 126 people, whilst the Platform was routinely operating with 140 personnel onboard. Furthermore, the bioreactor contains plastic matrix which it is understood get clogged by larger solids in the wastewater stream, this results in there being unstable nitrification in the STP. Nitrogen removal requires a better aeration process and less fluctuations in load (which often occur around shift changeovers).

A detailed assessment has been undertaken by Sakhalin Energy HSE Central and the equipment manufacturer and corrective actions have been implemented by Platform personnel as far as possible, e.g. more regular checking and cleaning of filters.

The Platform is continuing to work closely with Sakhalin Energy Central HSE to identify a permanent solution. Options to modify the existing STP are limited by space restrictions onboard the Platform and options to replace the STP system with a new system would require significant capital investment. We note that an associated business case has been provided to, and agreed by, lenders. Therefore, Sakhalin Energy has instead developed and submitted an application

package to the authorities to review the Water Use Permit and increase the pollutant concentration limits (up to: Phenols – 0.08mg/L; Ammonia nitrogen – 70.1 mg/L; and Phosphates – 3.07 mg/L).

3.3.4 Effluent Monitoring (for environmental protection purposes)

Independent analysis of effluent quality is performed on a bi-weekly basis. Samples are collected and dispatched for analysis by a 3rd party specialist contractor. Samples collected include raw and treated sewage and cooling water. All results are sent by the contractor to Sakhalin Energy Central HSE Department in Yuzhno-Sakhalinsk.

Based on a review of the Monthly Environmental Performance Overview report for August 2015, the parameters monitored for LUN-A include: suspended solids, BOD, phosphorous, ammonium nitrogen, surfactants, nitrite, nitrate, petroleum products, phenols and sodium hypochlorite. Insufficient time was available during the audit to verify the monitoring regime onboard the Platform. Any identified exceedances are reported to lenders on a quarterly basis.

3.3.5 Seawater, Sediment & Other Monitoring

Seawater

Platform personnel reported that surface water samples are taken on a monthly basis to the north, east, south and west of the Platform for chemical, hydrology and biota analysis at specified distances from the Platform. Samples are taken by the support vessel (surface and at depth samples) with results sent to Central HSE Department, Yuzhno-Sakhalinsk.

According to Platform personnel and a from a review of the Monthly HSE Reports for the Sakhalin Energy Offshore assets, the platform appears to be operating in compliance with the exception of certain parameters associated with discharges from the Platform's STP (discussed above).

Sediments

As per the HSESAP, the HSE Supervisor reported that seabed sediments continue to be subject to periodic sampling and analysis for particle size distribution, petroleum hydrocarbons, heavy metals, phenols, detergents at benthos at specified distances and directions from the Platform. Insufficient time was available during the audit to verify this onboard 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

Visual monitoring is performed every 3 hours by the nominated Weather Observer to check for Platform-derived waste, dust or debris in the sea or evidence of spills (e.g. oily sheens), presence birds and marine mammals. Daily Environmental Log records were shared with the Auditor.

3.4 Waste Management

Waste management procedures and the implementation of those procedures for the Platform were discussed with the Platform Services Supervisor (PSS) and HSE Supervisor and verified as far as possible during the platform visit. Both individuals confirmed that the Platform operates on the basis of "Zero Waste to Sea".

Wastes are collected on the Platform and returned by sea to Kholmsk port where the waste is then managed in accordance with Sakhalin Energy's broader waste management procedures. This audit only considered waste management practices up to the point where waste is loaded on to a vessel for dispatch to Kholmsk.

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

- food wastes
- plastic and metal containers (clean)
- glass
- paper and cardboard
- wood
- clean textiles.

The main hazardous wastes generated by the Platform include:

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

Segregation of waste (metals, lamps, wood, oily wastes and incompatible chemical wastes etc.), labelling, classification in accordance with Russian Hazard classes, temporary storage prior to its shipment to shore were found to be good (Photos 3, 6 and 7).

Opportunity for Improvement: During the Platform inspection, the Auditor noted approximately four small-volume former oil and paint tins (i.e. less than 25 litres) within a scrap metal container awaiting transfer to shore (Photo 8). As per the HSESAP and RF law, the Platform HSE Supervisor reported that tins that are "cleaned-out" and confirmed as "empty" (i.e. content less than 5% - Hazard Class 4). They are disposed of this way in order to minimise hazardous waste generation and promote recovery onshore. However, firstly, it was unclear as to whether there was an operating procedure/ work instruction in place to cover this decontamination process. Secondly, from a post-visit review of the Platform's Waste Generation Standards & Waste Disposal Limits (PNOOLR) document[9] and Waste Disposal Limits[10], it was noted that containers formally containing mineral oils or refrigerants (both of which are listed in the PNOOLR document), do not appear in the Waste Disposal Limits as separate entries (unlike old paint containers). Sakhalin Energy should to confirm whether or not these are therefore unrecorded waste streams and then revise Waste Disposal Limits accordingly in order to avoid the risk of potential sanctions being applied.

As well as daily walkarounds by the HSE Supervisor and periodic inspections, the Platform's designated Weather Observer conducts 3-hourly 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 (Daily Environmental Log records observed by the Auditor).

The transfer to shore of the Platform's waste is managed by the PSS. According to the PSS, 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. Waste records are kept that inventorise the volume and classification of all wastes,

[9] Doc ID. 24542349, dated 2014
[10] Waste Disposal Limit No.13-203/640011015419 for LUN-A Platform, 4000-HSE-0063-001-MNR-R-A, dated 01-01-2015

and checks are made to ensure that these volumes are in compliance with the Platform's 'waste passport' (which prescribes monthly limits for each type of waste).

Waste manifests are maintained for all shipments of waste, and waste volumes are reported on a monthly basis to the Central HSE in Yuzhno-Sakhalinsk[11]. Based on YTD volumes, the Platform is generally below permitted limits for all waste types, with the following two exceptions:

- Oily residue from pipeline and tank cleaning being wooden waste
- Silica gel from air dryer package.

Whilst it was reported by Platform personnel that opportunities for waste minimisation offshore were considered relatively limited, an initiative to return wooden pallets to shore for reuse has been implemented in the last two years and an initiative to reduce use of paper cups is under consideration.

The Platform's dedicated CRI is used for disposal of muds and cuttings. Both the existing CRI and a new CRI (not yet operational) were viewed during the audit. The existing CRI is currently under assessment to determine its future, as fluctuating pressure readings from the well reportedly suggest that the geological formations into which the cuttings have been re-injected may have fractured. Until a determination of the status of the existing CRI is made and the new CRI well is operational, Platform personnel reported that muds and cuttings will be temporarily transferred to PA-B Platform for re-injection in its CRI well (as described in the HSESAP). As a result, and in accordance with the HSESAP, no oil or water based muds will be discharged to sea and none will be transferred to shore.

Opportunity for Improvement: It is recommended that the known and potential environmental impacts of the CRI situation at LUN-A (i.e. the potential fracking event) and the subsequent inter-platform transfer (i.e. additional vessel fuel use and emissions and potential for spills during transfer activities) be appropriately assessed and the outcomes and lessons learned documented and shared through Sakhalin Energy's knowledge sharing system. The Auditor was not able to ascertain, for example, whether the inter-platform transfer could have been prevented with earlier identification of the need for a replacement CRI for LUN-A.

3.5 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 Management of Hazardous Materials

Numerous hazardous chemicals are used on the Platform. In particular, large quantities of chemical additives are required for the drill muds.

3.6.1 Chemical Management Systems

The HSESAP includes the following requirement(s) for the management of hazardous materials:

> *"Only Chemicals approved by the Sakhalin Energy Chemicals Approval Panel (CAP) shall be purchased and used at Sakhalin Energy Sites*."

The procurement of chemicals for LUN-A is the responsibility of the PSS. All chemical orders are passed to the PSS who arranges for the purchase and shipping of chemicals. Chemicals can only be procured via the Company's SAP system which contains the list of approved chemicals. Approved chemicals can only be uploaded to the SAP system by the Chemicals Approval Panel

[11] Insufficient time was available during the audit to review these records.

(CAP), based in Yuzhno-Sakhalinsk. As such, individuals on LUN-A cannot add new chemicals to the SAP system 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.

A further HSESAP requirement is that:

> *"An MSDS in Russian and English shall be available on-site for all potentially hazardous materials used in Sakhalin Energy operations."*

Material Safety Data Sheets (MSDS) are held on the Dolphin database and in hard copy in the PSS's office. During the Platform walkover dual language MSDSs where found to accompany the majority of observed chemicals.

Another requirement of the HSESAP is that:

> *"Chemicals shall be appropriately labelled and shall have accompanying instruction sheets for usage. In such regard, the Company shall comply with EU Council Directive 67/548/EEC (Classification, Packaging and Labelling of Dangerous Substances)."*

Opportunity for Improvement: This reference is now out-dated, as of 1st June 2015, when EU Council Directive 67/548/EEC was replaced in full by Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures (referred to as the CLP Regulation). The HSESAP should be revised at the next opportunity to reflect this change.

Opportunity for Improvement: Furthermore, when raised by the Auditor, the PSS was not aware of Directive 67/548/EEC or the CLP Regulation indicating a potential knowledge gap and training need (e.g. in relation to potential changes to hazard classification, hazard pictograms and MSDS). Awareness training should be provided to staff.

3.6.2 Walkover Observations – Chemical Management

The Platform's chemical storage areas, including the main storage area for drilling-related chemicals in the Drilling Module, 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 entire chemical storage area in the Drilling Module appeared to have been zoned as far as practicable to separate incompatible materials and the area was served by a closed drainage system. Furthermore, a new purpose-built, integrally-bunded and explosive-safe storage container was installed in 2014 for the storage of lubrication oils (Photo 4). Additional PPE and emergency provisions in the form of eye wash bottles, emergency showers and spill kits were also available in relevant locations.

Opportunity for Improvement: In the main storage area for drilling-related chemicals in the Drilling Module, restricted storage space has meant that wooden pallets of various chemical drums were observed stacked two or three pallets high in places and two pallets deep (Photo 13). The condition of the pallets could not be ascertained due to the restricted space, but such pallets are not designed for such storage practices. At the base of each stack was a bunded plastic pallet and the Drilling Supervisor reported that the chemicals stored were the minimal volumes for planned maintenance and drilling activities in October. Furthermore, no incidents have reportedly occurred in this area and spill kits and other emergency equipment (e.g. emergency shower) were present. While not specific on this topic, the HSESAP does state that Sakhalin Energy shall "*employ safe methods of working for all personnel handling chemicals*" (including in relation to storage) and that Sakhalin Energy shall employ "*good site practices… to minimise the risk of accidental spills occurring*." The current method of stacking of multiple chemical drums on wooden pallets in this area is not good practice and this was acknowledged by Platform personnel

during the audit. Reportedly, the Platform has considered several options to improve the situation, including racking systems, however no solution had been identified to date as restricted space is a particular challenge (e.g. to allow free movement of a forklift truck). Further research into racking systems and/or specialist advice is recommended in order to identify a solution to this issue.

3.7 Emergency Preparedness and Response

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

3.7.1 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 blowout preventers. However should these measures fail Sakhalin Energy has a suite of oil spill response plans (OSRPs) in place. One of these plans covers the activities of LUN-A. This plan has been extensively reviewed by the IEC under a separate scope of work and was not reviewed during this audit.

The 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 LUN-A workforce to respond. Spills to sea require additional clean-up resources in the form of response vessels which were excluded from the audit. Similarly response actions performed by the Emergency Crisis Team based in Yuzhno-Sakhalinsk, for example the use of oil spill trajectory models, are also excluded.

Full copies of the OSRP are held by the OIM, and along with the Emergency Response Plan, a copy is held in the Control Room. In the event of a spill the 'Site Controller' would be the OIM, supported by 'On-scene Commanders' which for LUN-A would generally be the HSE Supervisor. Nominated responders receive specialist response training, including contractor personnel.

The Platform also conducts regular emergency drills 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 is equipped with sufficient response equipment to deal with relatively small spills contained on the Platform. Two containerised emergency spill kits, sealed with cargo straps to prevent misuse, were located on deck and reportedly could be deployed by deck crane to the most appropriate point of use on the Platform (Photo 5). Multiple additional spill kits provided in wheeled bins, intended for more routine use such as cleaning up localised oil leaks, were observed by the Auditor throughout the Platform. The use of spill equipment should be reported to HSE Supervisor who will arrange to replenish the spill kits. The HSE Supervisor includes spill kit status in his daily workarounds. All the spill kits inspected by the Auditor were found to be complete.

3.7.2 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.

The OIM reported that no major medical emergencies had occurred on the Platform for over two years. The OIM further reported that the required maximum medical response times for different levels of treatment (i.e. first aider, doctor, hospital) set out in the HSESAP were realistic for LUN-A, even in winter.

3.8 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.

3.8.1 General

Overall there is a strong H&S culture on the Platform, typified by deployment of barriers and warning tape to limit pedestrian access to deck areas during lifting operations and adherence to the '3 point contact' rule for stairwells i.e. staff observed to be using handrails when descending and ascending stairs.

The offshore Lost Time Injury Frequency (LTIF)[12] for LUN-A at the time of the audit was zero.

A Health Risk Assessment (HRA) was reportedly conducted in 2014 and the HSE Supervisor reported that all major recommendations had been implemented. This was not verified by the Auditor.

3.8.2 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.

Specific requirements of the HSESAP relevance to Sakhalin Energy's offshore operations regarding personal protective equipment (PPE) include:

- All staff, contractors, and visitors onboard offshore facilities are required to wear the PPE described below. Exceptions to these rules shall be approved only by the Offshore Installation Manager.
- Protective Clothing: Flame resistant (FR) clothing shall be worn onboard offshore facilities while working outside accommodation modules, or in offshore facility accommodation electrical rooms.
- Protective Head Gear: Safety helmets shall be worn onboard offshore facilities while working outside accommodation modules.
- Foot Protection: Safety toe-protective footwear shall be worn onboard offshore facilities while working outside accommodation modules.
- Eye and Face Protection: Eye protection shall be worn onboard offshore facilities while working outside of the accommodation modules.

Each of these requirements was observed without exception during the Platform visit.

3.8.3 Medical Facilities

The Platform has a medical bay and a permanent fully trained and experienced doctor. The medical facilities are capable of dealing with most emergency situations, including fractures, burns, strokes etc. and minor ailments. The doctor is supported by a team of trained first aiders.

3.8.4 Fitness to Work

Fitness to work in managed via the 'Global Logistics Management System' (a 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.

[12] The number of lost time injuries occurring in a workplace per 1 million man-hours worked.

3.8.5 Grievance Procedure

The Auditor was informed that in practice any worker (Sakhalin Energy employee or contractor) could raise any grievance with their supervisor to be subsequently raised with the OIM either at the next appropriate daily/weekly operations meeting or the next monthly HSE Forum meeting (discussed above). Furthermore, customer satisfaction surveys using a drop-box system are periodically conducted by the contractor responsible for catering, cleaning and laundry, in order to ensure high standards are maintained and recommendations for improvement acted upon.

Grievances could reportedly be raised anonymously via these processes if a worker preferred. It was demonstrated to the Auditor that issues raised were documented and agreed actions tracked through to completion.

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 LUN-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.

There was a good level of compliance with environmental law and the requirements of the HSESAP with the following exceptions:

- A known issue exists in relation to the STP on LUN-A and compliance with criteria set out in the Platform's Wastewater Discharge Licence (see Lenders' Finding WATER.12 from October 2013). The Platform's STP has struggled to meet the limits for ammonia nitrogen, phenols and phosphates in 2015, with multiple exceedances recorded and financial penalties imposed by the authorities. The Company has provided a business case to lenders demonstrating that replacement of the STP is not cost-effective (Fountain Action #848242 under the above Finding). Sakhalin Energy has instead developed and submitted an application package to the authorities to review the Water Use Permit and increase the pollutant concentration limits; the results of this application are pending. Lenders have accepted this approach.
- Potable water quality test results reported in August 2015 indicated a non-compliance in relation to chloroform in the hot water supply. An internal investigation concluded that the non-compliance was most likely caused by the use of incorrect sampling containers and that new specifically-designed glass containers were to be used to resample in mid-October. The issue was not only isolated to LUN-A, but also affected other Sakhalin Energy assets. As a precaution, the Platform's fresh water treatment system was subjected to a non-routine inspection.
- As of August 2015, the Platform's YTD cooling water discharge limit was reportedly exceeded by 60%. An application package to obtain a new water discharge permit (within increased limits) has been developed and submitted to the authorities for approval. Sakhalin Energy expects to have the new permit in place by the end of 2015.

In addition, a number of Opportunities for Improvement to improve performance have been highlighted in this audit report, including:

- Due to space restrictions, chemical storage practices in the main storage area for drilling-related chemicals in the Drilling Module include storing chemical drums on wooden pallets stacked two or three pallets high in places and two pallets deep. Such arrangements are not considered to constitute "*good site practices… to minimise the risk of accidental spills occurring*" as required by the HSESAP. Reportedly, the Platform has considered several options to improve the situation, including racking systems, however no solution had been identified to date. Further research into racking systems and/or specialist advice is recommended in order to identify an ALARP solution to this issue.
- It is recommended that all reports generated from audit and inspection activities clearly state the level of audit/inspection that was conducted, an audit reference (taken from the annual assurance plan) and the scope and purpose of each exercise.
- The Water Use Standard within the HSESAP states that "*Oil Based Muds (OBM) shall not be used*". It is clear that OBM is being used at LUN-A (albeit in sections from 22 inches and below). The wording within the HSESAP should be reviewed and clarified accordingly at the next update (noting that all updates to the HSESAP would need to be agreed by lenders).
- The Auditor noted approximately four small-volume former oil and paint tins (i.e. less than 25 litres) within a scrap metal container awaiting transfer to shore. As per the HSESAP and RF

law, the Platform HSE Supervisor reported that tins that are "cleaned-out" and confirmed as "empty" (i.e. content less than 5% - Hazard Class 4). However, firstly, it was unclear as to whether there was an operating procedure/ work instruction in place to cover this de-contamination process. Secondly, from a post-visit review of the Platform's Waste Generation Standards & Waste Disposal Limits (PNOOLR) document and Waste Disposal Limits, it was noted that containers formally containing mineral oils or refrigerants (both of which are listed in the PNOOLR document), do not appear in the Waste Disposal Limits as separate entries (unlike old paint containers). Sakhalin Energy should to confirm whether or not these are therefore unrecorded waste streams and then revise Waste Disposal Limits accordingly in order to avoid the risk of potential sanctions being applied.

- It is recommended that the known and potential environmental impacts of the CRI situation at LUN-A (i.e. the potential fracking event) and the subsequent inter-platform transfer of cuttings and other fluids (i.e. additional vessel fuel use and emissions and potential for spills during transfer activities) be appropriately assessed and the outcomes and lessons learned documented and shared through Sakhalin Energy's knowledge sharing system. The Auditor was not able to ascertain for example, whether the inter-platform transfer could have been prevented with earlier identification of the need for a replacement CRI well for LUN-A.
- The reference in the HSESAP to EU Council Directive 67/548/EEC is now out dated as of 1st June 2015, when it was replaced in full by Regulation (EC) No 1272/2008, on classification, labelling and packaging of substances and mixtures (referred to as the CLP Regulation). Furthermore, when raised by the Auditor, the PSS was not aware of Directive 67/548/EEC or the CLP Regulation indicating a potential knowledge gap and training need (e.g. in relation to potential changes to hazard classification, hazard pictograms and MSDS). The HSESAP should be revised at the next opportunity to reflect this change, and awareness training provided to staff.

APPENDIX 1
PHOTOGRAPHIC LOG

Photo 1. LUN-A Platform (taken from crew boat)

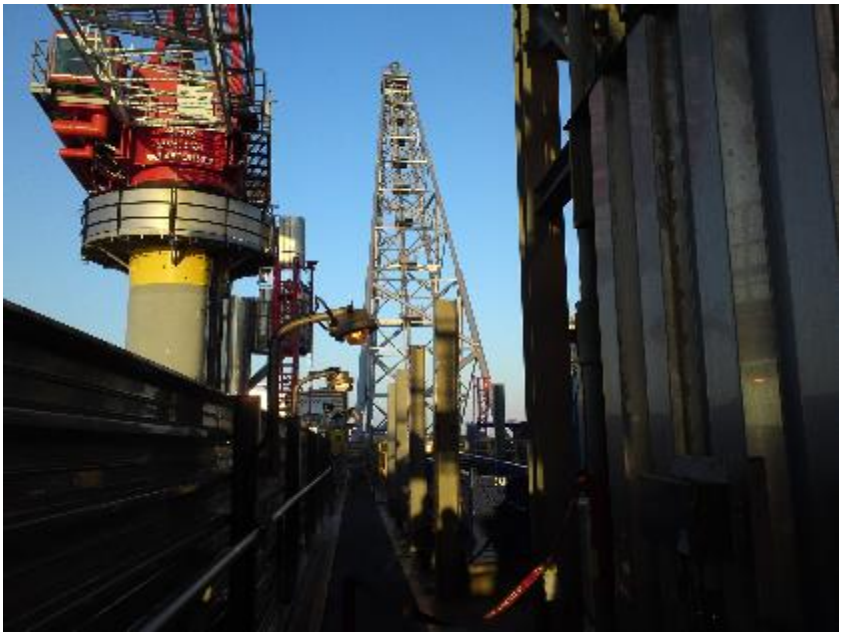

Photo 2. Flare (pilot flare only observed during audit)

Title: Photographic Log	**Client:** Sakhalin-2 Project Finance Parties
Site: LUN-A Platform	**Date:** October 2015

Photo 3. Main non-hazardous waste storage area

Photo 4. Dedicated lube oil storage container (installed 2014)

Photo 5. One of two Emergency Oil Spill Response Kits

Photo 6. Example of good waste segregation and storage practices (clear dual-language labelling)

Photo 7. Another example of good waste segregation and storage practices (clear dual-language labelling)

Photo 8. Reportedly empty oil tin in scrap metal skip

Photo 9. Cuttings Re-Injection Well (currently not in use – under assessment)

Photo 10. New shale shakers (not yet in operation)

Photo 11. Sewage Treatment Plant (control area)

Photo 12. One of two fire water pumps (diesel-fired)

Photo 13. Chemical storage area in Drilling Module (chemical drums on wooden pallets stacked three high and two deep)

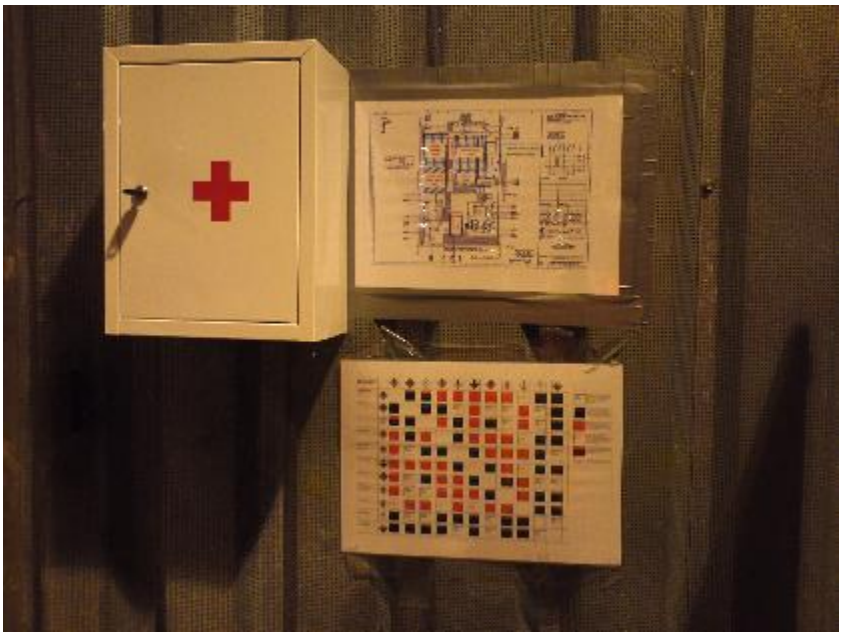

Photo 14. Chemical zoning plan to separate incompatible chemicals (plus first aid point)

APPENDIX 2
DOCUMENTATION

LIST OF KEY DOCUMENTATION REVIEWED

- Offshore Handbook – Lunskoye-A Platform, Sakhalin Energy, undated.
- IEC Inspection Report, March 2014, Sakhalin Energy.
- TDW Field Visit Report – LUN-A, May 2013, Sakhalin Energy.
- Offshore Level 2 HSE Audit Report 2014, December 2014, Sakhalin Energy (Doc. No. 1000-S090-04-T-0743-00-E).
- Offshore Platforms STP: Problem Definition & Proposed Way Forwards – Presentation, October 2015, Sakhalin Energy Offshore HSE, Version 2.
- LUN-A Well LA-150 – Investigation and Environmental Monitoring Results Overview – Presentation, Sakhalin Energy, undated.
- Offshore Operations & Maintenance – HSE Presentation, July 2015, Sakhalin Energy.
- Offshore Operations & Maintenance – HSE Presentation, August 2015, Sakhalin Energy.
- Monthly Environmental Performance Overview – Presentation, August 2015, Offshore HSE, September 2015.
- Environmental Aspects Register (Doc. No. 4000-S-(0-04-T-0001-00) [Appendix 4E of Platform's HSE Safety Case].
- Waste Disposal Limits No.13-203/640011015419 for LUN-A Platform, 4000-HSE-0063-001-MNR-R-A, dated 01-01-2015.
- Waste Generation Standards & Waste Disposal Limits (PNOOLR) document, 2014 (Doc. No. 24542349).
- Daily Environmental Log for LUN-A.

APPENDIX 3
ITINERARY AND AUDITEES

ITINERARY

28th September 2015	Crew boat transfer to LUN-A
	HSE Induction/orientation
	Meeting with HSE Supervisor and Offshore Installation Manager
	Auditing (15:00 – 18:30)
29th September 2015	Auditing (08:00 – 12:30)
	Depart by crew boat (14:00)

Note: Due to impending severe weather and sea conditions offshore and the need to transfer the auditor back to shore before crew transfer operations were suspended for several days, the audit duration was shortened to approximately eight hours (over two days).

LIST OF KEY AUDITEES

Role	Location
Offshore Installation Manager	LUN-A
LUN-A HSE Supervisor	LUN-A
Drilling Supervisor	LUN-A
Platform Services Supervisor	LUN-A