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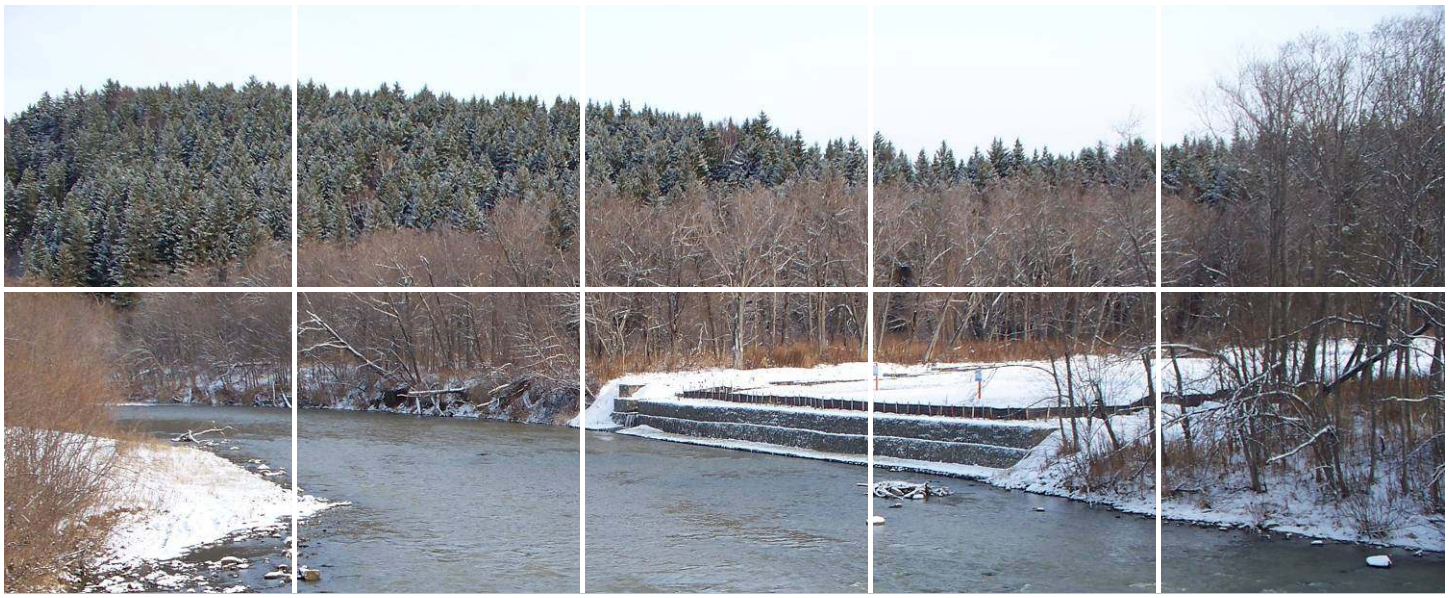

Lenders' Independent Environmental Consultant Site Visit Report: November 2008

Sakhalin II (Phase 2) Project

Report to Sakhalin II (Phase 2) Project Finance Parties

Restricted – Commercial
AEAT/ENV/R/2738 Issue 2
February 2009

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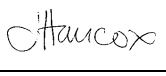
	Signature	
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List of Abbreviations

BOD	Biochemical Oxygen Demand
BVS	Block Valve Station
HDD	Horizontal Directional Drilling
HSESAP	Health Safety Environmental and Social Action Plan
IEC	Independent Environmental Consultant
IEMP	Interim Environmental Monitoring Plan
MEG	Mono Ethylene Glycol
MPE	Maximum Permissible Emissions
MSDS	Material Safety Data Sheet
OPF	Onshore Processing Facility
OSR	Oil Spill Response
OSRP	Oil Spill Response Plan
PAO	Permanent Accommodation and Offices
PMD	Pipeline Maintenance Depot
RemAP	Remedial Action Plan
RF	Russian Federation
RFSU	Ready For Start-Up
RoW	Right of Way
SPZ	Sanitary Protection Zone
STP	Sewage Treatment Plant
WUL	Water Use Licence

Table of contents

1 Introduction 1

2 Onshore Pipelines 2

2.1 Overview of Field Observations 2

2.2 Progress Against the Remedial Action Plan 5

3 Onshore Processing Facility 7

3.1 Pipeline Maintenance Depot 7

3.2 Wastewater Management 9

3.3 Sewage Treatment Facilities 10

3.4 Emissions and Air Quality 11

3.5 Solid Waste Management 12

3.6 Chemicals Management 13

3.7 Data Collection, Storage and Analysis 13

3.8 Camp Decommissioning and Demobilisation 14

4 Summary and Conclusions 15

Appendices

Appendix 1 List of Sites Visited

Appendix 2 Photographs

Appendix 3 OPF Personnel Involved in Monitoring Visit

1 Introduction

AEA Technology (AEA) is the Independent Environmental Consultant (IEC) acting on behalf of the lenders to the Sakhalin II Phase 2 project (the 'Project'). Under the Terms of Reference (ToR) of our engagement as the IEC, AEA and Lender representatives undertake periodic site monitoring visits to the Project. AEA has undertaken extensive field monitoring in Sakhalin since 2003 (see AEA report AEA/ENV/R/1376 for full details[1]) with the two most recent previous monitoring trips being undertaken in June and September 2008 (see AEA report AEA/ENV/R/2704[2]).

This report presents the findings of the site visit undertaken between the 5th and 12th of November 2008. The focus of the site visit was twofold:

1. Assessment of progress made on reinstatement of the pipeline right of way (RoW) and, in particular, progress made against the Remediation Action Plan (RemAP) for Rivers, Erosion Control and Reinstatement & Wetlands developed by Sakhalin Energy in response to non-compliance issues previously raised by AEA during the construction period (see AEA report AEA/ENV/R/1376). This monitoring visit focussed on the progress made since the September site visit (see AEA report: AEA/ENV/R/2704) at RoW locations in Sections 3 and 4 identified by AEA and Lender representatives (where appropriate, the discussion of RoW issues in this report references the September site visit report to avoid repetition). The full list of locations visited is provided in Appendix 1.

2. A monitoring visit to the Onshore Processing Facility (OPF), checking continuing compliance with HSESAP commitments. Our focus was on the operation of the facility itself, decommissioning of the construction camp and demobilisation of associated construction workforce, and assessment of the adequacy of handover from construction ('project') to operations personnel.

The November 2008 site visit focussed on environmental aspects; social issues will be addressed during future site visits.

[1] Sakhalin II Phase 2 Project Health, Safety, Environmental and Social Review; Independent Environmental Consultant Final Report – Agency Lenders; September 2007. Available from the Sakhalin Energy Investment Company Ltd. website: http://www.sakhalinenergy.com/en/library.asp?p=lib_sel_iecddr2007

[2] Lenders' Independent Environmental Consultant Site Visit Report: September 2008. Available from the Sakhalin Energy Investment Company Ltd. website: http://www.sakhalinenergy.com/en/library.asp?p=lib_sel_third_party

2 Onshore Pipelines

2.1 Overview of Field Observations

AEA inspected a range of locations along the pipeline RoW during the site visit (see Appendix 1 for full list). These were limited to Sections 3 and 4 of the RoW and a very short section of RoW near the OPF.

At the time of the visit, oil had been introduced to the pipeline in the northern sections, and all sections were "live" and operating under the Integrated Safe System Of Work (ISSOW) permit to work system. Environmental liaison officers have been working to raise the profile amongst local communities and businesses that the pipeline is now live.

Many areas of the RoW are also no longer accessible, largely due to progress made with reinstatement (it is good practice that final reinstatement often entails removal of the running track, and this naturally results in reduced access). This reduced accessibility now limits monitoring visits to views from access roads that either reach the RoW or cross it. Areas of continuing winterisation and reinstatement works with a running track still in place (such as in section 3B and 3C) were more accessible for that reason.

Sites to be inspected were identified by AEA on the basis of experience gained during previous field monitoring, and with a focus on key risk areas such as steep slopes, areas of particular geotechnical and engineering challenges and sensitive rivers. The most recent previous monitoring trip was undertaken in late September 2008. The sites visited during the November visit were selected (taking into account the above access limitations) in order to review progress made since September on the following subjects:

- Temporary erosion controls
- Permanent reinstatement of the RoW (including wetlands)
- Reinstatement of riverbanks.

2.1.1 General Reinstatement Works

As observed during the September 2008 site visit, the overall impression of the reinstatement and quality of erosion control works was generally favourable. The level of improvement and quality of work observed in the previous visit in September was again observed during the November visit, and included aspects of:

- Drainage controls
- Surface stabilisation
- Slope stabilisation and profiling
- Riverbanks reinstatement.

Each of these items was discussed in detail in the September 2008 site visit report. Since that visit, more work has been undertaken in all the above categories with on-going and recently completed works of winterisation and reinstatement being observed in Sections 3 and 4. In this report we concentrate on the works still in progress and on newly completed works since our last visit. The relevant findings are discussed below.

SECTION 3

Section 3 is divided into three segments A, B and C from north to south. Sites in each of the segments were seen during this visit.

Section 3A
Section 3A is the northern segment of Section 3. This segment is mostly flat with few low relief slopes, and works are mostly complete. Among the locations visited during the November visit we observed some sites in which works were recently completed. These include Goryanka River (KP 313), Mana River (KP 314), Klinovka River (KP 317) and Chulumyka River (KP 319). The Goryanka and Klinovka rivers provide examples of the scope and good quality of riverbank protection in this segment (Photos 1 and 2).

Section 3B
Section 3B is the most challenging of the three segments. It includes the Makarov Mountain region where the pipeline RoW crosses a series of rivers with very steep slopes. During this visit, we observed sites where technical reinstatement had been completed since the September 2008 visit and sites where reinstatement works were still in progress. Five sites of significant difficulty are described in more detail below. They are the riverbank crossing and the slopes of the Vidnaya, Kormovaya, Krinka and Lesnaya (3rd crossing) Rivers. The Varvarka Ridge, where side slope failure repair works required a detailed engineering design, was also inspected.

Vidnaya River and Slope – KP 343 – At the time of the visit, work was in progress on riverbank protection, which includes Reno mats and silt fences (Photo 3). The steep slope on the southern side has geojute fortified slope breakers and drainage control. While the RoW has been winterised, small erosional trenches are forming between the slope breakers on the southern side and should be monitored during the spring thaw. The northern slope of the Vidnaya River is part of Fault Crossing No. 11-14. The fault crossing has been hydroseeded and works are completed. Side cuts are sloped back, although remain unseeded and should be monitored.

Kormovaya River and Slopes – **KP 347 –** Crews were working at the Kormovaya River at the time of the November visit (the crews were reportedly at lunch during our brief visit, but ongoing works were evident). Reno mats were being reconstructed/repaired and new gabion walls were under construction. The bridge was still in place to allow workers to access both sides of the river. Use of the bridge appeared to be primarily foot traffic with no vehicles being driven onto the winterised northern slope. The bridge will reportedly be removed this year following completion of the above-mentioned works. Side cuts at Kormovaya have neither geojute nor any type of seeding. The northern slope has been winterised; biological reinstatement is planned for spring 2009 (Photo 4).

Krinka River and Slopes – KP 348 – Work has been undertaken on both slopes to the river, as well as riverbank protection. The slopes are equipped with armoured slope breakers and in the case of the northern slope, also with a subsurface drain. The riverbanks are protected with Reno matting and the river and the bridge are protected with silt fences (Photo 5). Works to date at the Krinka were found by AEA to be of excellent quality.

Varvarka Ridge – KP 364 – Work is in progress to repair the side slope of the ridge. This project required a detailed engineering design, which involved terracing the repaired slope with Terra Mesh steps (Photo 6).

Lesnaya 3 River – KP 376 – Work was recently completed on the steep slope to the south of the river, and the riverbanks are protected with gabion walls. The slope has slope breakers and drainage control (Photo 7), which AEA considers to be of good quality.

Section 3C
Section 3C is the southern most segment of Section 3. Within this segment the steep slopes (mostly the very southern portion) are already reinstated and protected with armoured slope breakers and are seeded. Good examples were seen at the Ssora and Tura rivers in KP 407 and KP 409 (Photos 8 and 9).

Further north, between KP 390 and KP 403, the riverbanks are protected and reinstated (rivers such as Zvanka River – KP 391 and Malakhitovka River – KP 395 (Photos 10 and 11). However, technical reinstatement of the RoW in this portion of Section 3C is still pending and the RoW includes a running track in place (Photo 10 and 11). This is mostly due to Sakhalin Energy concentrating its efforts on completing works on the high priority steep hills further south and the very high relief region of the Makarov Mountains in Section 3B.

The Zvanka River has riprap, Reno mat and recently repaired silt fencing. The bridge is still in place for access to the BVS. Malakhitovka River is similar except the silt fence on the bridge has failed, allowing relatively minor amounts of sediment to enter the river, and needs repair.

SECTION 4

Krasnaya River and Slope – **KP 461** – Works on the southern slope have recently been completed and are considered by AEA to be of good quality. The slope is currently graded to contour and protected with slope breakers and drainage control. The northern slope across the Federal road is fully reinstated and with grass cover from recent seeding. The river crossing is protected with Reno matting and with sediment control above the banks (Photo 12).

RoW and Side Slopes – **KP 483** – This location includes the river and a series of steeply cut side slopes. The riverbanks are protected by Reno mats and natural vegetation. Along the side cuts, Sakhalin Energy has implemented an engineering design to stabilise the cuts using gabion walls to build up the RoW elevation and reduce the overall impact of the cuts. The running track is still in place to provide access to the BVS at KP 482. This temporary track is due to be replaced in the future by a permanent access road (Photo 13).

Listvenitsa River and Fault Crossing – **KP 493** – Work at this site has been recently completed. The river is protected with Reno mats and the slope to the southern direction is graded to contour and has an extensive herringbone slope breaker arrangement and drainage control. The northern slope is part of the fault crossing and all works are completed. To the north of the fault crossing there are steep slopes that are graded to contour and protected with slope breakers and drainage control. The side cuts on the fault crossing are feathered back and covered with geojute (Photos 14 and 15).

KP 506 to 508 – Final reinstatement work-in-progress was observed in the area of KP 506 to 508. The works included the full range of reinstatement requirements: grading to contour, construction of drainage and slope stabilisation with slope breakers, fortification of slope breakers with geojute, and stabilisation of side slopes with geojute and Rubulon Green geotextile on side slopes (Photos 16 and 17). Seed bags were already present on site and reportedly manual seeding will follow completion of the earth works.

2.1.2 Wetlands

Due to the removal of most bridges in the area, only a very small section of RoW was accessible in the available time. A short visit from KP 155 to KP 164 was conducted. In general, the RoW was appropriately reinstated along this stretch. The RoW had been properly levelled and slope breakers with coco mat were in place where needed (very few were required in this fairly flat section). The running track was still in place along the stretch to access the BVS at the Nabil River. Edge Effect – an ecological term for damage to vegetation on the edge of a RoW or disturbed area newly susceptible to winds that other trees have blocked in the past – was evident along this stretch, as a recent storm had knocked over many trees on the edge of the RoW.

No true wetland areas are located within this section, with the exception of the Nabil and Orkunie Rivers. The Nabil (KP 164) was crossed using HDD and is therefore in a natural state approximately 100 m on either side of the river. Locals are using the access road to the BVS as a means to access the river for fishing. The Nabil is a taimen river and limiting fishing access would be preferred.

The Orkunie River (KP 167) requires further reinstatement work – one bank is protected with riprap and Reno mats, however the other side only has a silt fence, which will not be sufficient during the spring thaw. It was noted that the river is over three times its natural width at the crossing point, forming

eddies which will continue to erode the unprotected bank and may cause severe erosion during the spring. The steel bridge is still in place and requires removal. As riverbank reinstatement will be required in its place, it is recommended that the riverbanks both up and downstream of the bridge are reshaped on both sides at the same time, with placement of riprap and Reno mats to restore the river's natural shape and width.

We understand that further work will be undertaken when the bridge is removed, although confirmation of plans or scheduling could not be obtained during this visit. We believe the delay may be due to uncertainty with access to the Nabil BVS – the current temporary access may be constructed to be a permanent access road, in which case a new bridge will need to be built. In either case, the reinstatement surrounding the bridge will still need to occur.

2.2 Progress Against the Remedial Action Plan

2.2.1 Introduction

Significant improvements in reinstatement and erosion controls on the pipeline RoW were identified during AEA's previous monitoring visit in September 2008. Discussion and commentary on specific aspects of technical reinstatement, biological reinstatement, wetlands and riverbanks are provided in the September site visit report. While further progress was noted during the November 2008 monitoring visit, it remains that the rate of progress on reinstatement will not meet the RemAP target to complete all reinstatement of the RoW by end of 2008. We present below updated estimates, provided by Sakhalin Energy, showing the progress made towards RemAP targets at 31st October 2008.

We continue to recommend that, in the light of the actual progress made, Sakhalin Energy provides an update on the RemAP (for example as part of the monthly RemAP report) including:

- The progress made by the end of 2008 (in terms of areas signed off by Sakhalin Energy as RFSU, technically reinstated, and biologically reinstated)
- A realistic plan and timetable for completion of technical and biological reinstatement (including success criteria) prior to the spring thaw of 2009.

2.2.2 Technical Reinstatement and Winterisation of the RoW

As of 31st October 2008, Sakhalin Energy estimates that technical reinstatement had been completed for 574 km of 783 km of RoW[3]. This reinstatement has been signed off by Sakhalin Energy. This equates to 73% and is a significant improvement on the September 2008 completion figures of 56%. Sakhalin Energy also reports that 100% of the "ready for start-up" (RFSU) works on the RoW are now completed.

Sakhalin Energy was confident in September that almost 90% technical reinstatement would be completed by the end of 2008; this continues to remain partially dependent on weather conditions and the onset of winter, although significant effort was observed during this visit with crews working at many locations.

Work is still ongoing to stabilise the steep slopes (>10 degrees), involving addition of slope breakers, drainage control, geotextile reinforcements and hydroseeding. Reportedly, 69% of all the steep slopes are completed; the remainder are currently being winterised.

2.2.3 Biological Reinstatement

Although biological reinstatement was not included in detail in the RemAP, it was stated in the RemAP that Sakhalin Energy aimed to complete biological reinstatement by the end of 2008.

[3] Only fully completed RoW sections reported

At 31st October 2008, Sakhalin Energy estimated that 656 km of the 663 km RoW requiring seeding[4] had been completed – this equates to 99%. Table 1 shows a breakdown of seeding by pipeline section. These data refer to areas where seeding has been undertaken in 2008, and ongoing review of the success of this seeding in terms of actual re-vegetation will be required by Sakhalin Energy (including the development of re-vegetation success criteria).

Table 1 Seeding status at 31st October 2008 (data provided by Sakhalin Energy)

Section (Spread)	Length of Section / Spread	Seeding not required (Successful seeding 2007, TEOC wetlands, natural colonisation, etc)		ROW seeded where required	
	(km)	(km)	(%)	(km)	(%)
1A	56.8	13.5	23.8	43.3	100.0
1B	101.4	31.3	30.9	66.8	95.3
Northern Unit	**158.2**	**44.8**	**28.3**	**110.1**	**97.1**
Spread 1C	**93.0**	**4.9**	**5.3**	**88.1**	**100.0**
Spread 1CD	**6.9**	**0.6**	**8.6**	**6.3**	**100.0**
2A	76.1	18.4	24.2	55.1	95.5
2B	98.2	24.4	24.9	73.6	99.8
Section 2	**174.3**	**42.8**	**24.6**	**128.7**	**97.9**
3A	73.4	7.5	10.2	65.9	100.0
3B	43.3	0.0	0.0	43.3	100.0
3C	42.7	1.2	2.8	41.5	100.0
Section 3	**159.4**	**8.7**	**5.5**	**150.7**	**100.0**
Section 4	**191.7**	**19.0**	**9.9**	**172.4**	**99.8**
Total	**783.5**	**120.9**	**15.4**	**656.3**	**99.0**

The extent of actual re-vegetation was again seen to vary significantly along the RoW, reflecting the timing when the seeding occurred and the lack of topsoil in some areas. Further discussion regarding potential solutions to aid re-vegetation in areas where soil fertility is low and original topsoil has been lost is provided in the September 2008 site visit report.

Sakhalin Energy also reports that tree planting has been completed for 41 ha out of 79 ha (52% of the 2008 tree planting scope). Although tree planting is not part of the RemAP, it may be viewed as biological reinstatement. Nonetheless, it is important that all disturbed areas (for example deforested areas arising from reroute sections and around fault crossings) are appropriately reinstated as soon as possible.

2.2.4 Riverbank reinstatement

Under the RemAP, reinstatement of the riverbanks is due to be completed by the end of 2008. Work is currently completed or ongoing at 771 of 808 rivers, reflecting those rivers covered by 53 water use licenses. This equates to 95% and includes all 165 group 2/3 rivers, and 53 of the 54 critical tributaries. 628 (78%) are reportedly fully completed, 106 with remaining temporary bridge removal, 10 with some identified repairs, and 27 with work currently ongoing. Riverbank reinstatement at 37 lower priority rivers is planned for later in 2008.

Commentary on the quality of the riverbank engineering works observed during the November 2008 site visit is presented in Section 2.1 above. Future maintenance issues associated with the riverbank reinstatement works have previously been discussed in the September site visit report.

[4] 121 km out of 783 km does not require seeding (wetlands, natural colonisation)

3 Onshore Processing Facility

The OPF introduced first gas from the Molikpaq on 15th September 2008. During the OPF commissioning phase, this gas is used as a purge gas, for drying trains 1 & 2, and to power gas turbines A-4001A/B (commissioning due November 2008). Oil was introduced to the OPF on 4th November 2008.

The OPF has reportedly suffered from hydrate formation recently and had been running at reduced pressure for three weeks prior to AEA's visit. Mono ethylene glycol (MEG) is used on site to dehydrate the pipes and eliminate hydrates in the multiphase product. Sakhalin Energy is holding weekly learning sessions to share knowledge and discuss hydrate management at the facility.

A monitoring visit to the OPF was conducted by AEA between 9th and 11th November 2008 (effectively two working days). The lender group representatives were not present for this part of the monitoring visit. The OPF Project HSE Manager facilitated site walkovers and interviews with key HSE personnel.

AEA participated in an HSE induction and attended the Sakhalin Energy 'All Hands' HSE meeting, held every second Sunday of the month, involving all available Sakhalin Energy personnel. AEA was introduced to key HSE personnel at the OPF, who provided a series of short presentations and an outline of their role. A full day was then spent at various locations around the OPF, including the Pipeline Maintenance Depot (PMD), the Permanent Accommodation and Offices area (PAO), a small section of the RoW between the OPF and landfall and various locations around the facility itself. During the final morning, AEA spent more time viewing OPF locations and undertook a high level review of environmental monitoring, data management and reporting procedures through interviews with BETS and Sakhalin Energy personnel.

The OPF is currently in the process of transition from the 'Project' (construction) phase to 'Operations'. A Transition Inventory[5] for the OPF shows the items (both physical and information) to be transferred, requiring sign-off by both delivering and receiving parties. AEA recommends that as many Project personnel as possible be retained as the OPF moves into Operations to ensure continuity in quality and procedures.

The OPF will be subject to more detailed future audit(s) by the IEC, after the facility progresses from the commissioning to operational phase.

3.1 Pipeline Maintenance Depot

The OPF PMD was visited during the site visit. This building houses, *inter alia*, the oil spill response (OSR) equipment for the OPF facility and associated pipeline responsibilities. A severe storm the day before the visit had damaged the roof of the depot – while repairs were required, none of the OSR equipment within the building appeared to have been damaged. All emergency response equipment including OSR and fire fighting etc. is now the responsibility of Operations, including management, procurement and training. The provision of OSR equipment, procedures, training and personnel are described in this section.

Also within the depot is a vehicle maintenance facility and vehicle wash building, which were also visited and are described in this section.

3.1.1 Oil Spill Response

The OSR equipment held at the PMD was found to be comprehensive and appeared well maintained, neatly stored and in good order. Vehicles dedicated for OSR were pre-stocked with equipment and ready to mobilise in an emergency (Photos 18 and 19).

[5] Version seen dated April 08

Emergency response equipment for dealing with oiled wildlife could not be located at the PMD during the visit – OPF personnel were not aware of any such equipment or procedures, and AEA was advised that this specialty would likely be contracted out. The September site visit also noted that wildlife OSR equipment was yet to arrive at the Sovietskoye and Gastello PMDs. AEA understands that appropriate equipment and input from third-party specialists will be implemented soon. AEA recommends that PMD personnel should be kept informed of interim and future arrangements for wildlife OSR and that appropriate training is provided in equipment use.

A Russian language copy of the Sakhalin Energy Oil Spill Response Plan for the OPF was available in the PMD office. An English version was apparently held at the PMD but could not be produced at the time. Hardcopies of the Sakhalin Energy Oil Spill Response Handbook for the OPF were not available in either language, and AEA was advised that the responders would not use these in the event of a spill. (Each responder has an OSRL/EARL pocket handbook, which would be used in conjunction with the relevant Incident Specific Emergency Response Plan, held in the Emergency Command Centre. This issue is discussed further in the Emergency Command Centre section below.)

Personnel and Training

The Oil Spill Response (OSR) team at the OPF comprises responders from both the PMD and an external company, CREO. At the time of the September 2008 visit, the role of CREO personnel at other PMDs was unclear (see September 2008 site visit report for further details). However, it was very clear during this visit that CREO's role at the OPF is to support the PMD responders in Tier I situations as part of an integrated team. CREO personnel would not be acting as on-scene commanders in an emergency situation, nor would they be directing OSR exercises; CREO are expected to offer advice and support to the Sakhalin Energy-nominated commander. Their role also includes maintenance of OSR equipment at the PMD. The Maintenance and Integrity Manager did recognise that relationships are still being set up between Sakhalin Energy and CREO.

All personnel involved in OSR must undergo two mandatory training courses: an externally provided Russian Federation OSR course and an in-house Sakhalin Energy OSR equipment course. Both PMD and CREO personnel are trained in the same manner. Of the 61 current responders, 37 have so far taken the RF OSR course and 56 have taken the Sakhalin Energy equipment course. Records of staff training appeared well documented.

Large OSR exercises (organised by Ecoshelf) are currently undertaken annually, with smaller drills reportedly undertaken weekly. The most recent large exercise was undertaken in September 2008, which involved 18 OPF staff, observers and RF authorities. While the report was not available, AEA was able to view Sakhalin Energy's report for the previous exercise held in July 2007. This report identified the exercise's key successes, lessons learned and required actions with closeout deadlines, and had been endorsed by the Russian Ministry of Emergency Situations, MChS..

AEA has recommended to lenders that a specific oil spill visit to Sakhalin be undertaken in 2009.

Emergency Command Centre

While located in the PAO, the emergency command centre is the hub of emergency operations. A large, scale plan of the OPF was displayed in the room, with magnetic markers to track locations of fires and response teams in an emergency situation. Also displayed were an emergency command centre roster and an operations duty roster, identifying the commander, translator, responders, their roles and contact numbers (Photo 20). This had been updated three days before AEA's visit.

The emergency command centre contains shelves of neatly organised, clearly identifiable files holding Incident Specific Emergency Response Plans covering potential emergency situations at the OPF. These plans detail how to respond to individual incident types, for example one file is dedicated to dealing with diesel road tanker accidents. AEA was advised that these incident-specific plans would be used in the event of an oil spill, backed up if necessary by the full OSRPs. While the Operations HSES Supervisor was aware of the Sakhalin Energy OSR Handbooks, he advised that these would not be used.

Responders instead use a generic, compact, pocket-sized 'folder' as a quick and easy reference source for first response. These are issued to each responder by OSRL/EARL (OSR training providers). A copy is also kept in many response vehicles. Reasons for using these over the Sakhalin Energy OSR Handbooks include their compact size and ease of reference. A copy could not be obtained by AEA, as there were no spares.

3.1.2 PMD Vehicle Maintenance Building

A newly constructed vehicle maintenance facility is incorporated into the PMD. During the visit, we observed that the facility was very clean and well organised. Batteries were stored in a segregated room (Photo 21) and there were spill cleanup materials and segregated waste containers on site. Used oil is collected in a labelled container and recycled. The sub-floor work bay and concrete floor appeared very clean and stain free (Photo 22).

3.1.3 PMD Vehicle Wash Building and Wastewater Treatment

The PMD has an indoor vehicle wash facility. At the time of visit, the facility was very clean and appeared well organised (Photos 23 and 24). The facility has a closed system for the wash water. Wash waters are cycled through a dedicated water treatment unit within the building.

3.2 Wastewater Management

3.2.1 Drainage and Waste Streams

There are three wastewater streams at the facility (excluding sewage treatment discharge that is discussed in section 3.3). These include surface storm water collection system, process/technical wastewater, and wastewater originating in the bunded areas sump system. Each stream is further discussed below.

Open Storm Drain System

The facility has a drainage network consisting of open concrete lined ditches. The network covers all areas of the OPF and is gravity driven. Reportedly, there is no physical connection between any of the process facilities to the open ditch network; this was shown by a flow diagram presented by OPF personnel. Rain or melt water collected by the system flows freely to one of five outfall points outside the camp. The flow is not put through a separator and is not treated in any other way prior to release.

Process/Technical wastewater

Technical/process wastewater is generated from a variety of activities including: glycol regeneration, MEG contaminated water, MEG sump pumps, bundle cleaning facility and interim bundle cleaning facility. The wastewater from these sources is collected in a dedicated wastewater tank (T-2203) and from there the water is injected into disposal wells.

Open drainage of rain/melt water in process area

Stormwater from process open drain systems and bunded area sumps (Photo 25) are collected in a large multi stage separator and routed via a treatment system into the storm water overflow tank (T-2101). The water is then analysed; if clean, it is disposed as clean surface water and if not clean, or if analysis is not conducted, the water is routed into the technical/process wastewater tank T-2203 and injected into the disposal well.

Wastewater collected from the bunded areas of the future waste transit area (currently under construction and is scheduled to be operational in 2009) will be routed via the separator/treatment rout that is described above.

3.2.2 Disposal and Monitoring Wells

Disposal Wells

The OPF has two Injection Disposal Wells at the southwest corner of the site. The wells are used to inject technical and contaminated open drain wastewater from the process facility. The wells have insulation on the above ground metal parts and piping. They are situated within above ground structures, however without insulation of the structures and without doors at the equipment/maintenance access opening. The openings are covered with tarpaulin only and will not provide good protection in the winter (Photo 26).

Daily monitoring of wastewater sent to the disposal well (from T-2203) is undertaken, and measures temperature, flow rate and total injected. Samples are taken before discharge – if an exceedence is detected, the filter of the separator is changed and the wastewater separated again. No further monitoring of the disposal wells could be confirmed during the visit.

Monitoring wells

The OPF has 21 monitoring wells throughout the facility for monitoring the shallow groundwater – 13 wells located around the boundary of the OPF plant, plus eight wells located within the OPF site. In addition, we understand that there are two deep monitoring wells to monitor the impact of the injection disposal wells. An external subcontractor (MP Electra) monitors groundwater quality and levels once per quarter.

3.3 Sewage Treatment Facilities

There are three STP facilities at the OPF. Two of the facilities are functional – the large capacity BETS/Project facility that serviced the OPF throughout the construction process, and a newly commissioned PAO STP of much lower capacity. A third, low capacity facility was constructed within the process facility but has never been used due to inadequate volumes of effluent, not making its operation worthwhile. The three facilities are discussed further below.

3.3.1 BETS (Project) STP

The main STP facility within the OPF is the BETS STP, which currently treats all sewage from the OPF with the exception of PAO and PMD areas, which have their own newly commissioned facility (see section 3.3.2 below). The BETS STP was originally designed to handle effluent from 5,000 people, although has regularly had to treat effluent from 7,000 people. However, demand is currently decreasing as the construction phase draws to a close and project personnel are demobilised. Sewage is piped from the OPF into the BETS STP and trucked in vacuum tracks from the completed processing facility. Following treatment, the effluent is discharged off site.

The BETS STP facility was visited and found to be in good condition with a trained operator on hand (Photos 27 and 28). It has a small in-house bench laboratory that is able to analyse parameters such as nitrates, nitrites, phosphates and BOD_5 in real time (Photo 29). External contractors (DRC Group) undertake formal laboratory analysis of the discharged effluent on behalf of Sakhalin Energy once a month, as per RF regulations. Laboratory results indicate frequent exceedences of permitted concentrations of some parameters during 2008. Exceedences of suspended solids were noted early in the year, however falling within permitted levels more recently. It is understood that actions are considered in the event of an exceedence to prevent possible recurrence, such as changing to phosphate-free kitchen and laundry detergents, and clearing drains of excess sedimentation. However, of greater concern are the high levels of BOD, which have exceeded the permitted values every month in 2008 with only one exception. However, as the wastewater volume decreases with reduced workforce, the allowable residency time of wastewater at the STP should increase, resulting in lower levels of BOD upon release. (In addition, we note that the treated wastewater is discharged to the surrounding wetland (rather than to a stream) and this reduces the significance of elevated BOD levels.)

It is intended that the newly commissioned Operations STP will replace the BETS STP, however the BETS STP will be mothballed and retained for use during potential future project expansions. Mothballing of the BETS STP is currently planned for September 2009.

3.3.2 PAO (Operations) STP

A new, smaller STP has recently been commissioned, which is dedicated to the new PAO and PMD sections of the OPF. The unit has two parallel treatment cells and sludge compressor (Photo 30). The effluent is discharged in to the forest to the east of the facility, and the compressed sludge is disposed as solid waste by Ecoshelf.

When visited, it was found to be operating in good condition and with trained personnel. This facility does not have the in-house laboratory that was observed in the larger BETS STP. Operators advised that the STP performance is monitored on an approximately fortnightly basis (twice the monthly frequency required by RF regulations) due to its recent start-up; this was confirmed by viewing recent monitoring results for bacteriological and chemical parameters. It is understood that monitoring will move to monthly when Sakhalin Energy considers the STP to be fully commissioned and running normally.

Recent analyses undertaken externally by DRC Group indicate frequent exceedences of ammonium nitrate, nitrite and phosphate. Again, actions are reportedly taken in the event of an exceedence to prevent possible recurrence, such as using phosphate-free kitchen and laundry detergents.

3.3.3 STP Facility within the Process Facility

A third STP facility is located within the process facility (Photo 31). Reportedly, this STP has not previously been used, and may never be used due to too low effluent flow from the process facility. Currently sewage from the process facility goes via vacuum truck to the existing BETS STP. It is presumed that sewage will be taken to the Operations STP when the BETS STP is mothballed as planned, however this was not confirmed.

3.4 Emissions and Air Quality

3.4.1 Power Generation

Power generation at the OPF comprises:

- Two dual fuel turbines A-4001C/D currently on diesel, due to be commissioned on gas November 2008 (Photo 32)
- Two gas turbines A-4001A/B, due to be commissioned November 2008
- Diesel fire water pumps
- Diesel standby generators.

Turbine performance is monitored by measuring daily fuel consumption and undertaking chemical analysis of exhaust emissions. Monitoring of exhaust emissions is scheduled to be undertaken once per month by external subcontractor Sakhydromet. Results are reported to the Environmental Monitor, who enters these into a central spreadsheet called a “Log Book”. Any exceedences are reported to the data management advisor; operational engineers may also be advised and would be required to regulate the turbine operation in order to reduce pollutant emissions.

Results were seen during the visit confirming that monthly monitoring had indeed been undertaken in 2008 for the suite of pollutants shown in the Interim Environmental Monitoring Plan (IEMP, revision 04). Electronic copies of these results have been requested to enable AEA to examine and interpret further.

3.4.2 Vehicle Emissions

Sakhalin Energy is required to undertake annual monitoring of motor vehicle emissions during operations on diesel. Subcontractor Sakhydromet reportedly last undertook this monitoring in June

2008, although results are yet to be reported. These outstanding results should be followed up at the earliest opportunity.

3.4.3 Ambient Air Quality

At the time of AEA's visit, gas turbines A-4001A/B had not been commissioned, however gas was being used onsite as a purge gas and for drying trains 1 and 2. Flaring of this gas is necessary, although reportedly kept to a minimum. Emissions to atmosphere are calculated based on the volumes of flared gas.

Ambient air quality monitoring is undertaken at the OPF and within the designated Sanitary Protection Zone (SPZ). Quarterly ambient monitoring results of the pollutants listed in the IEMP (revision 04) were available for Q4 2007, and Q1 and Q2 2008.

The site visit timescale did not allow AEA to undertake a detailed investigation of ambient air quality results during the November visit; these have been requested by AEA. A detailed review of monitoring frequencies, recorded concentrations and actions should be planned and undertaken by the IEC during the next visit to the OPF.

3.5 Solid Waste Management

3.5.1 Temporary Waste Transit Area

The running and record keeping for the temporary waste transit area was found to be good at this visit, with the bulk waste of metal, general trash and wood wastes being separated in concrete bays and covered with a roof (Photo 33). The general trash from the OPF is transferred to the Nogliki upgraded landfill by Ecoshelf, and metal is taken for recycling in Yuzhno. The negotiation over gifting the wood for use in the local community is still ongoing – there are tax implications associated with proposed gifting, and it is hoped that these will be resolved soon.

Used drums are stored in separate concrete bays adjacent to a drum washing facility and are collected by Ecoshelf for disposal. Hazardous waste is also stored in separate, locked ISO (shipping) containers and with very few exceptions was found to be well labelled and segregated (Photos 34 and 35).

All waste is collected by Ecoshelf and transported off-site for disposal at a variety of disposal sites. As previously noted in the September 2008 site visit report, a contract is in place with Ecoshelf to collect and undertake final disposal of the wastes and arrange for the paperwork to be returned to Sakhalin Energy to complete their records. During the visit we observed the on-site waste registry that lists the type, quantity and shipment dates for waste disposal – this system was found to be well maintained.

3.5.2 New Solid Waste Transit Area

Sakhalin Energy is currently constructing a new solid waste transit area and associated facilities. Reportedly, the area will be operational in 2009 and will replace the existing temporary facilities. The overall area will include the following elements:

- Chemical and waste storage shelter
- Gas cylinder storage
- Waste handling building
- Oily waste handling area
- Bundle cleaning facility
- Warehouse.

3.6 Chemicals Management

3.6.1 Temporary Chemical Storage and Waste – Operations/Project

This facility is located in the southwest corner of the site, adjacent to the new waste transit area (under construction). The site is constructed of concrete base and bund and is shared by both Operations and Project activities. Chemicals associated with Operations activities are stored at the site in drums and IBC Totes (Photo 36). The other portion of the site is used by the Project personnel to temporarily store chemical waste in large Suttons shipping containers, which reportedly are due to be shipped in the near future to the mainland for disposal. This temporary storage facility will reportedly be discontinued when the under-construction Waste Transit Area becomes operational.

During the visit it was observed that the concrete base of the storage area was clean and free of stains. The bunded area also includes a closed sump to collect rain/melt water.

Chemical awareness courses are held for OPF personnel handling chemicals – this is a web-based learning course with questions to test knowledge and understanding. Records are held of those completing the course, and of those still needing to do it. To date, 68 of 109 personnel identified as needing training have completed this course.

3.6.2 BETS Chemical Warehouse

BETS operates a chemical storage warehouse. The warehouse was observed during the visit to be well organised, clean, and without stains on the concrete flooring (Photo 37). The majority of the chemicals stored comprised a variety of paint products. Also noted were drums of grease, oil and trichloroethylene (solvent). No handling of chemicals was noted on site. MSDS were present in organised folders on a dedicated shelf (Photo 38). MSDS were available in Russian, English and Turkish. The warehouse also included materials for the cleanup of spills and spill waste containers. This warehouse is proposed to be retained by the project expansion team.

3.6.3 Sakhalin Energy Commissioning Hazmat Storage Area

Sakhalin Energy Commissioning team is currently using a dedicated hazmat storage area. The site is constructed of concrete base and bund and includes drums and shipping containers. The shipping containers are used for the storage of smaller containers. The site was visited in the dark and it was not possible to view the condition of the concrete surface. The site is scheduled to be phased out as decommissioning is completed.

3.6.4 Diesel Storage Area

This area is currently used by BETS project team and is designated for mothballing. The site was visited and was found overall to be clean and well organised. There are six above ground storage tanks situated on a bunded concrete floor (Photo 39). Tanker trucks used to re-supply the above ground storage tanks park in a separate area also containing a bunded concrete floor with inclined ramps to allow vehicle access in and out.

An attached building houses the hand pump, which is used to refuel smaller vehicles (Photo 40). This is situated within the same bunded area. Inside the building, the concrete floor was clean with no evidence of leaks and secondary containment was used under joints in the piping and the hand pump unit. The actual hand pump was resting in its own secondary containment unit. Several large fire extinguishers were on-site and were easily accessible.

3.7 Data Collection, Storage and Analysis

The OPF has three main environmental permits (approvals), governing:

- Waste generation: with ‘Waste Disposal Limits’ and conditions
- Discharges to ground: with ‘Maximum Permissible Discharges’ and conditions

- Emissions to atmosphere: with 'Maximum Permissible Emissions' and conditions.

The OPF Environmental Management Plan includes the Interim Environmental Monitoring Plan[6] (IEMP), which outlines Sakhalin Energy's programme for environmental monitoring activities associated with early OPF operations on diesel. The scope of the proposed monitoring includes emissions to atmosphere, water supply and discharges, groundwater, waste, land (including soils and topsoil) and flora and fauna monitoring. The plan will reportedly be expanded to include additional facilities as they become operational and to accommodate fuel gas from PA-A and production hydrocarbons from Lun-A. Annex C of the HSESAP makes reference to the environmental monitoring programme in the IEMP.

The OPF Sanitary Monitoring Plan[7] outlines the RF Regulatory sanitary monitoring requirements for the OPF, and also addresses a number of monitoring requirements referenced within the IEMP.

The BETS Environmental Monitoring Plan[8] covers the majority of the environmental monitoring activities associated with construction (project) phase activities at the OPF site. Monitoring by BETS is still ongoing and results are obtained and reported in a similar manner to Sakhalin Energy results, described below.

The OPF HSES Compliance & Data Management Advisor maintains computer records of all the monitoring data for the site including the air, groundwater and waste records. These are used to monitor trends and produce the reporting required by both Sakhalin Energy and the regulator. Monitoring subcontractors (e.g. DRC Group, MP Electra, Sakhydromet) report results in Russian to the bilingual Environmental Monitor, who enters these into a central spreadsheet called a "Log Book". Exceedences of the permitted values are identified by the environmental monitor and reported to the data management advisor, who recommends investigative action if necessary. Exceeding the RF permitted values results in a penalty fine of five times the regular permit charge.

Data management at the OPF appeared very well organised and spreadsheets logging monitoring results could be quickly retrieved and were being updated in a timely fashion. At the time of AEA's visit, the current approved IEMP was Revision 04 (issued April 2008), although some monitoring was being undertaken to the updated monitoring timetables in Revision 05 (not formally issued at the time), making it difficult to assess compliance.

3.8 Camp Decommissioning and Demobilisation

The OPF is currently in the process of finalising the decommissioning plan. Although much is already decided, there is still some uncertainty regarding whether some structures and facilities are to be decommissioned, mothballed for use during potential future expansion works or remain active. The current categories of possible future outcomes are:

- Structure/Facility retained by Operation
- Structure/Facility retained by Expansion Project
- Structure/Facility retained by Expansion Project (pending confirmation)
- Structure/Facility retained by Operations (pending conformation)
- Structure/Facility first tranche demobilisation
- Structure/Facility phased rundown demobilisation.

At the time of the site visit, Sakhalin Energy was working with Version 3 (dated Oct 2008) of the decommissioning plan. Reportedly this is not a final version and more changes are possible.

[6] Current document: Sakhalin Energy Document No. 6000-S-90-04-P-7059-00-04
[7] Sakhalin Energy Document No. 6000-S-90-04-P-7086-00 "System of Industrial Compliance Control of Sanitary Rules and Realisation of Sanitary and Anti-Epidemic (Preventive) Measures for the OPF Site"
[8] BETS Document No. 24948-000-G01-GHX-00001-00F

4 Summary and Conclusions

The focus of the site visit was twofold: to report on progress made on the reinstatement of the pipeline RoW and against the targets set in the RemAP, and undertake a monitoring visit at the OPF.

Overall, a favourable impression was again gained of the reinstatement works being undertaken in sections 3 and 4 with noticeable reinstatement/winterisation work noted at some locations since the September site visit.

AEA's overall impression of the OPF was that it is a well-run facility with well managed environmental monitoring and data reporting procedures.

Notwithstanding the generally favourable findings of the site visit, a number of issues have been identified. These are summarised in the table below together with recommended actions for their resolution.

Table 2 Summary of issues and recommendations

Aspect	Issue/recommendation
Riverbank Reinstatement at Orkunie River (KP 167)	It was noted that the Orkunie River is over three times its natural width at the crossing point, forming eddies which will continue to erode the unprotected bank and may cause severe erosion during the spring. The steel bridge is still in place and requires removal. As riverbank reinstatement will be required in its place, it is recommended that the riverbanks both up and downstream of the bridge are reshaped on both sides at the same time, with placement of riprap and Reno mats to restore the river's natural shape and width.
Progress Against RemAP	We continue to recommend that, in the light of the actual progress made, Sakhalin Energy provides an update on the RemAP (for example as part of the monthly RemAP report) including: • The progress made by the end of 2008 (in terms of areas signed off by Sakhalin Energy as RFSU, technically reinstated, and biologically reinstated) • A realistic plan and timetable for completion of technical and biological reinstatement (including success criteria) prior to the spring thaw of 2009.
Transition to Operations	AEA recommends that as many Project personnel as possible be retained as the OPF moves into Operations to ensure continuity in quality and procedures.
Oil Spill Response	OPF personnel were not aware of emergency response equipment or procedures for dealing with oiled wildlife, and AEA was advised that this specialty would likely be contracted out. AEA understands that appropriate equipment and input from third-party specialists will be implemented soon. AEA recommends that site personnel at the PMDs should be kept informed of interim and future arrangements for wildlife OSR and appropriate training is provided in equipment use.
	AEA has recommended to lenders that a specific oil spill visit to Sakhalin be undertaken in 2009.
Disposal wells	The buildings' equipment/maintenance access openings are covered with tarpaulin only and will not provide good protection in the winter.

Appendices

Appendix 1: List of Sites Visited

Appendix 2: Photographs

Appendix 3: Personnel Involved in OPF Monitoring Visit

Appendix 1

List of Sites Visited

Location	Date	AEA / Lenders
Office Discussions		
Yuzhno kick-off meeting & HSE induction	05/11/08	All
OPF Introductory meeting, presentations & HSE induction	09/11/08	AEA
OPF close-out meeting	11/11/08	AEA
Yuzhno close-out meeting	10/11/08	Lenders
Yuzhno close-out meeting	12/11/08	AEA
Pipeline RoW (Section 4)		
Mereya River - KP614	05/11/08	All
Korsakovka River – KP608	05/11/08	All
Vodopyanovka River – KP603.4	05/11/08	All
RoW KP599	05/11/08	All
RoW – KP592.2	05/11/08	All
RoW – KP457 to 459	06/11/08	All
Krasnaya River – KP461	06/11/08	All
Slavnaya River – KP478	06/11/08	All
RoW to BVS– KP476	06/11/08	All
RoW and Side Slopes – KP483	06/11/08	All
Listvenitsa River and Fault Crossing 17 – KP493	06/11/08	All
Sovietskoye Ridge – KP503	06/11/08	All
Ai River – KP505	06/11/08	All
RoW – KP506 to 508	06/11/08	All
Pipeline RoW (Section 3)		
Travyanaya 1 River and slopes – KP419	07/11/08	All
RoW and slopes – KP414	07/11/08	All
Ssora River and slopes – KP407	07/11/08	All
River Tura KP409	07/11/08	All
Malakhitovka River – KP396	07/11/08	All
Zvanka River – KP391	07/11/08	All
Varvarka Ridge – KP365	08/11/08	All
Lesnaya 1 River – KP367	08/11/08	All
RoW – KP370 to 373	08/11/08	All
Zheleznyak River – KP372	08/11/08	All
Chinarka River – KP372.6	08/11/08	All
Lesnaya 3 River – KP377	08/11/08	All
Pulka Valley and Pulka River – KP353 to 356	08/11/08	All
Kormovaya River and Fault Crossing 15 – KP347	08/11/08	All
Vidnaya River and Fault Crossings 11-14	08/11/08	All
Gornaya River – KP341	08/11/08	All
Chulimka River – KP319	08/11/08	All
Klinovka River – KP318	08/11/08	All
Mana River – KP315	08/11/08	All
Goryanka River – KP313	08/11/08	All
OPF		
Onshore Processing Facility (various locations	09 – 11/11/08	AEA
RoW between OPF and landfall	10/11/08	AEA

Appendix 2

Photographs

Photo 1 – Goryanka River – KP 313 – View to the north showing Reno mats on the banks and reinstated RoW beyond the sediment control above the bank.

Photo 2 – Klinovka River – KP 317 – View of the riverbanks protected with Reno matting at the crossing and at the meander adjacent to the RoW. Also, note the graded RoW beyond the banks.

Photo 3 – Vidnaya River and Slope – KP 343 – View south showing armoured slope breakers and on going work on the riverbank. Photo taken from completed Fault Crossing No.11-14

Photo 4 – Kormovaya River and Slopes – KP 347 – View to the north showing pending winterisation on the northern slope. Gabion wall on the riverbank is in the process of construction

Photo 5 – Krinka River and Slopes – KP 348.5 – View south showing riverbank protection of reno mats and silt fences and both slopes with slope breakers. Note the growth of vegetation on the near slope, which was seeded early this year.

Photo 6 – Varvarka Ridge – KP 364 – Work in progress to stabilise the eastern slope of the ridge. The RoW is visible in the top of the photo.

Photo 7 – Lesnaya 3 River Crossing and Slope – KP 376 – View south showing completed winterisation works on the slope including slope breakers and drainage. The riverbanks are protected with gabion walls.

Photo 8 – Ssora River and Slopes – KP 407 – A view south showing the river with Reno matting and sediment control. The slopes on both sides of the river have armoured slope breakers and drainage.

Photo 9 – Tura River – KP 409 – View across the river to the southern direction showing the riverbanks protected with riprap and partial coverage of erosion control on the opposite slope.

Photo 10 – Zvanka River – KP 391 – The riverbanks are protected with Reno mats. The bridge and running track are still in place to provide access to the BVS.

Photo 11 - Malakhitovka – KP 395 – The riverbanks are protected with Reno mats. The bridge and running track are still in place to provide access to the BVS.

Photo 12 – KP 461 – Krasnaya River and Slope – view to the south showing the river protected with Reno mats and sediment control and the slope graded to contour and with drainage control.

Photo 13 – RoW and stabilised sidewall at KP 483 – The sidewall is stabilised with Terra Mesh and gabion walls. The RoW is graded but with only temporary road to the BVS.

Photo 14 – KP 493 – Listvenitsa River Slope – Note the extensive armoured slope breakers on the slope.

Photo 15 – KP 493 - Listvenitsa Fault – Completed fault crossing works. Note the feathered back side cuts with geojute protection.

Photo 16 – KP 507.5 - On-going grading to contour at KP 507.5. Note the Rubulon Green geotextile on the side cuts of the opposite slope.

Photo 17 – KP 507 – Completed geojute armoured drainage and slope breakers on the near slope. Note the Rubulon Green geotextile on the lower side cut above the Reno matting.

Photo 18 – OSR vehicle at PMD, pre-stocked and ready for mobilisation

Photo 19 – Tracked OSR vehicles at PMD

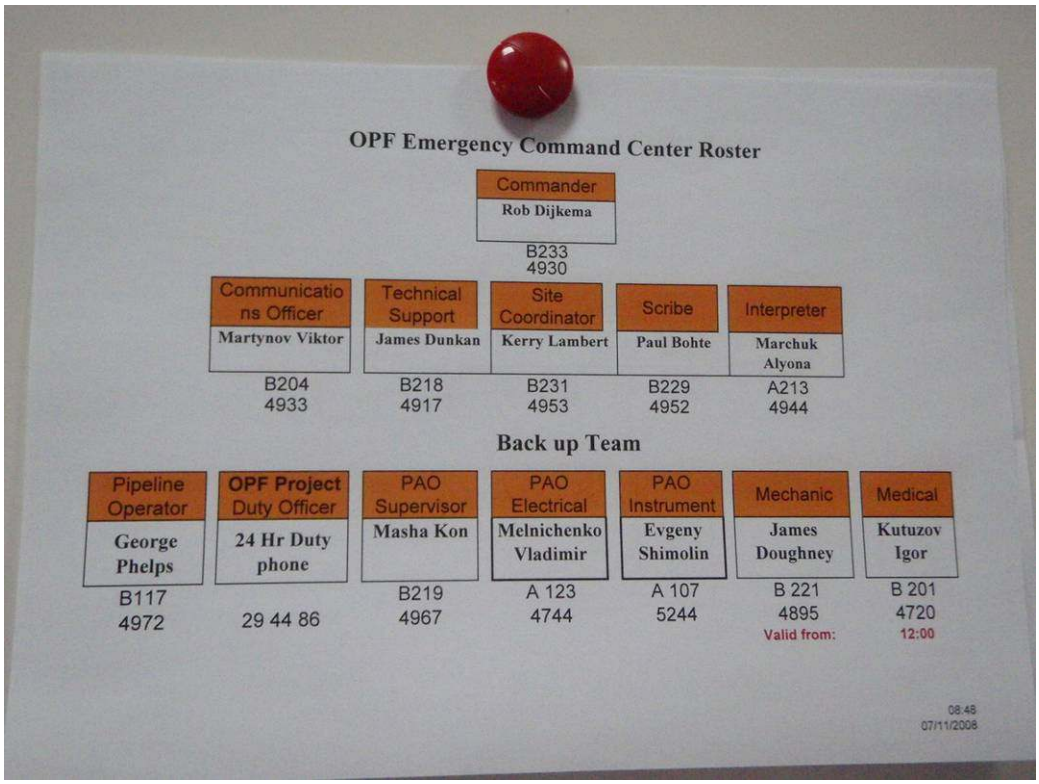
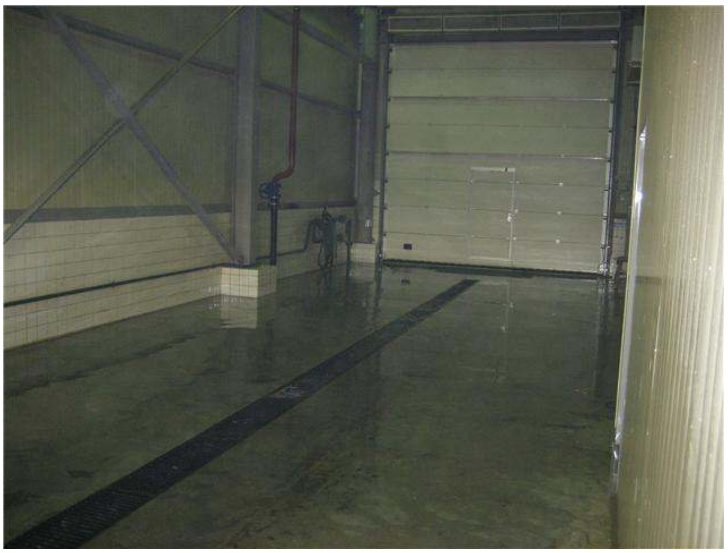


Photo 20 – OPF Emergency Command Centre roster showing roles, responsibilities and contact numbers

Photo 21 – PMD vehicle maintenance building: segregated battery storage area

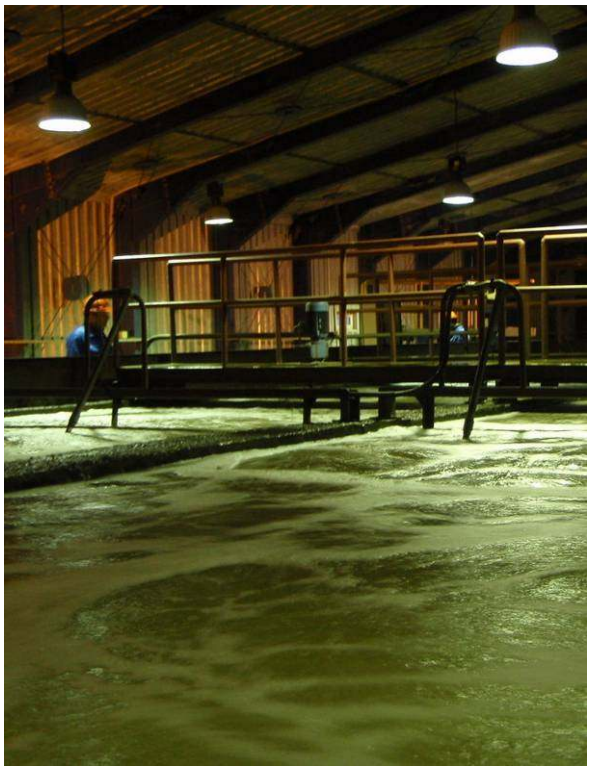
Photo 22 – PMD vehicle maintenance building: sub-floor work bay



Photos 23 and 24 – PMD indoor vehicle wash building and wastewater treatment

Photo 25 – Diesel storage tank within open bunded area – rain/melt water in drainage sump leads to multi-stage separator, through treatment system, into storm water overflow tank

Photo 26 – Structure housing injection disposal wells – note tarpaulin-covered openings



Photos 27 and 28 – BETS STP facility

Photo 29 – Small scale, real-time chemical analysis at the BETS STP

Photo 30 – Operations STP (for PAO and PMD)

Photo 31 – OPF process facility STP, not used

Photo 32 – Power generation turbines: A-4001C/D (left of picture) currently on diesel, and gas turbines A-4001A/B (right of picture) due to be commissioned November 2008

Photo 33 – Segregated waste storage bays at temporary waste transit area

Photo 34 – Hazardous waste in locked ISO containers

Photo 35 – Typically tidy storage of waste within ISO containers

Photo 36 – Temporary chemical storage area, shared by project and operations teams

Photo 37 – BETS chemical storage warehouse

Photo 38 – Easily accessible MSDS and stocked spill kits (blue drums, right)

Photo 39 – Diesel storage area

Photo 40 – Indoor diesel hand pumps at diesel storage area

Appendix 3

OPF Personnel Involved in Monitoring Visit

OPF Position
Operations Head of Maintenance
QA and Integrity Manager
OPF Installation Manager
Maintenance and Integrity Manager
Environmental Coordinator
Senior Site HSE Coordinator
OPF Project HSE Manager
HSES Compliance and Data Management Advisor
Sakhalin Energy Environmental Monitor
OPF Head of Operations
BETS Environmental Monitor
Pipeline Operator
Commissioning Manager
Operations HSES Supervisor
OPF Training Co-ordinator

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