

Intended for
Sakhalin Energy Investment Company Limited

On behalf of
Sakhalin-2 Phase 2 Project Finance Parties

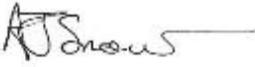
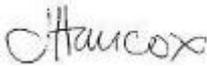
Date
February 2016

Project Number
UK22-17081

SAKHALIN-2 PHASE 2 LENDERS' INDEPENDENT ENVIRONMENTAL CONSULTANT LEVEL 1 AUDIT: PRIGORODNOYE PRODUCTION COMPLEX

SAKHALIN-2 PHASE 2 LENDERS' INDEPENDENT ENVIRONMENTAL CONSULTANT LEVEL 1 AUDIT: PRIGORODNOYE PRODUCTION COMPLEX

Project No. **UK22-17081**
Issue No. **2**
Date **03/02/2016**
Made by **Andrew Snow, Paul Bochenski, Jon Hancox**
Checked by **Helen Yip**
Approved by **Jon Hancox**

Made by:	
Checked/Approved by:	

This report has been prepared by Ramboll Environ with all reasonable skill, care and diligence, and taking account of the Services and the Terms agreed between Ramboll Environ and the Client. This report is confidential to the Client, and Ramboll Environ accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known, unless formally agreed by Ramboll Environ beforehand. Any such party relies upon the report at their own risk. Ramboll Environ disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the Services.

Version Control Log

Revision	Date	Made by	Checked by	Approved by	Description
01	17/11/2015	AS/PB/JH	HY	JH	Issue 1 for SE/lender review
02	3/02/2016	AS/PB/JH	HY	JH	Issue 2 Final Issue

CONTENTS

EXECUTIVE SUMMARY	II
1. INTRODUCTION	1
1.1 Background	1
1.2 Audit Scope	1
2. PRIGORODNOYE PRODUCTION COMPLEX	2
2.1 Location	2
2.2 Environmental Setting	2
2.3 LNG Plant	3
2.4 Oil Export Terminal	5
3. AUDIT FINDINGS	6
3.1 HSE Management Systems	6
3.2 Emissions to Atmosphere	8
3.3 Noise	8
3.4 Water and Wastewater Management	8
3.5 Waste Management	9
3.6 Management of Hazardous Materials	11
3.7 Occupational Health and Safety	11
3.8 Worker Accommodation	12
3.9 Port management	12
3.10 Vehicle Refuelling Area	14

APPENDICES

Appendix 1

Photo Log

Appendix 2

Documentation

Appendix 3

Itinerary

LIST OF ABBREVIATIONS

AST	Above ground storage tank
CO ₂	Carbon dioxide
DES	Delivered Ex Ship
FOB	Free On Board
GMAS	Shell Group Maritime Assurance System
H ₂ S	Hydrogen sulphide
HSE	Health, Safety and Environment
HSEMS	Health, Safety and Environmental Management System
HSESAP	Health, Safety, Environment and Social Action Plan
HTF	Heat Transfer Fluid
IBC	Intermediate bulk container
IEC	Independent Environmental Consultant
JVP	Joint Venture Port
LNG	Liquefied Natural Gas
MDEA	Methyldiethanolamine
MOF	Materials Offloading Facility
MR	Mixed Refrigerant
MSDS	Material Safety Data Sheet
OET	Oil Export Terminal
OPF	Onshore Processing Facility
OSR	Oil Spill Response
OVID	Offshore Vessel Inspection Database
PA	Piltun Astokhskiye
PAC	Polyaluminium chloride
PMR	Pre-cooling Mixed Refrigerant
PPE	Personal Protective Equipment
Ramboll Environ	Ramboll Environ UK Ltd
RE	Ramboll Environ UK Ltd
RF	Russian Federation
Sakhalin Energy	Sakhalin Energy Investment Company Ltd
SPZ	Sanitary Protection Zone
STP	Sewage Treatment Plant
TLU	Tanker Loading Unit
UST	Underground storage tank
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 the Sakhalin Energy Investment Company (Sakhalin Energy) Prigorodnoye Production Complex undertaken by Jon Hancox, Andrew Snow and Paul Bochenski of Ramboll Environ between the 12th and 13th October 2015.

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

Overall, Ramboll Environ identified that environmental performance at the Prigorodnoye Production Complex is good and that managers, plant operatives and working practices at the site indicated a strong HSE culture. There was a good level of compliance with environmental law and the requirements of the HSESAP with the following exceptions:

- During Ramboll Environ's October 2014 monitoring visit, it was observed that one of the permanent sewage treatment plant (STP) units was under maintenance. During the maintenance period, untreated sewage was being diverted to one of the older BR-200 treatment units via an aboveground temporary divert hose. This was raised as Finding WATER.15 in the lenders' Findings Log. At the time it was reported that the Company had already developed plans for a permanent underground pipe network to enable transfer of incoming sewage between the different units during maintenance periods.

During the current 2015 audit, the temporary divert hose was observed to be still in-situ between the two STP, seemingly contrary to update information provided by the Company in February 2015. The temporary hose crosses a number of storm water drainage ditches and was now observed to be exhibiting signs of wear and tear. The temporary hose represents a risk of a leak of untreated sewage to the environment and the longer it remains in use (now into its second year) the greater the risk of an incident (as the hose deteriorates and the chance of accident damage continues, e.g. by vehicle or storm). Sakhalin Energy has since advised that the hose is only in place during the summer period and only used during STP shut down or minor maintenance activities. It is reportedly visually inspected for damage before use and replaced if defects are found, and removed during the winter period. This finding will remain open until completion of the permanent underground pipework between the treatment units, due for implementation in 2018.

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

- There appears an element of uncertainty and inconsistency around the different levels within the Integrated Assurance Plan, in terms of the level and name of each exercise and corresponding reports (i.e. "audit" versus "inspection") and who is responsible for developing the scope and leading each level (i.e. Central HSE or Asset HSE). Whilst it appears that the assurance plan is being implemented, this uncertainty/inconsistency meant that Ramboll Environ was not able to verify progress year-to-date (YTD) against the plan. From discussions with facility personnel, the Auditors identified that there may be an opportunity to promote shared learning if selected Level 3 and 4 audit/inspection action findings captured in the Asset-level HSE Action Tracking System should also be added to the Fountain system (i.e. where lessons can be learnt that are applicable to other assets). At the closing meeting of the IEC monitoring visit, subsequent to the audit, Sakhalin Energy management reported that this opportunity had already been identified by the Company and work was underway to alter the HSE-MS accordingly.

- Review of incident records for a minor diesel fuel spill (incident reference 1283180) identified a lack of recorded information of immediate response actions to deal with the spill (thought to be contained within secondary containment) and also some apparent discrepancies in the information provided in the quarterly HSE report (Risk Assessment Matrix rating and number of actions identified). Sakhalin Energy should ensure that all incident reports clearly identify the immediate actions taken in response to environmental incidents, including oil/chemical spills. The Company should also ensure consistent reporting within the lender HSE reports.
- A number of redundant buildings / infrastructure associated with defunct sewage treatment facilities used during the construction phase are still present in close proximity to the operational STP. The derelict condition of these structures poses a potential health and safety risk to personnel working in the area and we recommend that they be removed and the site area restored.
- The Auditors observed a 205 litre drum of waste oil being delivered to Building 10 during the audit. The drum was being transported in the bucket of a Bobcat vehicle without any form of strapping/device to secure the load. Furthermore, the slotted drain over which the vehicle was parked, whilst the drum was offloaded, was identified as a storm drain that discharges directly to a natural drainage ditch. Given the hazardous waste transfer activities that take place in this area, it is recommended that the Company gives consideration to installing a pen-stock valve so that the drain can be isolated in the event of a spill.
- At the time of the audit, work was ongoing to upgrade the non-hazardous waste storage area. In the interim period, the waste is stored in shipping containers. We note that little progress has been made to upgrade the non-hazardous waste storage area since the site visit in October 2014, and we recommend that efforts are made to ensure that the upgrade works are completed by the Company's estimated completion date of the end of December 2015.
- It was reported that cut grass and other vegetation from grounds maintenance activities is disposed of to landfill. Given the capacity restrictions at Korsakov Landfill, opportunities to divert this organic waste from landfill should be explored (e.g. composted on site or provided to local farms). Sakhalin Energy has agreed to test options to divert fresh grass cuttings to a local farmer.
- Storage Room R101, which contained a large number of chemical drums, did not appear to have been designed for such a use (i.e. no sump or lip across the door). It appears that the room was originally designed for dry storage but ended up as mostly liquid chemical storage. The Company should pursue possible mitigation measures to bring it up to standard for liquid chemical storage. As a minimum, chemical drums should be stored further from the entrance.
- While in general across the facility, safety signage was observed to be good, the Auditors noted that the hearing protection sign was missing from the entrance to one of the two main STP buildings. The Auditors observed an operative accessing the building without using hearing protection. The sign was observed on the door to the other building.
- Heavy levels of guano fouling were observed on the materials offloading facility (MOF) and we recommend that this be cleaned.

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 the Sakhalin Energy Investment Company (Sakhalin Energy) Prigorodnoye Production Complex undertaken by Jon Hancox, Andrew Snow and Paul Bochenski of Ramboll Environ between the 12th and 13th 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).

The audit visit comprised the following tasks:

- Site walkover of the following facilities / areas:
 - Waste handling area
 - Vehicle re-fuelling and washing area
 - Workshops
 - Warehouses/fuel stores
 - LNG production area
 - Potable water treatment area
 - Wastewater treatment facilities
 - Port facilities and Oil Spill Response (OSR) base
 - Yunona camp.
- Interviews & Records Review:
 - HSE performance and assurance, incidents, training and competence
 - General operational overview, recent achievements and environmental initiatives, current and future challenges
 - Waste management practices
 - Flaring performance and management
 - Environmental monitoring Interviews and document reviews.

2. PRIGORODNOYE PRODUCTION COMPLEX

2.1 Location

The Prigorodnoye Production Complex comprises a two-train liquefied natural gas (LNG) plant and oil export facilities (oil export terminal (OET) and tanker loading unit (TLU)). It is located at 46°38' N, 142°55' E on the shoreline of Aniva Bay, on the southern coast of Sakhalin Island, around 15 km east of the port of Korsakov and 53 km south of the capital city, Yuzhno-Sakhalinsk.

The total fenced area of the Prigorodnoye site is 4.2 km², and is divided by the Goluboy Stream (and surrounding undeveloped buffer zone); the LNG plant is located in the western part of the site, and the eastern part is occupied by the OET.

2.2 Environmental Setting

The Prigorodnoye Production Complex is situated on the southern outskirts of the Korsakovsk plateau, which rises to 10 to 25 metres above sea level. The production complex is situated on the lower onshore terrace of Aniva Bay.

Immediately to the east of the LNG plant are two surface watercourses discharging into Aniva Bay and a wetland area. Beyond the valley and to the north are low forested hills, 50 to 60 m high. The Goluboy stream bisects the Prigorodnoye Production Complex, between the LNG and OET areas.

There is a formal Sanitary Protection Zone (SPZ) around the plant. This zone extends 800 m from the perimeter road in all directions. A map showing the Sanitary Protection Zone around the site (red contour line) is shown in Figure 1.

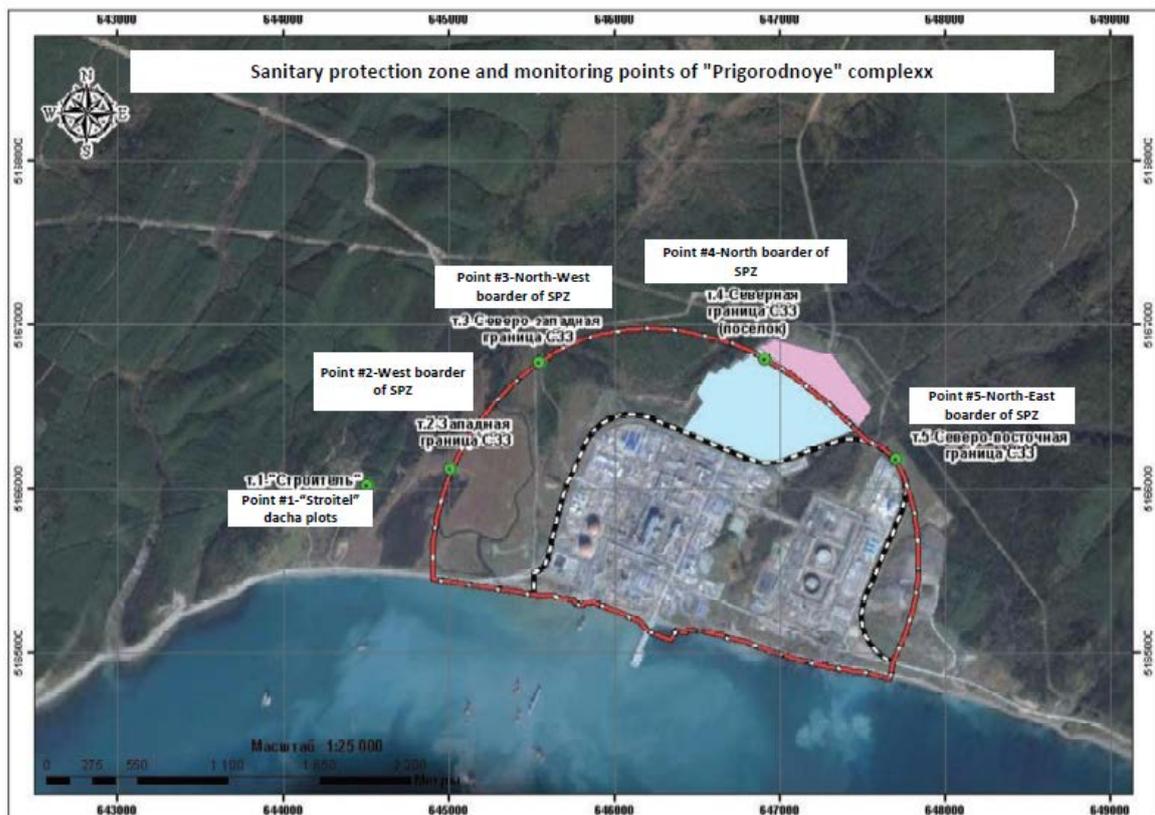


Figure 1 - Sanitary Protection Zone around the Prigorodnoye Production Complex

The Prigorodnoye Production Complex is located in a seismically active area. Studies have shown that the maximum credible earthquake in the area was 6.5 on the MLH scale, and there is a potential seismic fault lying south-west to north-east just to the east of the Prigorodnoye site. In the winter, from October to March/April, cold northerly winds prevail while in the summer relatively warm winds from southerly directions predominate.

Aniva Bay remains ice-free through the winter, enabling year-round oil and LNG deliveries. At the end of summer, tropical cyclones may occur; these originate near the Philippine Islands, and lose most of their intensity before reaching Sakhalin Island.

2.3 LNG Plant

The LNG plant consists of two LNG trains, designed to meet international best practice at the time of construction in 2004 to 2008.

The LNG plant comprises the following five distinct onshore areas:

1. Two liquefaction trains and their common facilities (with provision for a third train).
2. Two LNG storage tanks located to the west of the liquefaction trains.
3. An LNG loading jetty extending 805 m into Aniva Bay, with two parallel loading lines.
4. Technical service and administration buildings, canteen and training centre, fire station, workshops, first aid facilities, laboratories and control room located to the north of the common facilities/utility area.
5. Flare area, located to the south of the liquefaction trains.

Feed gas supplied to the LNG plant consists of a mixture of associated gas from the Piltun-Astokhskoye (PA) field and non-associated gas from the Lunskeye field. Gas from both fields is first processed at the Onshore Processing Facility (OPF), where the gas is dehydrated to meet the pipeline specification. From the OPF, the gas is routed via a 630 km long, 48" (1219 mm) diameter single pipeline to the LNG plant at the Prigorodnoye Production Complex. The OPF and pipelines to the LNG plant were outside of the scope of this audit.

Feed gas arriving from the OPF is metered before being split into two parallel LNG trains. Each train comprises:

- An acid gas removal unit (Sulfinol-D and Active MDEA processes) to remove acid gases (mainly carbon dioxide (CO₂) with trace amounts of hydrogen sulphide (H₂S)) from feed gas. The removed acid gas, containing some hydrocarbons co-absorbed by the solvent is routed to an incinerator.
- A molecular sieve unit to dehydrate the feed gas.
- A guard bed of sulphur-impregnated activated carbon to remove any mercury that may be present in the feed gas.
- A Double Mixed Refrigerant Liquefaction Unit to liquefy the gas using two separate mixed refrigerant cooling cycles. One cycle is for pre-cooling of the gas to approximately -50°C (PMR cycle), and the other for final cooling and liquefaction (MR cycle) to below -160°C.
- A fractionation unit to produce refrigerant grade ethane and stabilised condensate.

LNG produced by the two trains is transferred to two double-walled storage tanks of 100,000 m³ net capacity each and exported via a dedicated tanker loading facility. A collection and compression system is provided to recover boil-off gases generated during storage and loading for use as plant fuel. Condensate produced in the LNG trains is exported to the adjacent OET.

LNG is stored and then exported by ship at atmospheric pressure and at its atmospheric boiling point of about -160 °C.

Jetty and mooring facilities receive ships for transport of LNG. Dedicated loading and unloading facilities are provided as well as recovery facilities for the displaced LNG vapours from the LNG ships. LNG loading is undertaken at a rate of approximately 10,000 m³/h. An LNG tanker takes a shipment every two to three days.

Figure 2 shows the layout of the Prigorodnoye site and Figure 3 illustrates the LNG process flow.



Figure 2 - Layout of Prigorodnoye Production Complex (from Sakhalin Energy website)

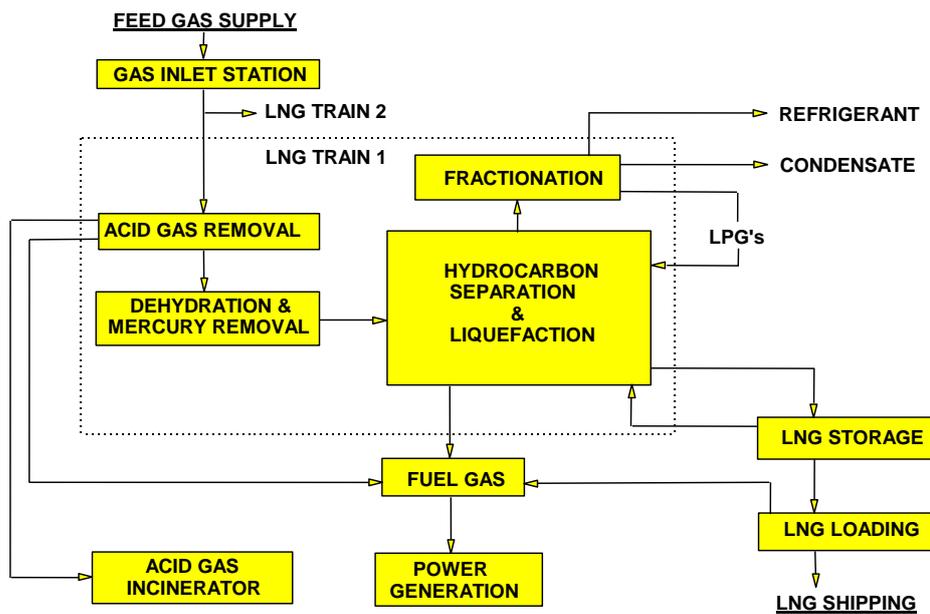


Figure 3 - LNG Plant block flow diagram

2.4 Oil Export Terminal

The OET comprises oil storage facilities, oil export pump station, underground/subsea export pipeline and a tanker loading unit (TLU). The terminal receives stabilised oil from the PA field in the north of the island (following treatment and separation from associated gas on the PA-A and PA-B platforms) via a single-phase pipeline transportation system. The small amounts of condensate recovered by the LNG plant are blended with the oil at the OET.

Oil is stored at the OET in two floating roofed tanks, each with a capacity of 95,000 m³. It is then transferred to the TLU, a 74 m high structure located 4.8 km offshore in waters approximately 30 m deep, through the export pipeline where it is offloaded to oil tankers for export.

The OET shares a number of management and supporting systems with the adjacent LNG plant - operations are managed in the Control Room and the supporting utilities are located on the LNG plant footprint.

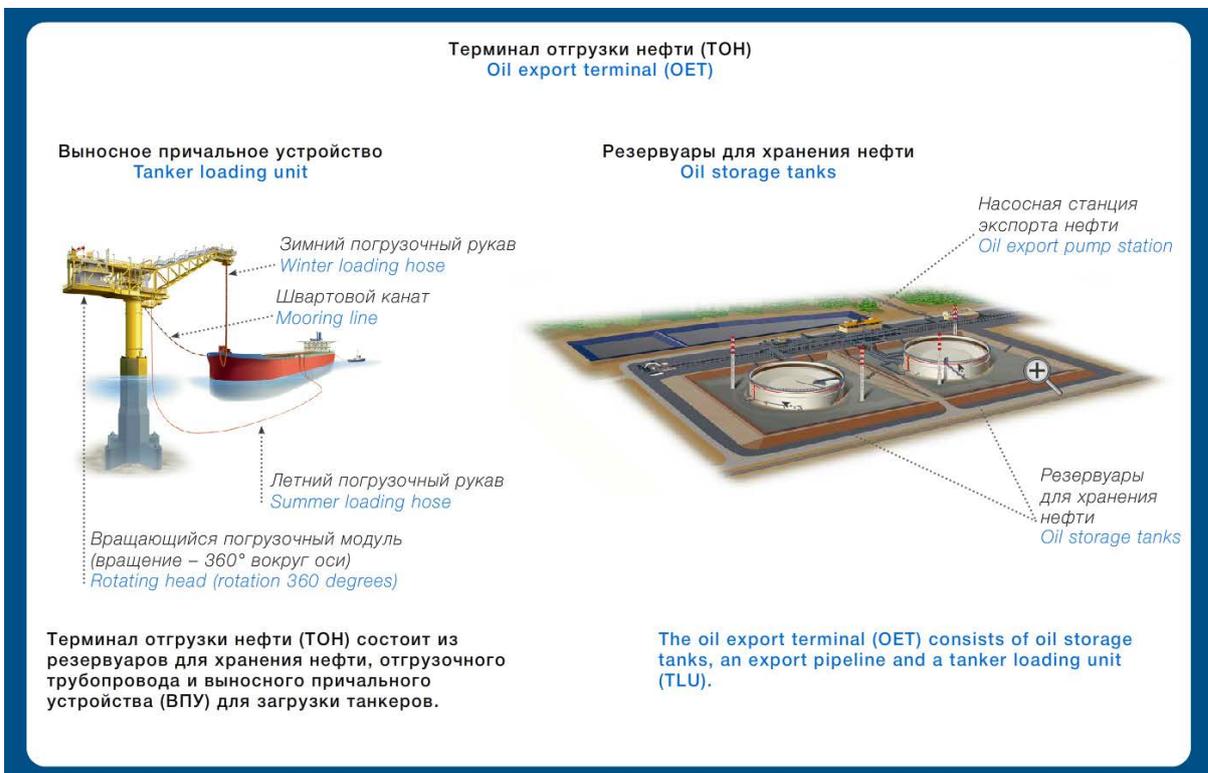


Figure 4 - Pictorial Description of OET (from Sakhalin Energy website)

3. AUDIT FINDINGS

3.1 HSE Management Systems

3.1.1 Communication, Training and Competency

Facility health, safety and environment (HSE) personnel provided information on the various Health, Safety and Environmental Management System (HSE-MS) mechanisms through which HSE information is communicated to Sakhalin Energy personnel and contractors on site. These include, but are not limited to: toolbox talks, safety alerts, weekly 'Townhall' Meetings, a monthly HSE Newsletter, quarterly HSE Forum meetings (which involve Asset management, HSE and discipline heads) and Safety Days. Information shared through these mechanisms includes: HSE performance metrics against target; incidents, breaches and lessons learnt; and topical issues (e.g. preparing for winter).

During discussions around induction and the onboarding process for new joiners, it was stated that the Sakhalin Energy HSE Competency Assessment should take place as soon as possible after an employee began work but it was permitted to take place up to six months after joining. It was not clear why this six month timeframe had been set. In reality, it was reported by Asset and Central HSE personnel that competency is a key consideration during the hiring process and that formal HSE competency assessments are usually completed much sooner than six months (i.e. within first month of employment). However, no data were available to verify this. During the site visit, and based on the information made available at that time, Ramboll Environ recommended an OFI whereby Sakhalin Energy re-visits this timeframe and considers reducing it to a maximum timeframe which is shorter yet still practicable. Following the site visit Sakhalin Energy provided further information on the HSE Competence Standard and the practical aspects associated with rotation workers. The Company further advised that for Level 1 HSE Critical positions, competency is managed by the CAP (Competence Assurance Programme). This response provides some explanation of the Company's approach to management of HSE competencies. However, before determining whether there still remains an OFI in this regard we recommend that further review of the CAP for HSE critical positions, including review of implementation and records, is undertaken by Ramboll Environ during the next site visit.

3.1.2 Compliance Assurance Systems

The Asset's Integrated Assurance Plan 2015 was reviewed and discussed during the audit. The plan is structured by the level of audit, as per Sakhalin Energy HSE Audit Procedure (from Level 1 external audits to Level 4 local HSE inspections).

The Asset has been subject to numerous Level 1 external audits and regulatory inspections already in 2015, including an ISO 14001 & OHSAS 18001 re-certification audit in February and regulatory inspections in February, April, May and September.

The next Level 2 audit was scheduled to take place in the second half of October 2015 and be conducted by a team from Sakhalin Energy Central HSE. It was reported during the audit that Sakhalin Energy is aware of the need to increase the pool of qualified HSE auditors within Sakhalin Energy to conduct Level 2 audits. Formal training is planned.

Several Level 3 exercises including Corporate Health Inspections, Corporate Industrial Environmental Control Inspections and Critical Contractor HSE Audits have been completed in 2015.

Facility HSE personnel reported that Level 4 Inspections are being conducted on a quarterly basis as per the plan and a sample of reports was provided to Auditors¹.

Opportunity for Improvement: There appears an element of uncertainty and inconsistency around the different levels within the Integrated Assurance Plan, in terms of the level and name of each exercise² and corresponding reports (i.e. "audit" versus "inspection") and who is responsible for developing the scope and leading each level (i.e. Central HSE or Asset HSE). Whilst it appears that the assurance plan is being implemented, this uncertainty/inconsistency meant that Ramboll Environ was not able to verify progress year-to-date (YTD) against the plan.

Reportedly, no significant audit findings arising from Level 1 and 2 audits of the LNG facility were outstanding on the Fountain system at the time of the audit.

From discussions with facility personnel, the Auditors identified that there may be an opportunity to promote shared learning if selected Level 3 and 4 audit/inspection action findings captured in the Asset-level HSE Action Tracking System should also be added to the Fountain system (i.e. where lessons can be learnt that are applicable to other assets). At the closing meeting of the IEC monitoring visit, subsequent to the audit, Sakhalin Energy management reported that this opportunity had already been identified by the Company and work was underway to alter the HSE-MS accordingly.

3.1.3 Incidents and Breaches

No significant environmental incidents or breaches have reportedly occurred related to LNG operations in 2015. Two minor incidents previously identified at the facility through the Company's quarterly HSE reporting to lenders were selected for review during the audit. However, due to time constraints, it was not possible to review the incident reports during the site audit and so incident details were provide post-visit for review. Review of these materials is provided below.

- Incident 1266707, lube oil spill, 11/10/14

A lube oil spill is reported to have occurred during de-spading work on Lube Oil Tank T-4010 at gas turbine GTG-1. The reports indicate that 150-200 litres of lube was spilled during the incident. The oil is reported to have been cleaned up using pumps and absorbent pads (while not explicitly stated in the incident report, we understand that the spill was contained within a hardstanding area). The actual environmental severity level was classified as 1, which, given that the oil was contained within secondary containment, is appropriate. Incident follow-up included a root cause analysis, following which three corrective actions were identified including changes to working procedures. Overall the reporting, immediate response actions and follow-up actions were appropriate. The information provided following the audit suggests that all three actions remain open/in progress, although this information appears to be out-of-date as the latest quarterly HSE report (Q2 2015) indicates that 2 of the 3 actions have now been closed.

- Incident 1283180, diesel spill, 5/11/14

It was reported that approximately 100 litres diesel were spilled at the TLU from the diesel tank for an emergency generator. The incident report does not state an environmental incident severity, nor provide any commentary on how the spill was cleaned up. However,

¹ Including Chemical Warehouse Inspection Reports from January and August 2015 (covering Rooms 101 to 107) and Waste Management Inspection Reports from July 2015.

² As an example, Item 13 in the plan presented was entitled "Level 3 - Corporate Industrial Environmental Control Inspections", when in fact it appears to have been a Level 2 audit conducted by Central HSE personnel. These exercises were reported to be the exercises, through which assurance of compliance with HSESAP requirements would be considered, where these were based on RF legal requirements (e.g. for air, water, waste, etc.).

according to the Q1 2015 HSE report to lenders the actual environmental severity level was classified as 1, which suggests that the oil was contained within secondary containment. There are some discrepancies between the information provided following the site audit and that presented in the quarterly HSE lender reports for this incident:

- o The Sakhalin Energy Risk Assessment Matrix (RAM) rating in the incident follow-up materials is stated as C2 Low, but as C3 Low Amber in the Q1 2015 HSE Lender report
- o The incident follow-up materials identify a total of 6 items, 4 of which were closed, while the Q1 2015 HSE Lender Report identifies a total of 2 actions, both of which were closed.

Opportunity for Improvement: Sakhalin Energy should ensure that all incident reports clearly identify the immediate actions taken in response to environmental incidents, including oil/chemical spills. The Company should also ensure consistent reporting within the lender HSE reports.

In addition, a minor incident involving a leak of hydraulic oil from a waste contractor's truck did occur in 2015 onsite, however, the oil was lost in a contained area and no release into the environment reportedly occurred.

3.2 Emissions to Atmosphere

The HSESAP specifies stack emission limits and monitoring for relevant emission. The principal emission sources are:

- GE Frame 5 main power generators (5 units)
- GE Frame 7 compressor drivers (4 units)

These units are subject to annual stack monitoring. The 2015 monitoring results for each of the above were reviewed during the audit and found to be in line with HSESAP limits.

Quarterly air quality monitoring is also required at 5 locations on the boundary of the sanitary protection zone (SPZ) around the facility. The 2015 monitoring results available to date (for quarters 1, 2 and 3) were reviewed and all measurements were within the HSESAP limits.

3.3 Noise

Noise levels are measured quarterly at the boundary with the nearest residential area, the Stroitel dachas, as part of Sakhalin Energy's "Quality of Life" monitoring programme. The most recent monitoring results (September 2015) were reviewed and found to be within prescribed limits.

3.4 Water and Wastewater Management

3.4.1 Sewage Treatment Plant

During the October 2014 monitoring visit by Ramboll Environ, it was observed that one of the permanent sewage treatment plant (STP) units was under maintenance. During the maintenance period, untreated sewage was being diverted to one of the older BR-200 treatment units via an aboveground temporary divert hose. This was raised as Finding WATER.15 in the lenders' Findings Log. At the time it was reported that the Company had already developed plans for a permanent underground pipe network to enable transfer of incoming sewage between the different units during maintenance periods.

During the current 2015 audit, the temporary divert hose was observed to be still in-situ between the two STP, seemingly contrary to update information provided by the Company in February 2015. The temporary hose crosses a number of storm water drainage ditches and was now observed to be exhibiting signs of wear and tear. During the audit, the Company reported that

as part of the Capital Expansion Projects planned for 2016, an upgrade of the Effluent Treatment Plant and Dehydration Unit is scheduled.

FINDING: The temporary hose represents a risk of a leak of untreated sewage to the environment and the longer it remains in used (now into its second year) the greater the risk of an incident (as the hose deteriorates and the chance of accident damage continues, e.g. by vehicle or storm). Sakhalin Energy has since advised that the hose is only in place during the summer period and only used during STP shut down or minor maintenance activities. It is reportedly visually inspected for damage before use and replaced if defects are found, and removed during the winter period. This finding will remain open until completion of the permanent underground pipework between the treatment units, due for implementation in 2018.

Opportunity for Improvement: A number of redundant buildings / infrastructure associated with defunct sewage treatment facilities used during the construction phase are still present in close proximity to the operational STP. The derelict condition of these structures (see Photo 1) poses a potential health and safety risk to personnel working in the area and we recommend that they be removed and the site area restored.

3.4.2 Monitoring data

Monthly monitoring is undertaken from discharges from the effluent treatment facility (via outfall 4) and the sewage treatment plant (via outlet 2). The monthly monitoring reports available for 2015 at the time of the site visit we provided and reviewed in detail by Ramboll Environ after the site visit. All monitoring was found to be undertaken in line with the HSESAP requirements and results were within HSESAP limits (note that coliform bacteria monitoring was not included in the monitoring data made available for review).

3.5 Waste Management

3.5.1 Waste Storage

The Prigorodnoye Production Complex generates a number of different hazardous and non-hazardous waste streams. In general, waste is stored on site to a very high standard. In all locations waste containers were observed to be in an excellent condition and were clearly labelled in Russian and English, including the relevant hazard class. Also, the segregation and containment of waste was generally very good.

Hazardous waste is collected in Building 10. During the audit, the building was observed to hold drums of spent lube oil, intermediate bulk containers (IBCs) of floating film from oil skimming, plastic crates for spent mercury wastes and batteries, and oil-contaminated sorbent materials. External to the building was an unsheltered but bunded storage area provided with a sump. This area is understood to be used for empty drum and IBC storage. Spill kit materials were present. We note that the eye wash kit was missing from Building 10 but was reportedly in the process of replacement at the time of the visit by the facility's doctor.

The building was well organised and housekeeping standards were observed to be high. The building was divided into hazardous and non-hazardous zones (separated by low bund walls, although a small 1cm gap was noted in one of the bund walls). In the non-hazardous cells, staff were using a compactor to compact non-contaminated cardboard and plastic.

Opportunity for Improvement: The Auditors observed a 205 litre drum of waste oil being delivered to Building 10 during the audit (see Photo 2). The drum was being transported in the bucket of a Bobcat vehicle without any form of strapping/device to secure the load. Furthermore, the slotted drain over which the vehicle was parked, whilst the drum was offloaded, was identified as a storm drain that discharges directly to a natural drainage ditch. Given the hazardous waste transfer activities that take place in this area, it is recommended that the

Company gives consideration to installing a pen-stock valve so that the drain can be isolated in the event of a spill.

At the time of the audit, work was ongoing to upgrade the non-hazardous waste storage area. In the interim period, the waste is stored in shipping containers.

Opportunity for Improvement: We note that little progress has been made to upgrade the non-hazardous waste storage area since the site visit in October 2014, and we recommend that efforts are made to ensure that the upgrade works are completed by the Company's estimated completion date of the end of December 2015.

The HSE Department conducts quarterly waste inspections, as part of the Asset's Integrated Compliance Assurance Plan, including in their scope the Yunona Camp before and after it was used during the summer turnaround.

3.5.2 Waste Management Systems

The HSE Department maintains very good waste tracking systems, which are used to monitor the amount of waste generated and stored on site and its disposal, and by the asset and Central HSE Department to prepare required regulatory reports.

A small sample of waste consignments was selected by the Auditors during the audit and were found to be clearly traceable in the tracking system and records.

It was reported that the logistics department checks the licenses of waste carriers and waste disposal companies to ensure that waste is handled by competent and approved organisations in accordance with the requirements of the HSESAP.

As of June 2015, the Company has moved to an electronic waste transfer note system. This has resulted in the Company ceasing to use the multi-copy paper waste transfer manifest forms. However, after the relevant information is filled in electronically the form is printed and two copies given to the waste transport contractor, of which one copy returns to the facility after disposal. The new system provides better tracking of waste generation and disposal and provides real time updates regarding waste disposal weights of each category with respect to permitted limits.

According to facility HSE personnel, no waste disposal limit exceedances have been recorded in the last two years. Future increases in waste generation due to maintenance activities (such as turnarounds) is forecasted in advance of the waste generation and permits are obtained accordingly.

3.5.3 Waste Minimisation

In comparison with previous Ramboll Environ visits, waste minimisation is now clearly a high profile issue at the facility and is discussed at senior management level (principally due to restrictions on remaining landfill capacity on the Island). However, while Hazard Class I and II wastes are exported to mainland Russia for destruction/treatment/recovery, a number of Hazard Class IV and V waste streams generated by the LNG plant are still sent for off-site disposal at the regional Korsakov Landfill.

Some wastes are recycled or reused such as:

- waste lube oil (Hazard Class III) is, in accordance with a protocol agreed with the Commercial Department, blended with crude oil at crude export system in a controlled manner;

- waste cardboard and plastic bottles (contract recently established); and
- food waste (given to a local farmer for animal feed).

Furthermore, the facility is compacting plastic, cardboard, sewage sludge and other domestic waste in order to minimise transport impacts and has established a Materials Disposal Group, which at the request of departments can undertake an assessment of opportunities for reuse before material or equipment is scrapped.

Opportunity for Improvement: It was reported that cut grass and other vegetation from grounds maintenance activities is disposed of to landfill. Given the capacity restrictions at Korsakov Landfill, opportunities to divert this organic waste from landfill should be explored (e.g. composted on site or provided to local farms). Sakhalin Energy has agreed to test options to divert fresh grass cuttings to a local farmer.

3.6 Management of Hazardous Materials

In general, the Auditors observed that chemical storage was well organised across the site, with secondary containment systems, material safety data sheets (MSDS), spill kits and eye wash stations available at relevant locations. The different storage facilities were either bunded or provided with sumps to capture spills.

In work areas, such as the vehicle lube station, chemical containers that were actively in use were situated in drip pans.

Opportunity for Improvement: Storage Room R101, which contained a large number of chemical drums, did not appear to have been designed for such a use (i.e. no sump or lip across the door). It appears that the room was originally designed for dry storage but ended up as mostly liquid chemical storage. The Company should pursue possible mitigation measures to bring it up to standard for liquid chemical storage. As a minimum, chemical drums should be stored further from the entrance (See Photo 3).

Two external bulk above-ground storage tanks (ASTs) were viewed during the audit; one for diesel (T4901) and one for Heat Transfer Fluid (HTF) (T4101). Both ASTs were situated in concrete secondary containment enclosures, which were observed to be in good condition, with no obvious signs of leaks or spills. Dedicated offload aprons were installed and spill kits for minor leaks/spills during loading operations were available at the location.

3.7 Occupational Health and Safety

While the focus of the audit was on environmental issues, occupational health and safety issues were noted during the inspection and discussed with site personnel.

In particular, the Auditors discussed management of health and safety during the recent summer turnaround when numerous additional contractors came on site. A number of measures were taken to ensure contractors were appropriately informed of Sakhalin Energy's HSE requirements and expectations:

- Specific HSE Plans were generated and implemented
- Specific risk assessments and method statements were put in place
- The Permit to Work system was rolled-out to contractors
- Isolation barriers were installed and access control measures implemented
- Emergency control systems were introduced
- Gas monitoring was undertaken
- Daily meetings with contractors' HSE representatives were implemented.

Furthermore, incidents from previous turnarounds were analysed and the lessons learnt. As a result, it was positively reported that zero HSE incidents directly attributable to the maintenance activities were recorded during the 2015 turnaround.

Opportunity for Improvement: While in general across the facility safety signage was observed to be good, the Auditors noted that the hearing protection sign was missing from the entrance to one of the two main STP buildings. The Auditors observed an operative accessing the building without using hearing protection. The sign was observed on the door to the other building.

3.8 Worker Accommodation

The worker accommodation facility, known as Yunona Camp, north of the LNG facility was not in use at the time of the audit. The facility was last used, in part, during the summer 2015 turnaround maintenance period. The next turnaround is scheduled for 2016 and will last 28 days. Sakhalin Energy reported that it was the choice of the contractor management as to whether or not to house their staff in the camp or in other accommodation (e.g. hostels) in near-by conurbations.

From a brief walkover of the camp conducted during the audit, it was clear that the camp is currently much reduced in size in comparison to its peak during the original LNG facility construction period. The Company was in the process of repairing substantial wind damage to buildings that was caused by a recent storm. Furthermore, electrical transformers were being upgraded along the intersection of the main access road through the camp and the perimeter security fence has recently been renewed. Other key plant and equipment such as water treatment equipment has been mothballed. The Company was also upgrading the cafeteria facilities at the camp at the time of the audit.

The residential units are reportedly intact and can be brought back into service at relatively short notice. Two accommodation units that were visited showed sufficient space for lodging, sufficient furniture and a good standard of sanitary facilities (e.g. two dormitory rooms per block, containing two sets of bunk beds, with one bathroom per room). Reportedly, there is clear segregation of male and female accommodation blocks. Buses are provided to transport workers to and from the LNG facility.

A sewage collection system is in place, which comprises gravity-controlled below grade collection tanks, however, no STP is in place. When the camp is operational, sewage is removed untreated from the camp and transferred to the LNG's STP via vacuum trucks. It is expected that along with all mothballed plant and equipment, the below grade tanks will be appropriately cleaned and inspected/tested for leaks before being brought back into service.

Company management reported that the camp would be subject to a total revamp before it was used to accommodate workers for future major construction projects (i.e. the Train 3 Project).

3.9 Port management

3.9.1 Overview

The Prigorodnoye marine facilities, including the LNG jetty, materials offloading facility (MOF) and TLU, are operated by the Joint Venture Port (JVP), which comprises Sakhalin Energy and the RF Port authority. The JVP is responsible for navigation, piloting, lighting and bathymetric surveys (and dredging as required).

3.9.2 Shipping

Four tugs operate at Prigorodnoye under long term charter, three for the LNG carrier operations and one for static tow of oil tankers. Oil export is performed exclusively by three long-term long term charter oil tankers; the TLU design precludes export on to the spot market as tankers need to meet specific specifications to moor/load from the TLU. LNG export is currently performed by five long term charter LNG carriers for Delivered Ex Ship (DES) export and by spot carriers for Free On Board (FOB) export.

All long-term chartered vessels are vetted to confirm compliance with applicable maritime standards by the JVP. To do this the JVP uses the services of external inspectors / databases, including the Shell Group Maritime Assurance System (GMAS) for larger vessels and the Offshore Vessel Inspection Database (OVID) for smaller vessels. Spot market LNG carriers are checked for eligibility prior to being allowed in to port using GMAS. JVP submits a request to Shell for a clearance assessment of each spot market LNG carrier before it is given permission to come into port. Recent sample pending and approved GMAS clearance checks were demonstrated on screen during the audit and found to be in order.

Tugs operate from the MOF, where crew changes take place, goods/materials are loaded and solid wastes offloaded (for disposal via the Prigorodnoye Production Complex waste management system). Loading arms are fitted on tugs (no cranes are provided at the MOF). Tugs are fitted with MARPOL compliant clean sewage systems. Refuelling of tugs is from a third party bunker vessel that is located outside of the 12 nautical mile limit.

No ship wastes are accepted from LNG carriers or oil tankers at Prigorodnoye. Oil tankers and LNG carriers are required to exchange ballast water in deep water 48 hours before arrival at Prigorodnoye. Ballast water exchange reports generated by SGS surveyors for all vessels recently visiting the port were provided shortly following the visit, confirming that checks are undertaken for every vessel and records are held by the Company.

3.9.3 Dredging

The JVP undertakes bathymetric surveys of the port and navigational channels. To date no maintenance dredging has been required since operation commenced. However, recent bathymetric surveys have revealed sedimentation build up around the MOF and LNG jetty, and according to the JVP personnel some dredging to an 8m depth may be required in 2016. Any maintenance dredging activities will need to be undertaken in line with HSESAP Dredging and Dumping Specification.

3.9.4 Site inspection

A visit to the LNG jetty not possible due to loading of an LNG carrier at the time of the site visit.

MOF found to be free from clutter clear of obstacles and no signs of oil contamination were identified.

Opportunity for improvement: heavy levels of guano fouling were observed on the MOF and we recommend that this be cleaned.

The oil spill response depot was observed. A detailed audit of equipment inventory was not undertaken in the scope of the audit. The depot and found to be tidy and well maintained. Access for vessel and equipment launches were in good order and clear of obstacles. Pre-loaded equipment trucks were also identified in the depot. Detailed audit of the equipment inventory was not undertaken.

3.10 Vehicle Refuelling Area

During the site inspection, works to upgrade the main vehicle refuelling area were observed. As part of the works the old underground storage tank (UST) had been removed and was reportedly being replaced by an aboveground tank. The removed UST was stored on unprotected ground adjacent to the refuelling pad. While the UST had reportedly been cleaned out, it would nonetheless be good practice to store it within secondary containment.

Brief visual inspection of the new construction works did not find evidence of any liner having been installed below hardstanding at location where the new tank is to be installed. However Sakhalin Energy has subsequently provided details of the vehicle refuelling station design, which incorporates a newly laid (since the October 2015 site visit) continuous concrete slab of appropriate thickness with hydrocarbon-resistant joints at the refuelling island. The perimeter of the refuelling pad is bunded by a 25cm high concrete kerb. The fuel tank itself is of double skinned construction and alarmed in the event of loss of containment. Accidental spills and potentially contaminated rainwater/snow melt are directed via an engineered gradient to a sump tank (enabling sampling) prior to containment in the main UST. We are satisfied with this design.

APPENDIX 1 PHOTO LOG

Title: Photographic Log	Client: Sakhalin-2 Project Finance Parties
Site: Prigorodnoye Production Complex	Date: October 2015



Photo 1. Derelict structures in close proximity to operation STP facilities



Photo 2. Waste oil drum transported by Bobcat – unsecured – outside Building 10 (over storm water drain)

Title: Photographic Log	Client: Sakhalin-2 Project Finance Parties
Site: Prigorodnoye Production Complex	Date: October 2015



Photo 3. Storage of liquid hazardous chemicals in Room 101 (not designed for such storage)

Title: Photographic Log	Client: Sakhalin-2 Project Finance Parties
Site: Prigorodnoye Production Complex	Date: October 2015

APPENDIX 2 DOCUMENTATION

LIST OF KEY DOCUMENTATION REVIEWED

- Prigorodnoye Production Complex - HSE Onboarding Handbook (undated), Sakhalin Energy.
- Prigorodnoye Asset Integrated Assurance Plan (2015), Sakhalin Energy, Updated: 10/10/2015
- Chemical Warehouse Inspection Reports from 27th January and 24th August 2015 (covering Rooms 101 to 107).
- Waste Management Inspection & Review Reports from 8th, 12th and 21st of July 2015 (covering LNG Facility and SD Camp).
- Prigorodnoye Asset Waste Management System (tracking spreadsheet), Sakhalin Energy, October 2015.
- HSES MS Audit Report 2015 – Contractor GE Rus Infra Contract No. Y02588 (Doc. No. 7000-S-90-04-M-002-00-E), June 2015.
- Incident report documents: incident 1266707
- Incident report documents: 1283180

APPENDIX 3 ITINERARY

ITINERARY

Monday 12 October 2015

09:00	Arrival
09:30–10:00	KO Meeting with Site Leadership Team
10:00-11:30	Visit to waste handling area, refuelling and washing areas, workshops, warehouses, vehicles garages
11:30-13:00	Visit to LNG production and OET storage areas, potable water treatment and wastewater treatment facilities
13:00-14:00	Lunch
14:00-17:00	Visit to port facilities and OSR depot (Hancox)
14:00-17:00	Yuona camp visit (Snow and Bochenski)

Tuesday 13 October 2015

09:00	Arrival
09:30–11:15	Interview HSE Representatives
11:15-12:30	Interview Operations Manager
12:30-13:30	Lunch
13:30-14:00	Interview Environmental Engineer
14:00-15:00	Interview Operation Reliability
15:00-15:30	Interview Environmental Monitoring
15:30-16:30	Close out meeting