ENVIRONMENTAL MANAGEMENT AND
ENVIRONMENTAL PROTECTION POLICY

EXXON NEFTEGAS LIMITED
SAKHALIN-1 PROJECT OPERATOR

ExxonMobil Corporation Subsidiary

2018
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1 INTRODUCTION

Exxon Neftegas Limited (hereinafter – ENL, Company) is a subsidiary of ExxonMobil Corporation - a world leader in the oil and gas and petrochemicals industries which continually improves its financial and operating performance and upholds the highest standards of business ethics.

In its activities, ENL strictly follows ExxonMobil Corporation principals of business conduct, such as compliance with all applicable laws and regulations, respect for local and national culture, considering the most important tasks - to ensure industrial safety and environmental protection in the area of works.

The company seeks to attain the highest level of competitiveness across all of its business streams while researching and embracing the latest achievements and developing its proprietary technologies.

The aim of this report is to provide information about the policy and key aspects of environmental performance of ENL as it develops oil and gas fields as part of the Sakhalin-1 Project, about the efforts to prevent and mitigate potential environmental impacts from this project, and about 2018 environmental performance indicators.

Information has been provided to the public throughout the entire project implementation period. The Sakhalin-1 Project website at www.sakhalin-1.ru publishes and regularly updates information about the project itself, job opportunities, contract awards, public engagement, safety, health, and environment.

Being a subsidiary of ExxonMobil corporation, ENL performance is reflected in ExxonMobil corporation Sustainable Development Reports posted on www.exxonmobil.com (in English) and at www.exxonmobil.ru (in Russian). Sustainable Development Reports have received an assurance statement from Lloyd’s Register Quality Assurance, Inc. (LRQA) to the effect that ExxonMobil reports conform to the requirements of the International Petroleum Industry Environmental Conservation Association (IPIECA) and the American Petroleum Institute (API). The LRQA Assurance Statements are posted on www.exxonmobil.ru.

Environmental Resources Management Inc. (ERM) performed an audit and confirmed conformance of ExxonMobil corporation Sustainable Development Report to the G4 Guidelines for Sustainability Reporting issued by Global Reporting Initiative (GRI) and to UN’s Sustainable Development Goals (SDG). The Compliance Table in Russian is posted on www.exxonmobil.ru.

Over the recent 10 years, the External Advisory Public Commission on Sustainable Development has been providing its expert conclusions on the ExxonMobil corporation reports related to sustainable development and business transparency issues. The External Advisory Commission is made up of academicians, representatives of non-governmental organizations, and experts with experience in various fields related to environmental protection and state management activities.

2 OPERATIONS INTEGRITY MANAGEMENT SYSTEM

ENL, strictly following ExxonMobil corporation business conduct rules, remains steadfast in its commitment to excellence in safety, security, health and environmental (SSH&E) performance, referred to collectively as “Operations Integrity”.

Operations Integrity Management System (OIMS) of ExxonMobil corporation, the methods and rules developed to comply with its requirements are binding on all Exxon Mobil divisions and are fully complied with by Exxon Neftegas limited. Detailed information about OIMS is published on the website www.exxonmobil.ru

The best way to manage the integrity of business is through a capable, committed workforce coupled with policies, practices and management systems designed to enable safe, secure and environmentally responsible operations.

OIMS is the cornerstone of ENL commitment to managing risk factors and achieving operational excellence.

OIMS establishes a common framework for addressing SSH&E risks. At the corporate level, the OIMS framework is built around 11 elements, as illustrated below, each covering a key aspect of risk across the breadth of ENL operations. Each element is comprised of a number of expectations, 65 in all. These elements provide greater detail about OIMS implementation mechanisms.

OIMS element 1 — management leadership, commitment and accountability — outlines the expectations of managers as they lead their units through the implementation of OIMS principles. OIMS element 11 — operations integrity assessment and improvement — describes the requirements associated with how each operating unit evaluates the extent to which it is meeting the expectations of OIMS. These two elements are often referred to as the “bookends” of OIMS, with element 1 being the “driver” and element 11 providing the feedback mechanism to ensure continuous improvement. Elements 2 through 10 address the operational, day-to-day aspects of OIMS, such as risk management, facilities design, construction and personnel management and training.

All operating organizations are required to comply with the requirements and to conform to the expectations described in OIMS by operating in accordance with the OIMS guidelines to ensure the 11 elements and 65 expected results or targets are consistently met.

OIMS includes a systematic, disciplined approach to measure progress and track accountability across business lines, facilities and projects. To drive continuous improvement, the evaluation of opportunities to improve the OIMS framework is conducted periodically in order to review and upgrade it.
Since the inception of OIMS in ExxonMobil corporation in the early 1990s, the lost-time incident and marine spills rates have been significantly reduced, and it was also demonstrated a remarkable decline in emission reductions.

**OIMS quantitative performance indicators, part of which are the corresponding indicators of ENL, are published in Sustainable Development Report and are available in Russian language on the web site** [www.exxonmobil.ru](http://www.exxonmobil.ru).

ExxonMobil Corporation has been certified by Lloyd’s Register Quality Assurance, Inc. (LRQA), confirming that the Operations Integrity Management System is compliant with the international standards ISO 14001 and OHSAS 18001.

ExxonMobil has been cited by Lloyd’s Register Quality Assurance (LRQA) for “being among the leaders in the extent to which environmental management considerations have been integrated into our ongoing business practices.”
3 ENVIRONMENTAL MANAGEMENT

Environmental management is part of the overall OIMS. The environmental management system has a clear organizational structure and aims at achieving the provisions specified in the environmental policy by implementing environmental protection programs and activities.

The Environmental Aspects Assessment (EAA) process allows the Company to systematically identify, assess, manage and monitor environmental and social risks throughout the life cycle of the assets.

Assessment of the environmental aspects of business operations is the principal OIMS mechanism for risk assessment and management as well as a key element of the process of planning the aspects of the Company's environmental performance as prescribed by OIMS. Illustrated below are the interconnections of the key corporate policy components, expectations, systems, and guidance documents with the processes of assessment of the environmental performance aspects of business operations and planning of nature conservation activities.

The Company periodically reassesses the background condition of the environment depending on the complexity of operations and any sensitive elements of the environment that may be present. Reassessment of the background condition is performed by a cross-disciplinary team comprised of professionals with appropriate knowledge and expertise in engineering research, operations, public relations, and environmental protection. The chart below shows the aspects of environmental protection management procedures:
Assessment of the environmental performance aspects of the Company's operations involves studying alternative work schedule, facility locations, or technologies. For existing facilities and ongoing operations, the results of identification and assessment of the environmental performance aspects serve as the primary guide to choosing the priorities in planning of operations and finding opportunities for improving environmental performance.

For example, during the marine operations in Piltun Bay the following key mitigation measures for protection of grey whales were implemented:

- The sealift operations were conducted in the earliest possible time after ice clearance, before arrival of the main herd of grey whales;
- Vessels permissible speed limits were established;
- The sea tug waiting site was extended toward open sea to increase the distance to the whale feeding area;
- Equipment for real time acoustic monitoring was used to control noise permissible indicators;
- Onshore infrared (IR) system was used for detection of whales' location and taking appropriate measures to enforce whales protection.

The Company's environmental performance planning process is implemented with a view to establishing nature conservation indicators, monitoring compliance and tracking changes. Plans for nature conservation, socioeconomic, and public health activities are developed and implemented throughout the development and production phases of a project to minimize environmental and social risks.

The Company integrates stakeholder feedback and results of scientific research into the processes to ensure we operate in a safe, environmentally-friendly, and socially responsible manner.
4 ENL ENVIRONMENTAL PROTECTION POLICY

The environment policy of ExxonMobil corporation calls for doing business in a way that maintains a balance between the environmental and economic interests of population and host countries where the company operates. The Company is at all times committed to improving its environmental performance across all assets on a global scale.

In line with these expectations, the key principles of ExxonMobil corporation worldwide environment policy include:

- Complying with all applicable environmental protection laws and regulations, and applying responsible standards where such laws and regulations do not exist;
- Cultivating a caring and respectful attitude toward the environment, making each employee more accountable for environmental protection and putting in place appropriate industrial practices and personnel training;
- Cooperating with the public authorities and industry groups to draft in a timely manner, effective science-based environmental protection laws and standards, taking into account risk, cost and benefit analysis, including energy-saving and product supplies;
- Managing business operations so as to prevent incidents and monitor harmful emissions and waste and keep them within safe limits;
- Designing, operating, and maintaining facilities in a proper manner;
- Promptly and effectively responding to incidents caused by the Company's operations in cooperation with industry regulators and public authorities;
- Conducting and sponsoring research aimed at improving the understanding of potential industrial impacts on the environment, improving the environmental protection practices, and helping the company to make its operations and products more compliant with nature conservation standards;
- Liaising with the public in matters of environmental protection and exchanging experiences with a view to improving overall industry performance;
- Undertaking appropriate reviews and evaluations of operations to measure progress and to ensure observance of the principles outlined herein;

The principles of ExxonMobil's environment policy are incorporated into the internal regulatory document, Standards of Business Ethics, published at www.exxonmobil.ru.

ENL develops resources as part of the Sakhalin-1 Project proceeding from the principles of environmental responsibility, which call for preventing or mitigating potential environmental impacts through the use of design solutions based on the latest technologies and carefully planned impact prevention and mitigation efforts. ENL pursues continual improvement of its environmental performance and commits to ever-increasing quality standards in its nature conservation activities.

Accordingly, ENL’s policy is aimed at:

- Complying with all applicable environmental protection laws and regulations of the Russian Federation and the application of principles of environmental responsibility in those cases where such laws and regulations do not exist;
- Honoring obligations under the Production Sharing Agreement and submitting complete information about operations and Sakhalin-1 Project implementation plans to the Russian inspection and oversight authorities;
- Working with the Russian public authorities and industry groups to foster timely development of legislative acts that effectively regulate environmental protection issues based on sound science and considering risks, costs, benefits, and effects on energy and product supply;
Assessing industrial and environmental risks as well as the risk of potential socioeconomic and public health impacts across the facility design, construction, operation, and abandonment phases as well as planning and implementing risk mitigation measures;

- Preventing and mitigating potential effects of cumulative and transboundary impacts;
- Conducting a comprehensive assessment of potential environmental, socioeconomic, and public health impacts during the facility design, construction, and abandonment phases;
- Conducting additional risk assessments for environmentally sensitive territories; developing and applying appropriate additional protection measures for operating areas potentially vulnerable to enhanced risks to biodiversity and/or biological species by thoroughly studying the area’s environmental set-up;
- Ensuring effective environmental performance, including:
  - Implementing a program to protect biodiversity and ecosystems;
  - Preserving migration routes of wildlife;
  - Improving the water management systems;
  - Reducing air pollutant emissions;
  - Reducing landscape fragmentation;
  - Performing reclamation and remediation of disturbed lands;
  - Monitoring and reducing fuel and lubricant leaks;
  - Monitoring and using effective waste management processes and neutralizing waste.

- Conducting systematic industrial environmental supervision and environmental monitoring;
- Devoting particular attention to incident prevention across all project phases;
- Inspecting, repairing and maintaining pipeline routes;
- Responding quickly and effectively to incidents resulting from project operations in cooperation with industry organizations and public authorities;
- Avoiding operations in areas of specially protected natural territories, their protection zones, world heritage sites, wetlands of international importance (Ramsar);
- Developing the environmental office initiatives;
- Improving the energy efficiency of production processes;
- Continuing to promote a sustainable and caring attitude toward the environment of Sakhalin Island, making each company employee accountable for environmental protection in the workplace, putting in place appropriate work processes and conducting regular professional and environmental staff training;
- Conducting and sponsoring research to improve understanding of the impact of the Sakhalin-1 Project on the environment, to improve methods of environmental protection, and to enhance capability to make operations and products compatible with the environment;
- Promoting a policy of respect for the interests and rights of indigenous minorities of the North and maintaining a constructive interaction with representatives of indigenous people local communities. Planning the Company activity considering the traditions of natural resources use;
- Maintaining a dialog with the local community in matters of environmental protection, sharing ENL experience with other organizations;
- Undertaking appropriate reviews and evaluations of its operations to measure progress and to ensure compliance with this policy;
- Applying the principles of the corporate environment policy to operations of contractors;
- Requiring higher environmental performance from the company’s transportation means including from those of contractor companies;
- Prohibiting the Company’s employees (including those of contractor companies) from hunting, fishing and collecting wild-growing herbs in the area of operations.
5 COMPREHENSIVE ASSESSMENT OF SAKHALIN-1 PROJECT
POTENTIAL ENVIRONMENTAL, SOCIOECONOMIC, AND
PUBLIC HEALTH IMPACT

ENL has been conducting comprehensive assessments of its impacts on the environment, socioeconomic conditions, and public health as part of the Sakhalin-1 Project across all phases – from construction to abandonment:

- in preparing materials for Justification of Investments in the Sakhalin-1 Project – Phase 1 “Development and Production” in 2001;
- in preparing the Sakhalin-1 Phase 1 TEO Construction for Chayvo and Odoptu Field Development in 2002-2004;
- in preparing the design package for Phase 1 of Odoptu Field Development in 2007-2008;
- in preparing the Arkutun-Dagi field development plan in 2008-2010.
- in preparing the design package for the Stage 2 of Odoptu Field development, including infrastructure development projects, during the period from 2013 up to now.

ENL activities in the Russian Federations strictly comply with the current legislation requirements including Federal Law #7-FZ of January 10, 2002 “On Protection of Environment”. Being the fundamental in the sphere of environmental legislation, this law establishes the basic principles of the state environmental protection policy, regulations and approaches to protection of environment including the environmental requirements for operation of oil and gas producing facilities.

The environmental sections of design documentation are developed based on the existing regulatory framework of the Russian Federation with account for international requirements and experience, including the experience of application of the best available technologies.

The principal methods used for environmental impact assessment in the Russian Federation are as follows:

- “Normative approach” based on comparison of the regulatory values (standards) of the environment quality with the corresponding background and design indicators of the impact on the environment during the project implementation;
- Ecosystem approach, which includes an assessment of anthropogenic factors of impact on the ecosystems and populations with account for their actual space-time habitat scale and the natural reproduction characteristics.

The process of a comprehensive assessment of impact on the environment, socioeconomic conditions and public health is based on a systemic approach and includes the following main elements:

- Research and analysis of the environmental and socio-economic background conditions before planning project operations;
- Analysis of the potential environmental impact of the proposed activity and evaluation of its significance at all stages of the project, from planning to implementation and abandonment;
- Consultations with stakeholders concerned with the environmental, social, economic, and other aspects of the proposed activity with a view to find mutually acceptable solutions;
- Submission of materials of a comprehensive EIA for approval by the relevant public authorities. The company received favorable state environmental expert review
conclusions or/and Glavgosexpertiza of Russia expert conclusions in compliance with RF legislation requirements;

- The use of impact assessment results in the decision-making process relating to the proposed activity.

In conducting a comprehensive assessment of the potential impact of the Sakhalin-1 Project on the environment, all the environmental components are considered, including air, surface water and water resources, geological environment, soils, vegetation and wildlife. Special attention is paid to protection of wildlife rare species, as well as critical habitats and sensitive ecosystems.

The development of measures to mitigate the potential impact is one of the main components of the EIA process.
6 POTENTIAL ENVIRONMENTAL IMPACT PREVENTION AND MITIGATION

In the development of measures to prevent the impact and environmental protection programs, ENL uses the experience of other international oil and gas projects in regions with sensitive natural resources and places where indigenous peoples live. The applicable mitigation measures that had proven effective in other regions of the world were selected and adapted to the specific conditions of the Sakhalin-1 Project implementation region in the context of legal regulation in the Russian Federation.

In the development of environmental protection measures by ENL, sources of impact are identified, their characteristics that affect environmental components are studied, and, if necessary, numerical modeling of the spread of pollution is performed. Modeling was done for the most intense operation and the worst weather conditions.

Based on the results, measures are developed to ensure compliance with environmental and health standards of the Russian Federation.

6.1 Air Quality Protection

Measures to Reduce the Negative Impact on Air Quality

- Use of modern vehicles, construction machinery, and equipment in proper operating condition;
- High-quality maintenance of vehicles, construction machinery, and equipment;
- Optimizing traffic and the operation of process equipment;
- Use of high-quality fuel (conforming to GOSTs);
- Use of methods of integration of structures and improvement of the technological availability of structures and materials;
- Equipping flare stacks with devices for soot-free combustion;
- Sealing of process equipment;
- Use of high-seal-class shutoff and control valves and connections;
- Cleaning dust-containing emissions from the bulk handling pneumatic system;
- Use of incinerators with exhaust gas afterburners;
- Onshore and offshore pipeline burial.

Program to Reduce Greenhouse Gas Emissions

Under the Program for Environmental Protection and Environmental Monitoring, in order to reduce greenhouse gas emissions ENL conducts the following types of operations for utilization of associated petroleum gas:

- Reinjection of produced gas;
- Providing gas for outside customers (Khabarovsk Krai);
- Use of produced gas for needs of production facilities of the company (boilers, gas generators). [Please verify how these 2 bullets reduce GHG’s.]

From the beginning of ENL production activity in October 2005 through December 2014, the level of associated petroleum gas flaring had averaged 3.3% of the total volume of gas produced, and in 2017 this indicator was 2.5%. This indicator was 0.9% overall for the Sakhalin-1 Project in 2018.

The decrease in the produced gas flaring ratio is due to the implementation of the following technical measures to improve the Odoptu-Chayvo OPF oil pipeline performance. Installing a
station for gas compression and reinjection at Odoptu in 2014 stabilized and lowered the gas flaring ratio.

ENL uses a number of proven methods to improve efficiency, reduce emissions and assist in the development of effective long-term solutions to minimize the risks associated with climate change. The main methods for reducing greenhouse gas emissions at the Sakhalin-1 project sites are:

- Optimizing production processes to reduce gas flaring;
- Use of gas turbine units with "Solonox" mode – operation mode, which reduces emissions of nitrogen oxides due to the most complete combustion of fuel;
- Use of combined heat and power generation plants;
- Study of technological possibilities of gradual transfer of diesel equipment to gas, where applicable;
- Timely implementation of comprehensive equipment maintenance programs to ensure its reliability and optimal operation.

6.2 Protection of Surface Water

The key technical and organizational measures to prevent impact on water bodies are:

- Use of marine vessel wastewater treatment facilities that comply with the International Convention for the Prevention of Pollution from Ships (MARPOL);
- Use of wastewater treatment facilities on the offshore platforms, that comply with pollutant discharge limits prescribed by laws of the Russian Federation;
- Laying of pipeline under the seabed using horizontal directional drilling;
- Optimizing the offshore pipeline route with the goal of reducing its length and reducing the impact on the marine environment;
- Minimum use of additives in water used for hydraulic testing of the onshore pipeline section and regulatory compliance for all discharges when water additives are used in pressure tests of onshore and offshore sections of the pipeline;
- Injection of the main volume of drilling waste (and platform wastewater, where appropriate) into a disposal well;
- Construction of culverts to preserve natural runoff;
- Measures to reduce the flow of suspended matter into water bodies during earth moving;
- Maximum use of the existing infrastructure;
- Choice of technology options for stream crossing construction based on hydrological and hydrochemical characteristics of the sites and water resources.

An analysis of design solutions and environmental protection measures leads to the conclusion that during normal operation the impact on water resources (surface water bodies and the marine environment) for construction operations as well as the operation of planned facilities complies with established Russian environmental protection requirements and international water protection standards.

6.3 Protection Against Physical Factors

Physical impact factors include noise and vibration in the air and water environment, electromagnetic and ionizing radiation from equipment and technical devices and equipment lighting and thermal impacts.

The main measures to mitigate potential impact are:
Light Impact

- Aiming all general, safety, emergency, security and other light fixtures correctly;
- Switch off idle lighting equipment and if possible, work during daylight hours.

Noise and Vibration

- Use of acoustic construction methods to provide vibration and acoustic insulation;
- Installation of mufflers on the exhaust and suction pipes of gas turbine engines and gas-pumping units, and screening of noisy units or groups of units.

Electro-Magnetic Radiation

- Placement of sources of electromagnetic radiation, with the direction and power of radiation selected according to the requirements of the laws of the RF;
- The use of modern technology with low levels of radiation to ensure compliance with health and industrial safety regulations;
- Strict enforcement of equipment operating rules.

Ionizing Radiation

- Compliance with instructions for operation and storage of ionizing radiation sources;
- Training of personnel in the safe use of equipment;
- Compliance with industrial safety rules and all applicable requirements of the laws of the RF pertaining to sources of ionizing radiation.

6.4 Protection of the Geological Environment

Measures to protect the geological environment are ENL technical solutions and measures intended to ensure the safety of facilities in the event of earthquakes or other hazardous geological events, such as permafrost conditions change, soil decompaction and to prevent the development of new geological processes that are hazardous both for the facilities themselves and for the environment: shore erosion, scouring, rising groundwater and bog formation, wind erosion of soils, etc.

The following measures prevent the development of new geohazards:

- Platform jacket protection structure to prevent erosion of sediments around the platform;
- Protection of the sea coast by the creation of coastal protective structures;
- Decreasing the area where the topography is altered and the soil cover is disturbed during construction;
- Preserving/restoring natural groundwater flow and surface runoff to prevent rising groundwater and bog formation;
- Reclamation of areas disturbed during construction.

During drilling and operation of wells, measures are taken to ensure protection of subsurface resources and efficient use of mineral resources, as required by RF regulations. This is done by means of advanced drilling technologies that permit the maximum possible utilization of the field’s natural hydrocarbon reserves.

Drilling waste is disposed of into deep isolated subsurface formations via dedicated wells 2.5 to 3 km deep.

After production ceases in each well, a set of plugging and abandonment operations are carried out to ensure that they are reliably isolated and subsurface resources are conserved.
6.5 Reducing Natural Landscape Fragmentation, Soil Protection, and Land Remediation

Sakhalin-1 project reduces Natural Landscape Fragmentation through the use of extended reach batch drilling (drilling of wells from a small pad, with 5 meters wellhead spacing), construction of line facilities within the existing utilities corridors, deployment facilities within the existing construction sites.

Measures for the protection of soils during construction and operation are common to all Sakhalin-1 facilities and involve, first and foremost, the following preventive measures:

- Stabilization of soils on construction sites
- Anti-erosion measures (i.e., the preservation of existing vegetation, anchoring slopes, and controlling surface runoff, where possible)
- Thorough waterproofing of all settling tanks (storage and separator tanks, etc.)
- Injection of drilling waste into deep aquifers
- Installation of drainage systems, monitoring of groundwater, and measures to prevent underflooding and marsh formation
- Environmental monitoring of all operations in the construction and operation phases
- Mechanical and biological remediation of lands disturbed during construction
- In accordance with the ENL policy, prohibition of the collection of vegetation and other intrusive activity in the project area.

In addition to general preventive measures, the measures to protect the soil during construction and operation include:

- Use of methods of integration of structures and improvement of the technological availability of structures and materials
- Trenching using advanced international experience under such conditions
- Using concrete for weighting to prevent pipes from floating up in soggy areas
- Use of water treatment systems, oil and gas separators, and other water treatment facilities
- Use of incinerators equipped with special filter devices
- Inspection of machinery prior to work commencement and upon work completion to assess wear and tear of hydraulic equipment and machinery
- Mandatory provision of containment sumps installed on the machinery parked in its parking slots
- Prohibited placement of construction equipment outside its dedicated spots.

Remediation of land disturbed during construction is conducted by ENL in two phases:

It is performed after the final stage of construction activities is completed (removal of construction wastes; demolition and removal of all temporary structures, installations and construction materials from the site; backfilling of pipeline trenches with a windrow required to ensure a plane surface after soil compactions; uniform distribution of organic soils over the surface) and consists of grading to create natural slopes of the surface.

The biological phase consists of re-vegetation and restoration of the topsoil fertility. The usual planting of vegetation is performed at most sites, and accelerated planting of vegetation and hydroseeding are performed in areas where it is necessary to slow down erosion processes, such as on slopes.
6.6 Protection of Vegetation and Forests

The main sources of impact on vegetation in the construction phase are: vehicles and construction equipment, waste generated during construction, temporary and permanent structures, and local leaks during the construction.

The Project provides for the following measures to prevent or reduce the potential impact on vegetation:

- Maximum use of the existing infrastructure;
- Erosion prevention measures;
- Removal of fallen trees and other flammable materials and compliance with fire regulations prescribed by the laws of the RF;
- Prohibition of moving trees and slash out to the forest edge;
- Compliance with forest management regulations and requirements in accordance with the laws of the RF;
- Laying the onshore part of the pipeline system in existing utility corridors for other pipeline systems;
- Restoration of original contours of the site and drainage routes disturbed during construction;
- Prohibition of the collection of plants and other intrusive activity in the project area for ENL and contractor employees;
- Monitoring of the vegetative cover and monitoring of reclaimed land.

ENL environmental protection measures result in limiting the impact of the land allotment area without disturbing the vegetation of surrounding areas, followed by revegetation of the disturbed land.

6.7 Protection of Terrestrial Wildlife

A system of measures is used to reduce the potential impact on wildlife; the system includes:

- Construction planning takes into account the periods of maximum vulnerability of individual species and groups of animals;
- The distribution of critical habitats, including places where migrants congregate in certain seasons, breeding grounds and the primary feeding areas of rare species, is taken into account in planning the sites of construction areas and temporary camps;
- Construction equipment is not be allowed to operate outside the boundaries of assigned areas;
- Vehicle traffic is controlled to maintain the distances necessary to avoid disturbing nesting and rare colonial bird species and congregations of molting and migrating birds;
- Unauthorized public access to and use of previously hard-to-access natural areas is prohibited;
- Hunting, gathering of eggs of nesting birds, destroying the nests of rare bird species, and visiting environmentally vulnerable areas during critical periods is prohibited for people employed in the Project;
- Workers familiarize themselves with the instructions on how to behave in the event of an encounter with wild animals when servicing and monitoring overland sections of the pipeline.
6.8 Protection of Aquatic Biota and Commercial Biological Resources

During the construction and operation of onshore oil production facilities, the impact on water bodies and commercial bio resources is a result of the construction of water body crossings, earthmoving, and pressure testing of pipelines.

Offshore operations include preparation of the seabed for the installation of the platform, excavation and filling of trenches for laying pipelines, noise exposure during the movement of construction, transportation, and supply vessels, and discharge of water based drilling mud and cuttings on the seabed during the installation of surface casings and drilling of shallow well sections.

Sakhalin-1 project is carried out on the basis of the principle of minimizing the potential impact on aquatic biota, commercial biological resources, and their habitat. ENL implements the following main environmental protection measures:

- Enforcing the strict observance of land allocation boundaries, particularly in water crossing areas and near bodies of water;
- Performing vehicle maintenance at least 100 meters from watercourses;
- Using a water filtration system after pressure testing of pipelines;
- Using modern equipment that reduces water turbidity during excavation and filling of the pipeline trench;
- Water intakes equipped with fish protection systems;
- Implementing ship sewage discharge according to MARPOL standards and RF statutes;
- The condition of construction projects is checked regularly;
- Monitoring of the aquatic biota to assess the condition of plankton, bottom-dwelling communities during operation of offshore Sakhalin-1 Project facilities.

ENL also assesses the damage to fishery resources during project activities and performs compensatory measures for the artificial reproduction of Pacific salmon and chum salmon in Sakhalin Oblast and Khabarovsky Krai.

6.9 Protection of Marine Mammals

The main potential impacts on marine mammals in the construction and operation phases are associated with the physical presence of facilities and vessels, noise generated by industrial equipment, vessels and aircraft, and discharges of sewage and wastewater treated to comply with the standards. ENL has developed a system of measures to protect marine mammals and their habitat with the goal of minimizing potential impacts on migration routes, feeding areas, and breeding areas and preventing the deaths of animals.

The system of measures for the protection of marine mammals has been tested successfully and improved steadily in the course of the Sakhalin-1 Project. It includes the following elements:

- Monitoring of activities in the work area during all periods of noisy and potentially disturbing operations;
- In the event of unacceptable levels of noise impact on animals, the source of the noise is determined, and the noise level is reduced with mechanical insulation, where this is possible;
- Temporary shutdown of unused equipment;
Marine vessels use wastewater treatment units that meet the requirements of the Russian Federation Maritime Registry and have been certified by the proper authorities;

♦ All fuel, chemical and waste handling activities are carried out in a manner designed to minimize or eliminate chronic inputs and accidents. The offshore platform and support vessels have the necessary equipment and materials to prevent small spills.

Discharges of household sewage from ships and the platforms are treated to comply with standards and as such have a negligible impact on marine mammals.

6.10 Preservation of Protected Natural Areas and Environmentally Sensitive Areas

ENL fully recognizes the importance of unique, ecologically, scientifically, culturally, and aesthetically valuable natural complexes and natural monuments in Sakhalin Oblast and Khabarovsk Krai. In order to prevent potential impacts to protected areas, Sakhalin-1 project facilities are located outside these areas.

Specially protected nature territories of the Sakhalin Oblast include 2 national natural reserves, 1 natural park, 15 national nature sanctuaries, and 45 natural monuments.

The specially protected natural areas near the work area include:

♦ The Nogliki regional State Nature Sanctuary (the northwest boundary of the sanctuary is about 0.2 km from the onshore pipeline from the Chayvo OPF to Nevelskoy Strait)
♦ Vagis Mountain Range regional natural monument (the southern boundary of the monument is 1.4 km from the onshore pipeline from the Chayvo OPF to Nevelskoy Strait)
♦ Wrangel Islands regional natural monument (4.1 km from Odoptu WS1 and 3.25 km from Odoptu WS2)
♦ Lyarva Island regional natural monument (32 km from the Orlan platform and 36 km from the Chayvo WS)

Specially protected areas of Khabarovsk Krai include six national natural reserves, eight national nature sanctuaries, 226 natural monuments, and 20 natural resource refuges. The specially protected areas within Khabarovsk Krai which are located proximate to the project facilities include:

♦ Ustrichny Island local natural monument (the distance from the De-Kastri oil export terminal is 7.5 km)
♦ Somon Lagoon local natural monument (the distance from the De-Kastri oil export terminal is 7.5 km)

The natural habitats and the condition of flora and fauna of these areas are not impacted by the Sakhalin-1 project facilities.

6.11 Protection of Archeological and Cultural Monuments

Within the area of the Sakhalin-1 facilities there are archeological, ethnographic, and historical sites that include ancient settlements, camps, and burial grounds of various periods and cultures.
Environmental Management and Environmental Protection Policy.

The study and excavation of the archeological landmarks located directly within the boundaries of the construction sites are carried out by ENL before the beginning of construction operations.

To ensure the preservation of archeological monuments, both those that are already known and ones that may be discovered, it is planned to carry out archeological monitoring in all phases of construction, which helps to increase the amount of information about the history and culture of indigenous minorities of Sakhalin.

In addition, ENL implements the following measures for protection of the archaeological and cultural sites:

- Surveying of the proposed construction sites for any possible archaeological sites;
- Optimizing the location of construction sites in order to bypass valuable archaeological sites;
- Organization of training for construction personnel on how to handle archaeological artifacts;
- Daily interaction between the construction managers and persons responsible for archaeological monitoring;
- Allocation of resources and determination of the procedures for emergency excavation of sites, if archaeological material is discovered during the construction process.

Most of the artifacts found during those studies are gathered in the archeological museum of the Sakhalin State University. The recovered archeological artifacts are also displayed in Sakhalin Oblast museums of regional studies.

6.12 Socio-Economic Impact

Implementation of the Sakhalin-1 Project is a stimulus to economic activity and has a beneficial effect on the economy and population of Sakhalin Oblast and Khabarovsk Krai, as well as on the economy of the Russian Federation as a whole.

This positive impact will be long-term (dozens of years), exceeding the duration of the Project itself because of the positive residual effects of revival of industry and the economy.

Implementation of the project began on schedule and rapidly reached the planned level of oil production of 250,000 barrels per day (33,000 tonnes per day).

More than 15 Gm$^3$ of natural gas has been delivered to the Russian Far East customers.

The positive impact of the project is due primarily to payments and revenue for federal, regional, and local budgets in accordance with the PSA.

The PSA also states the intention to use Russian equipment and services in all cases where the cost, quality, availability, and delivery times do not impair the economic performance of the project. This relates to all stages of the project: design, fabrication, construction, installation, and operation (including drilling operations). Opportunities for Russian content are provided in several areas, including equipment, construction materials, labor for civil construction and for construction sites, pipeline construction, start-up operations as well as improvements to local infrastructure.

At the beginning of the project, the parties to the PSA (federal agencies and representatives of Sakhalin Oblast and ENL as the project operator) organized the Joint Committee on Russian Content for the Sakhalin-1 Project. The main objective of the Joint Committee is to assist in maximizing the involvement of Russian subcontractors and Russian suppliers of
goods and services in the Project. The Joint Committee operates as a special working group to establish initiatives for Russian Content and conducts quarterly reviews of plans for ENL contract activity.

The Joint Committee works to keep potential Russian contractors and suppliers informed and develop a database of Russian contractors and suppliers. In particular, it conducts workshops for contractors and suppliers based on Sakhalin, where it informs them of current needs for the Sakhalin-1 Project, the terms of tender procedures, contract terms, etc.

Socioeconomic benefits associated with the project also include the creation of a significant labor market; reduction of the population loss from the areas of construction and operation of facilities; and increases in worker income and purchasing activity due to the purchase of equipment, materials, and services to meet the needs for construction and operation.

The project provides a number of measures aimed at strengthening the combined positive effects of its implementation:

- Construction and rotation worker camps are built in accordance with international standards, giving due regard to applicable Russian regulatory requirements, which include installation of water supply and water treatment systems, wastewater treatment plants for sewage and drainage, removal of solid waste, etc.;
- Application of the policy of preferred hiring of qualified local people to work at specific construction and operating sites. This applies especially to inhabitants of settlements located near the project and along the strip of land allocated for pipelines and access roads;
- Providing training to local workers employed for the construction and operation of Project facilities.

Implementation of the Sakhalin-1 Project is conducive not only to raising the standard of living but also to the development of transportation infrastructure and improvement of the level and quality of educational, medical, and cultural services.

The Consortium has invested more than 120 million USD in modernization of Sakhalin infrastructure, which is an unquestionable benefit for the local population. The targets of such modernization are hospitals and clinics, roads, bridges, ports, airports, and heat and water supply facilities. Examples include the Nogliki airport and federal and municipal roads and bridges.

As part of a number of projects, including educational, health care, youth, art, and social ones, social institutions have received charitable contributions totaling more than 3.5 million USD (85 million rubles). Examples are the Oblast Children's Hospital, the Women's Clinic of Yuzhno-Sakhalinsk, the Oblast Cancer Center, the Yuzhno-Sakhalinsk Chamber Orchestra, summer camps for children of indigenous peoples in the Okha and Nogliki districts, and development of the Oil and Gas Engineering Institute and its facilities.

ENL and members of the Sakhalin-1 project Consortium promptly respond to the public's needs and render assistance in the event of emergency situations such as the earthquake in Nevelsk in 2007.

6.13 Prevention and Mitigation of Potential Effects of Cumulative and Transboundary Impacts

Identification of potential cumulative effects related to the presence of third-party anthropogenic impacts on environment in the planned project implementation area is an integral part of the EIA. Several insignificant impacts can combine into a significant or a qualitatively new impact.
Cumulative impact zones result from the impacts of third party facilities located in the areas neighboring the site of the intended activity. The cumulative impact can be produced by major fuel and energy, oil producing and refining facilities, large chemical and metallurgy industry facilities that have a spatially significant environmental impact zone, or by close enterprises or human activity sites with lesser impact zones.

The following types of potential cumulative impact are assessed for Sakhalin-1 Project facilities:

- Air emissions amounted to 5% of maximum permissible concentration permitted by Russian Federation regulatory documents for populated areas;
- Propagation of allowable level (45 dBA) airborne noise in residential areas at night time;
- Propagation of underwater noise of the levels affecting the most sensitive marine biota.

The analysis includes the following potential sources of cumulative impact:

- All existing Sakhalin-1 Project facilities at various sites and at different stages of construction and startup;
- Vessels servicing Berkut and Orlan offshore platforms;
- Small watercraft engaged in fishery operations in the cumulative impact zone as well as other small vessels;
- Vessels carrying out geophysical research;
- Production facilities of Rosneft and Gazprom;
- Nearby industrial zone of De-Kastri settlement, which includes electric power station, boiler houses and a seaport.

At the Sakhalin-1 Project sites, the expressed cumulative effects, with critical levels of environmental impact, have not been revealed to date due to the spatial remoteness of the industrial facilities of northeastern Sakhalin from each other. The control of cumulative influences and their restriction of permissible levels of influence is provided by constructive and technological solutions and environmental measures of protection from cumulative impacts such as:

- Monitoring pollutant emissions;
- Monitoring intensity levels of airborne and underwater noise;
- Monitoring operation of equipment, machinery and automotive transport;
- Monitoring compliance of equipment, machinery and automotive transport with the technical operation requirements.

The methodology for analysis of transboundary impacts is based on: the Espoo Convention on the Environmental Impact Assessment in a Transboundary Context, 1991, which regulates the EIA procedures in the case of transboundary impacts, the Convention on Long-range Transboundary Air Pollution, 1979, the Convention on the Transboundary Effects of Industrial Accidents, 1992, as well as other international documents.

None of the potential impacts of Sakhalin-1 Project under normal operations or in case of potential accidents can affect the neighboring countries' territories or their marine economic zones.
7 RISK MANAGEMENT AND EMERGENCIES PREVENTION

ENL Risk Management and Incident Prevention

The ENL strategy is based on the concept that all field development activities should be implemented in such a way as to minimize the risks to the environment and human health and safety. With respect to this strategy, all types of activities should be analyzed for the purpose of reducing the risks of potential hazards.

A risk assessment has been conducted on the Sakhalin Project to assess potential safety, health, environmental, and property impacts.

The risk analysis procedure is conducted in the following sequential steps:

- Determination of potential causes that could result in a undesirable consequence;
- Development of credible scenarios that could lead to undesirable events;
- Listing preventative safeguards that may prevent the event from occurring;
- Listing the mitigating measures that may limit the extent of damage associated with the scenario;
- Describing the consequences of the event in terms of the potential for harm to people and the environment;
- Analysis of scenario realization frequencies from historical data;
- Development of solutions to reduce risk through the use of a risk matrix;
- Documenting any additional remedial measures or actions that may be considered to further reduce the risk associated with the scenario.

The necessary systems of safety measures and equipment meeting the requirements of applicable safety standards are provided for all identified hazards.

Development of the necessary incident prevention measures and calculation of the manpower and equipment needed for timely response are provided by drafting such documents as the Industrial Safety Declaration, the Emergency Response Plan, and the Oil Spill Response Plan.

Precautions to Prevent Emergencies

The risk of incidents is reduced and damage is minimized by general and specific safety measures (Table 1 and Table 2):

**Table 1. General Measures to Minimize Emergencies**

<table>
<thead>
<tr>
<th>Description of Actions</th>
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</thead>
<tbody>
<tr>
<td>Development and control of fulfilling detailed process regulations</td>
</tr>
<tr>
<td>Training and examination of personnel knowledge</td>
</tr>
<tr>
<td>Regular technical maintenance of equipment</td>
</tr>
<tr>
<td>Corrosion protection for equipment</td>
</tr>
<tr>
<td>Regular inspections and checkups of safety assurance systems</td>
</tr>
<tr>
<td>The quality of construction and assembly work shall be inspected.</td>
</tr>
<tr>
<td>Operations shall be subject to regular industrial and environmental monitoring.</td>
</tr>
</tbody>
</table>

**Table 2. Special Measures to Minimize Emergencies**

...
### Description of Actions

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separation and isolation of technological processes and equipment (safety,</td>
</tr>
<tr>
<td>shutoff valves, etc.);</td>
</tr>
<tr>
<td>Early hazard identification systems (gas analyzers, etc.);</td>
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<tr>
<td>Automatic leak control system;</td>
</tr>
<tr>
<td>Equipment Emergency Shut-down Systems</td>
</tr>
<tr>
<td>Construction of secondary safety barriers (levees, trays, drains,</td>
</tr>
<tr>
<td>waterproofing geomembranes)</td>
</tr>
<tr>
<td>Passive and active fire protection systems</td>
</tr>
</tbody>
</table>

Technology and work management take into account the seismicity of the production facility locations and exposure to other geological hazards (underflooding, gullyng, marsh formation, etc.), specifically by the development of measures to prevent the manifestation and effects of these processes.

Fire protection activities at the facility are part of a general strategy aimed at incident-free operation of technological equipment.

The basic principles of fire safety used in developing fire-protection measures are:

- Compliance with RF regulatory requirements antisyatizing fire safety in the design, construction and operation of a facility;
- Use of modern fire prevention and fire protection systems and administrative and technical fire protection procedures;
- In accordance with RF regulations, the fire safety of the Sakhalin-1 facilities is ensured by:
  - Fire prevention system;
  - Firefighting systems;
  - A system of organizational and technical measures.

The fire-prevention system calls for:

- The use of new technologies and process equipment ensuring the highest degree of fire safety;
- Use of slow-burning and incombustible materials;
- Reduction of the fire load;
- Measures to prevent the formation of a combustible environment and the origination of ignition sources therein;
- Maximum process mechanization and automation;
- The use of devices to protect equipment from damage.

The fire prevention system is deployed in the form of specific technical solutions: in the master plan, the production part of the plan, power supply, ventilation, etc.

Administrative and technical measures include:

- Organization of fire safety of facilities and cooperation of fire safety services with territorial subdivisions of the State Fire Fighting Service;
- Determination of fire hazard levels of substances, materials and technological processes;
- Providing fire safety training for employees;
Environmental Management and Environmental Protection Policy.

- Development of facility-specific regulations, instructions and other documents for handling inflammable substances and materials;
- Development of measures for personnel actions in the event of a fire, and the organization of evacuation of personnel;
- Implementing technical solutions to provide for successful fire extinguishing;
- Specifying the procedure for storing substances and materials which cannot be extinguished with the same agents;
- Using devices for automatic and automated protection of the facility’s production equipment from unauthorized and mistaken actions of personnel that may cause fires or explosions;
- Testing and maintaining active fire-protection subsystems, etc.

**ENL Readiness for Emergency Prevention and Response**

ENL readiness for emergency prevention and response is ensured by the following:

- Creating a three-tier operations command system for oil spill response which includes the use of company’s own manpower and resources, as well as response professionals from contractors acting as a coordinated group for emergency response at the facility;
- Availability of manpower and resources for prevention and containment of emergencies at the Sakhalin-1 production facilities;
- Creation of a personnel education and training program dealing with emergencies, including study of the features of production facilities and areas of applicability of the Plans and special equipment and procedures for its use, as well as development of tactics for dealing with emergencies at a single complex;
- Response capability will be provided by ENL with assistance, as required, from other Sakhalin, Russian Far East, and international resources;
- Protection of ENL facilities against potential natural and man-made impacts;
- Compliance with industrial, environmental, and fire safety requirements during field exploration, development construction, production and during storage of oil and oil products;
- Buildup of reserve of material and financial resources for Emergency Situation response;
- Compulsory liability insurance, consistent with requirements of the Sakhalin-1 Production Sharing Agreement, against damage from operations of hazardous industrial facilities.

Monitoring of the implementation of measures for emergency prevention, containment, and response is conducted by the relevant executive agencies of the Russian Federation with supervisory authority in the course of scheduled and unscheduled inspections in accordance with Russian regulations, as well as in the process of conducting drills and training on emergency containment and response.
8 ENL FINANCIAL RISK POLICY. ENVIRONMENTAL INSURANCE

Sakhalin-1 Production Sharing Agreement makes the Consortium liable for any damages or injuries directly caused by the fields development operations for which the Consortium is responsible under the law of Russian Federation.

The Consortium provides and maintains kinds and amounts of insurance commensurate with reasonable risk management. Types of insurance may include, but are not limited to, insurance against loss of assets, loss of use of assets, loss of investment value, control of well and re-drilling expenses, pollution and seepage costs and liability, general third-party liability, and such other insurance as is consistent with good Oil and Gas Industry practice and Russian Federation legislation requirements.

Each year, the company signs a package insurance policy of energy risks that covers objects like onshore assets, offshore assets and onshore drilling rigs for the total amount of US$ 17 390 Billion. In addition, the policy covers drilling operations, third-party liability, cargo shipping, unlawful acts by third parties. Coverage amount differs with each object, varying from US$ 50 thousand to US$ 1 580 Million in each ensured event.

Each year, ENL concludes mandatory insurance agreements with АО «SOGAZ»:

- Civil liability insurance policies for any risk of damage to life and health of humans, the environment, life and health of animals and plants, cultural heritage of the Russian Federation peoples, that may result from defects in construction workmanship or in site surveys and project documentation preparation affecting safety of the capital facilities. Currently effective insurance policies’ limits total 400 million rubles.

- Insurance policies associated with the company liabilities to compensate for any damage to life, health and property of a third party and to the environment as the result of emergencies occurring at the hazardous industrial facilities that the Company operates. Currently effective insurance policies’ limits total 385 million rubles.

- The environmental civil liability insurance policy for any risk of damage to the environment, including water resources and to life, health and property of any third party resulting from oil and petroleum product spills in the course of company’s Sakhalin-1 operations, with the limit of 100 million rubles.

In November 2015, a financial reserve to support the higher priority works was established in order to provide necessary reserves for the containment and response to natural calamities and man-made emergencies at Sakhalin-1 facilities.
9 ENERGY EFFICIENCY IMPROVEMENTS

Measures to ensure the energy efficiency of all buildings, structures and facilities of the Sakhalin-1 Project are developed at the planning stage and presented for state expert review as part of the relevant design packages.

In terms of the degree of power supply reliability, electrical loads of the Sakhalin-1 Project are subdivided into reliability categories and grouped by redundancy requirements, which rules out the installation of electric equipment with excessive power demand and prevents energy losses.

ENL is implementing the following electricity-saving measures at Sakhalin-1 Project sites:

- Indoor workplace lighting is provided by LED lamps and high-pressure sodium lamps with a higher luminous efficacy factor and a longer service life;
- Supply and distribution circuits are laid along optimal routes to minimize voltage losses.
- Phases are evenly loaded within each switchgear unit;
- Process flows have been optimized by using a scientifically calculated efficient pipeline diameter and installing software that controls the operating mode of electrical heat tracing of pipelines;
- High-efficiency electric motors are used;
- Power sources are installed centrally to electrical loads;
- Outdoor lighting is controlled by photocells that turn off the power supply in the daytime;
- Electric heat tracing of pipelines and equipment is controlled automatically depending on the ambient temperature.

Energy (primarily electricity) saving is ensured through the use of modern equipment, microprocessor-based process control systems, operating mode control software, and through state-of-the-art maintenance and repairs of primary and secondary equipment.

The Sakhalin-1 Project sites have a self-contained power supply system. Facilities are supplied with electricity from gas-turbine and diesel generators. Fuel for gas turbines is produced directly at the Sakhalin-1 Project sites.

Design documentation for the Sakhalin-1 facilities includes the chapter "Measures to ensure compliance with energy efficiency requirements and requirements for the equipment of buildings, structures and facilities with energy meters". The chapter, as mandated by the RF laws must be submitted for the State Expert Review as part of design documentation.

ENL’s energy use efficiency enhancement program is part of Environmental and Property Solutions (E&PS) Global Services Company, affiliated with ExxonMobil corporation, activities. One of the key aspects of E&PS’s operation is management of effective water use and power, including reductions in consumption of these resources, mitigation of the potential environmental impact, and curtailment of operational costs.

E&PS draws up an annual Environmental Business Plan, which allocates priorities and expectations for each business unit. Performance assessment is also done on an annual basis.

The methods used to improve energy use efficiency, among others, include:

- Level 1 power consumption audit, which includes regular review of the general configuration of the facilities, types and quality of energy systems used for the purpose of their refinement and optimization;
- Level 2 power audit used to assess and identify opportunities for energy saving by the available personnel using minimal resources;
- The KNOW YOUR ENERGY SOURCES program, which is expected to hone the understanding and control of all energy sources and of their utilization factor.

In addition, ENL’s E&PS department runs the program, which is intended to remind employees, visitors, and partners to turn off the equipment and electric appliances when they are no longer in use. Another program is known as ENVIRONMENTALLY RESPONSIBLE USE OF OFFICE EQUIPMENT, which calls for environmentally responsible operation and maintenance of equipment and appliances.
10 CONTRACTOR WORK MANAGEMENT REQUIREMENTS

Contractor's Responsibilities.

In accordance with the contracting procedure approved by ENL, which is included in tender document packages, contractors are required to develop an Environmental Protection Plan. The Plan should include solutions/programs for waste management and engagement of the relevant services, environmental, socioeconomic, and sanitation monitoring, prevention of water pollution, oil spill response, measures to comply with legal and regulatory requirements, assessment of impacts on environmental, socioeconomic, and sanitary conditions, and measures for their mitigation and elimination and should provide for training and appropriate reporting. These programs are reviewed and approved by ENL before starting work.

Each ENL contractor is required to identify and obtain all necessary permits, notifications, authorizations, approvals, licenses, and agreements with applicable stakeholders that are required to progress work and as agreed in the contractor's Regulatory Compliance Plan. The Plan is also submitted for careful review before the start of work and is approved by ENL.

In accordance with the terms of the contract, the Contractor must create a division responsible for compliance with environmental regulations, including the requirements of the Environmental Protection Plan covering the Contractor's scope of work.

Contractors should require that their subcontractors meet similar requirements, and during internal inspections each contractor must include data on the compliance of its subcontractors with environmental protection requirements in its reports.

Contractors are responsible for the proper training of their workers and the workers of subcontractors, as well as their awareness of current environmental and other legal/regulatory requirements and obligations and the environmental requirements for the Project.

Contractors shall periodically evaluate and adjust their Regulatory Compliance Plans and programs for management and monitoring of environmental and socioeconomic activities to ensure efficiency and to promote continuous improvement.

Contractors are responsible for all legal/regulatory, environmental, socioeconomic, and sanitary aspects of their work, including work performed by their subcontractors.

Contractors shall ensure that their subcontractors have implemented Regulatory Compliance Plans and Environmental Protection Plans (including plans for waste management, spill prevention and response, social and economic activities, training, and monitoring), as well as the relevant procedures which are compliant with Contractor-approved Regulatory Compliance Plans and Procedures and the Environmental Protection Plan.

Interaction between the ENL Project Environmental Protection Team and Contractor

To ensure the appropriate level of organization of environmental protection activities and compliance indicators in the Environmental Protection Plan for the Project, ENL has put in place an effective process for exchanging information between the Project Team and contractors.

The ENL Environmental Protection Team performs the following functions:

- Oversee/monitor Contractor’s management of the environmental aspects of its work activities on a regular, on-going basis;
Coordination of the interaction between the Contractor Team responsible for the execution of the Environmental Protection Plan and third parties with a relationship to the Project (the representatives of state agencies, private organizations, etc.).

Interaction of ENL personnel with specific state authorities does not relieve the Contractor of full responsibility for the implementation of its own regulatory compliance procedures and compliance with the relevant approval conditions.

The interaction between the ENL Environmental Protection Team and the Contractor Team responsible for the implementation of the Environmental Protection Plan includes the following:

- Causing contractors to implement the Environmental Protection Plan in a proper manner;
- Consultations regarding proposed change events as part of the Change Management Process;
- Submittal of proposed changes to the Environmental Protection Plan by the Contractor to the ENL Project Team for approval;
- Mandatory immediate communication with the ENL Project Team concerning failure to comply with environmental requirements;
- Mandatory immediate communication with the ENL Project Team concerning spills of hazardous substances;
- Mandatory transfer of information by the Contractor to the ENL Project Team on environmental monitoring, audits, and inspections conducted at the work sites;
- Weekly and monthly reporting by Contractor regarding environmental performance and statistical data.

The ENL Environmental Protection Team conducts periodic checks of Contractor work sites (including ships).

In the event of an environmental emergency, the Contractor shall forward a notice to the ENL Project Team immediately and take appropriate measures to respond to the emergency and mitigate its consequences.
11 INDUSTRIAL ENVIRONMENTAL CONTROL AND ENVIRONMENTAL MONITORING SYSTEM

ENL performs industrial environmental control at the Sakhalin-1 Project facilities and environmental monitoring in the areas of their potential environmental impact in accordance with the Sakhalin-1 Project Environmental Monitoring and Industrial Environmental Sanitary Control (EM & IESC) Program, which has received a favorable state environmental expert review opinion (Rostekhnadzor Order No. 920 of November 30, 2005). The EM & IESCP is an informational and measuring system that is implemented using technical, software, information and organizational means providing complete, on-line, reliable and comparable information about the environment.

Environmental monitoring practices during oil spill incidents are detailed in the Corporate Plan for prevention and response to oil and oil products spills for Exxon Neftegas Limited production facilities under the Sakhalin-1 Project.

ENL Strategy for Environmental Monitoring and In-Process Control

In compliance with current environmental protection laws, standards and regulations of the Russian Federation, and with the international conventions on environmental protection ratified by Russian Federation, ENL has performed and continues to perform environmental studies and industrial environmental control during construction and operation of Sakhalin-1 production facilities.

Environmental studies, a potential environmental impact assessment, and industrial environmental control are integral components of environmental management.

The essence of the in-process environmental control and environmental monitoring concept is as follows:

- Environmental surveys, including determination of baseline environmental indices, are performed during the pre-construction phase;
- A detailed potential environmental impact assessment is performed using the results of environmental studies by ENL at the project site and the results of environmental monitoring and industrial control at active Sakhalin-1 facilities; the intensity, duration and spatial dimensions of zones of potential impact on elements of the environment are determined for different phases of project implementation;
- Based on the results of the impact assessment, an Environmental Monitoring and In-Process Control Program for the construction and operation phases is developed;
- Programs for study of individual elements of the environment and study and protection of vulnerable species are developed and implemented;
- Compliance of production operations with the environmental laws and implementation of environmental protection measures is monitored, and records are kept of the use of natural resources;
- The environmental monitoring and industrial control program include monitoring of the actual environmental impact of commercial activities;
- The monitoring results are used for operational management in planning production activities.

Goals and Objectives of Environmental Monitoring and Industrial Environmental Control

The goals of environmental monitoring and industrial control are to:
Environmental Management and Environmental Protection Policy.

- Ensure compliance with environmental standards and implement measures for environmental protection and sustainable use of natural resources;
- Compliance with environmental requirements prescribed by the laws of the Russian Federation;
- Implementation of the Company’s environmental protection policy;
- Ensuring that the environmental information is comprehensive, provided on time and reliable.

The principal objectives of environmental monitoring and industrial control are to:

- Monitor implementation of environmental protection measures, instructions, and recommendations of specially authorized government agencies in the field of environmental protection;
- Enforce the prescribed standards and rules for handling hazardous wastes and materials;
- Monitor sustainable utilization of natural resources and keep records of their use;
- Monitor the state of elements of the environment in the facility impact zone;
- Observe hazardous natural processes that affect project facilities and predict the development of monitored indices of these processes;
- Maintain the facility's environmental documentation;
- Submit the information specified by the Company's environmental management system in a timely manner;
- Timely provision of information in compliance with regulatory requirements for statistical reporting and other mandatory reporting.

Stages of Environmental Monitoring

Environmental monitoring of the Sakhalin-1 Project facilities is done in three stages:

- Baseline monitoring (pre-construction);
- Local environmental monitoring and industrial environmental control at the construction stage (construction monitoring);
- Local environmental monitoring and industrial environmental control at the stage of operation (operational monitoring).

Pre-construction monitoring involves an appraisal of the status of environmental components in the projected zones of project facilities prior to the start of construction work. The data thus obtained are subsequently used as inputs for the evaluation of the potential environmental impact of the Sakhalin-1 Project facilities in the course of their construction and operation.

The construction monitoring stage involves industrial control of environmental impact and environmental status monitoring during construction of the facilities.

Operational monitoring begins as the facilities go on stream. The stage of operational monitoring involves industrial environmental monitoring of the impact on the environment and environmental status monitoring during operation of the facilities.

Management of in-process environmental control and environmental monitoring.

The environmental monitoring and industrial environmental and sanitary control system is divided into the following functional subsystems:

- Data measurement;
- Data transmission;
- Data management.
The environmental observations combine two systems: monitoring the sources of potential environmental impact and monitoring the condition of the environment. The system for monitoring the sources of potential environmental impact records emissions, discharges, levels of physical impact and the volumes and movement of production and consumption waste. Monitoring of the condition of the environment includes measurement of parameters of the air, surface water bodies and groundwater, the geological environment, soil cover, vegetation, aquatic biota and terrestrial wildlife.

ENL performs the following field studies:

<table>
<thead>
<tr>
<th>Field Studies</th>
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<tbody>
<tr>
<td><strong>Atmospheric Emission Monitoring</strong></td>
</tr>
<tr>
<td>Sampling of Atmospheric Emissions</td>
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<tr>
<td>Measurement of Gas-Air Mixture Parameters</td>
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<tr>
<td>Measuring Pollutant Concentrations</td>
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<tr>
<td><strong>Atmospheric Air and Work Area Air:</strong></td>
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<tr>
<td>Sampling to Determine Pollutant Content</td>
</tr>
<tr>
<td>Measuring Pollutant Concentrations</td>
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<tr>
<td><strong>Monitoring of Wastewater Discharge and the Quality of Surface and Subsurface Water:</strong></td>
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<tr>
<td>Water sampling to Determine Pollutant Concentrations</td>
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<tr>
<td><strong>Physical Impact Factor Monitoring:</strong></td>
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<tr>
<td>Noise Measurement</td>
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<tr>
<td>Electromagnetic Field Measurement</td>
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<tr>
<td>Vibration Measurements</td>
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<tr>
<td><strong>Monitoring of Geological Processes:</strong></td>
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<tr>
<td>Observations of Exogenous Geological Processes</td>
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<tr>
<td><strong>Soil Conditions Control:</strong></td>
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<tr>
<td>Soil Sampling</td>
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<tr>
<td><strong>Monitoring of Vegetation Status:</strong></td>
</tr>
<tr>
<td>Field Material Collection</td>
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<tr>
<td>Organization of permanent test site network</td>
</tr>
<tr>
<td>Work at base sites</td>
</tr>
<tr>
<td><strong>Control of Wildlife Conditions:</strong></td>
</tr>
<tr>
<td>Monitoring of wildlife species specified in the monitoring program</td>
</tr>
</tbody>
</table>

Properly accredited and certified Russian laboratories are enlisted for laboratory work.

All laboratory studies are conducted in accordance with existing Russian methods included in the State List of Quantitative Chemical Analysis Methods and the Federal List of Methods for Carrying out Measurements Allowed for Use in Performing Environmental Pollution Monitoring, and RF Ministry of Health methods.

This environmental monitoring program makes it possible to monitor the quality of the natural environment during implementation of the Project. Using the monitoring findings, ENL and its contractors take adequate and timely measures to mitigate the potential environmental impacts. The information acquired in the environmental monitoring process is duly conveyed to Russian governmental authorities.
12 PUBLIC AWARENESS OF PROJECT PROGRESS

The public is kept informed throughout the Sakhalin-1 Project period

**Data Transmission Means**

<table>
<thead>
<tr>
<th>Form</th>
<th>Where</th>
<th>When</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass media (newspapers, television, radio)</td>
<td>The entire island and the relevant part of the Russian mainland</td>
<td>On a regular basis</td>
<td>Provide specific information on the project, give notice of meetings and open door days, and determine public opinion</td>
</tr>
<tr>
<td>Visual Aids</td>
<td>Open door days, seminars and conferences, special libraries</td>
<td>On a regular basis</td>
<td>Provision of information</td>
</tr>
<tr>
<td>Posters, brochures, flyers, reports,</td>
<td>Open door days, seminars and conferences, special libraries, and additional dissemination of information by request</td>
<td>On a regular basis</td>
<td>Provision of information</td>
</tr>
<tr>
<td>Video, photographs, maps, charts</td>
<td>Meetings, seminars, open door days</td>
<td>On a regular basis</td>
<td>Provision of information</td>
</tr>
<tr>
<td>Direct communication</td>
<td>Yuzhno-Sakhalinsk; whole island</td>
<td>On a regular basis</td>
<td>Provision of information</td>
</tr>
<tr>
<td>Website</td>
<td>On an international scale</td>
<td>On a regular basis</td>
<td>Provision of information</td>
</tr>
</tbody>
</table>

ENL conducts public consultations on EIA materials and promotes public participation in the process of assessing the potential environmental impact of the project, providing the opportunity to express opinions on the key issues related to this process.

A notice advising of public consultations is published in federal, regional and municipal levels papers, such as Sakhalinsky Neftyanik (the city of Okha), Znamya Truda (the settlement of Nogliki), Gubernskiye Vedomosti (Yuzhno-Sakhalinsk), Rossiyskaya Gazeta. The EIA technical assignment and preliminary materials are made available to the public for review at local libraries.

Concerned citizens and public organizations may comment on EIA materials during public consultations, as well as by hot line telephone and other duplex communication channels.

The public comments and suggestions are taken under advisement and integrated into the EIA materials submitted as part of the submittal package for State expert review.
### Public Consultation Communication Methods

<table>
<thead>
<tr>
<th>Form</th>
<th>Where held</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview / focus groups</td>
<td>Yuzhno-Sakhalinsk, Chomsky, Nogliki, Okha, Bogorodskoe</td>
<td>Environmental protection policies;</td>
</tr>
<tr>
<td></td>
<td>Yuzhno-Sakhalinsk, Kholmsk, Nogliki, Val, Okha</td>
<td>Study of environmental protection issues and updating of EIA.</td>
</tr>
<tr>
<td>Public Opinion Survey</td>
<td>Yuzhno-Sakhalinsk, Kholmsk, Korsakov, Aleksandrovsk-Sakhkalinski, Nogliki, Okha and Dolinsk</td>
<td>Determination of baseline data</td>
</tr>
<tr>
<td></td>
<td>Yuzhno-Sakhalinsk, Kholmsk, Okha, Val, Nogliki, De-Kastri</td>
<td>Determination and comparison of baseline data.</td>
</tr>
<tr>
<td>Public opinion exit poll</td>
<td>Yuzhno-Sakhalinsk, Kholmsk, Val, Nogliki, Okha, De-Kastri</td>
<td>Collection of additional information</td>
</tr>
<tr>
<td></td>
<td>Yuzhno-Sakhalinsk, Kholmsk, Val, Nogliki, Okha, De-Kastri</td>
<td>Collection of additional information</td>
</tr>
<tr>
<td>Stakeholder workshops</td>
<td>Yuzhno-Sakhalinsk, Kholmsk</td>
<td>Exchange of information and determination of public opinion.</td>
</tr>
<tr>
<td></td>
<td>YUZHNO-SAKHALINSK</td>
<td>Exchange of information and determination of public opinion.</td>
</tr>
<tr>
<td>Open Door Sessions</td>
<td>Yuzhno-Sakhalinsk, Kholmsk, Val, Nogliki, Okha, De-Kastri</td>
<td>Exchange of information and determination of public opinion.</td>
</tr>
<tr>
<td>Books with the documentation and comments in public (city, town) libraries</td>
<td>Yuzhno-Sakhalinsk, Kholmsk, Korsakov, Val, Nogliki, Okha, De-Kastri, Nikolaevsk-on-Amur</td>
<td>Exchange of information and determination of public opinion.</td>
</tr>
</tbody>
</table>

ENL promotes regular meetings with a wide range of parties affected by the project. Meetings with regional and local authorities are an important component of the system for project management and addressing of regulatory issues. Representatives of regional and local government bodies are involved in determining the issues to be discussed with the public at open door days, seminars, and other events.

ENL recognizes the importance of public participation in the discussion of issues related to the project. ENL employees participate in numerous community events and intend to continue this interaction with the public on Sakhalin Island and in Khabarovsk Krai and to arrange presentations and events for schools, environmental groups, local government, business groups, and community organizations.
13 KEYS PROGRAMS FOR CONSERVATION OF BIODIVERSITY

Analysis of the environmental setting and the wildlife inhabiting the area around the Sakhalin-1 project facilities has identified the species that can be potentially affected by certain aspects of the company's production operations.

The following biodiveristy conservation programs were initiated at different stages of the project life:

- Gray whale monitoring
- Piltun Bay seal rookery monitoring
- Steller's sea eagle monitoring
- Avifauna monitoring

The above programs for biodiversity conservation are currently active at different implementation stages.

The Company's specialists are continuously engaged in the initiatives aimed to increase awareness on the monitoring and scientific research results among students, pupils, and Sakhalin indigenous minorities. The Company’s specialists hold educational and awareness-raising work among employees and contractors to increase knowledge, responsibility, and professional skills on environmental protection matters.

The Gray Whale Monitoring Program

The key feeding grounds of gray whales (Eschrichtius robustus) near the Sakhalin Island are located in close vicinity to the Odoptu, Chayvo, and Arkutun-Dagi oil and gas fields of Sakhalin-1 project.


There are two types of mitigation measures used to reduce potential impact on gray whales. The measures used to avoid impact are the mammals condition monitoring (as background information to be used for further mitigation measures development), and time and space restrictions based on the information received from the monitoring. An example of such time restriction is the early start and completion of work in the beginning of summer season, when the shoal of whales is not there for feeding yet – this work schedule allows to avoid an overlap of the operations period with the major whale shoal feeding period. Marine Mammal Protection Plan, another mitigation measure, sets up marine operations rules mandatory not only for ENL, but also for the contractors, which make it possible not to stop production operations without affecting marine mammals. The Plan introduces space restrictions (buffer zone) and speed limitations for vessels.

The monitoring program has been performed annually since 1997 in cooperation with the Sakhalin-2 Operator and the recently joined Sakhalin-3 Operator. The Program objectives include expansion of the body of scientific knowledge of gray whales and their environment, as well as the factors that influence the population and its habitat, and assessment of the population status (e.g., the population size, increase, etc.) and habitats. The work in different years included different areas of research: study of their distribution area and abundance, photographic identification, study of their food resources, acoustic monitoring, and behavioral studies. The Monitoring Program is one of the longest multi-disciplinary research programs that focuses on specific marine mammal species in a specific area. The Program uses
advanced monitoring methods: genetic investigations, drone aircraft, infrared equipment and satellite tagging. The satellite tagging program in 2010-2011 achieved outstanding results, which led scientists to review the available data on the migration routes of the gray whale in the Pacific Ocean basin.

The work involves scientists from the FEB RAS National Scientific Center of Marine Biology and the FEB RAS Institute of Pacific Oceanology, as well as experts from Sakhalin State University and other Russian and international research institutions.

Information received under the Program is used by ENL for the following purposes: minimizing potential effects of industrial operations on the whales and their habitats as well as defining and implementing measures to reduce risks to gray whales and their habitat during production operations. There is Marine Mammal Protection Plan (MMPP) in place to prevent collisions with animals, which reduces risks related to all marine mammals including gray whales in the course of project operations. Certain mitigation measures developed using a scientific approach are implemented in the course of construction operations that can have potential impact on mammals.

There has not been a single recorded case of injury to marine mammals in all the years of Sakhalin-1 project implementation.

The recent research results are described in numerous published articles.

The articles related to the acoustic environment in the gray whale feeding areas were included in a collection of articles of the XVIth Academician L.M. Brekhovskikh workshop school Ocean Acoustics on May 29- June 1, 2018, P. Shirshov Institute of Ocean Studies, Russian Academy of Sciences, Moscow, Russia (www.ocean.ru).

The results of the experiment on whale satellite tagging were published in:


The recent publications on various aspects of whale biology are listed below:


- M. J. Scott and A.D. Samatov, Joint Program of Gray Whale Monitoring off the NE Coast of Sakhalin
- Peter van der Volf, Onshore UAV Photo Identification and Shooting of Gray Whales during Field Survey at Sakhalin
- A.V. Bobkov, V.A. Vladimirov, V.V. Vertyankin, Near-Bottom Activity Specifics of Gray Whales (Eschrichtius robustus) in Shallow Waters off NE Coast of Sakhalin
- V. Brykov, K. Efimova, J.A. DeWoody and J.W. Bickham, Genetic Biodiversity of Sakhalin Gray Whales Identified by Four mtDNA Genes Sequencing Method
- J.W. Bickham and J.A. DeWoody, Gray Whale Genetics Based on Group Single Nucleotide Polymorphism (SNP) Analysis and Full Genome Sequencing of Bioptic Samples of Sakhalin and Mexican Whales
- V.A. Vladimirov, N.V. Doroshenko, I.A. Timokhin, S.P. Starodymov, S.A. Tyurin, CURRENT NUMBER AND DISTRIBUTION OF GRAY WHALES (Eschrichtius robustus) OF THE EAST SAKHALIN FEEDING GROUP
- V.S. Labay, Kim Sen Tok, A.V. Smirnov, V.N. Chastikov, G.V. Shevchenko, Zh.R. Tskhay, ECOLOGICAL CARRY CAPACITY ASSESSMENT OF THE
ENVIRONMENT FOR GRAY WHALES (ESCHRICHTIUS ROBUSTUS) IN THE KNOWN FEEDING AREAS OFF THE NORTH-EAST COAST OF SAKHALIN

- L. Aerts, R. Melton, M. Jenkerson, V. Nechayuk, M.J. Scott, Impact Mitigation and Monitoring of Multiple Seismic Surveys in the Immediate Vicinity of Gray Whales in the Feeding Area off the Sakhalin Coast, Russian Federation, in 2015

ENL participates in the work of the Gray Whale Conservation Interdepartmental Work Group under the RF Ministry of Natural Resources and Ecology, specifically, the following meetings in 2017-2018:

- Session of the Interdepartmental Work Group, 19 April 2018:
  o Results of the 2017 Gray Whale Monitoring Program off the NE coast of Sakhalin
  o Overview of activities planned for 2018 Gray Whale Monitoring Program off the NE coast of Sakhalin
  o Studies of Gray Whale Early Migration off the NE coast of Sakhalin with Infrared Detectors

- Session of the Interdepartmental Work Group, 6 December 2018:
  o Overview of the 2018 Gray Whale Monitoring Program off the NE coast of Sakhalin
  o Overview of activities planned for 2019 Gray Whale Monitoring Program off the NE coast of Sakhalin
  o Overview of the Monitoring and Impact Mitigation Program during ENL 2019 4D Survey

- Session of the Interdepartmental Work Group, 23 April 2019:
  o Results of Gray Whale (Eschrichtius robustus) Photo-Identification Studies off the Sakhalin Coast in 2018
  o Results of Studies of Gray Whale Distribution and Abundance in the NE Sakhalin Near-shore Waters in July-October 2018
  o Overview of activities planned for 2019 Gray Whale Monitoring Program off the NE coast of Sakhalin
  o Overview of the Monitoring and Impact Mitigation Program during ENL 2019 4D Survey

ENL participates in the work of the Expert Group on Biodiversity of the Sakhalin Oblast Interdepartmental Ecological Council, specifically, in the following meetings in 2018-2019:

- Session of the Work Group on Biodiversity of the Sakhalin Oblast Interdepartmental Ecological Council, 25 May 2018
  o Gray Whale Early Migration Studies with Infrared Detectors;

- Session of the Work Group on Biodiversity of the Sakhalin Oblast Interdepartmental Ecological Council, 27 November 2018
  o Using Infrared System for Gray Whale Monitoring at Sakhalin Offshore NE Sakhalin in 2018;

- Session of the Work Group on Biodiversity of the Sakhalin Oblast Interdepartmental Ecological Council, 28 May 2019
  o Marine Mammal Impact Mitigation Measures during the 2019 Geophysical Studies by Exxon Neftegas Limited.
Seal Rookery Monitoring in Piltun Bay

The program was initiated in view of the planned activities in Piltun Bay and was conducted from 2014 to 2017. There is an onshore rookery of earless seals in the mouth of Piltun Bay, which is one of the largest in the Russia’s Far East and the largest on the Sakhalin Island. Animals use the rookery during the entire ice-free period, and it has a complex spatial arrangement: the rookery consists of five areas and accommodates three species of earless seals at a time. In particular, the group of animals in the rookery consists of bearded seal, ringed seal and spotted seal. There are no other such multi-species rookeries on Sakhalin formed by three species of earless seals.

In 2016-2017, ENL carried out activities associated with transportation of large-size modules to the bay from the nearby Okhotsk Sea water area. The modules were delivered through the Piltun Bay mouth.

Two impact mitigation methods were employed to mitigate impact on the seal rookery. To avoid impact, condition of the rookery was monitored (to obtain information that could be used to further develop mitigation activities), and temporal and spatial restrictions were applied based on the information acquired during the monitoring. An example of temporal restrictions would be early start and completion of work at the beginning of the summer season, when there is a minimum number of animals in the rookery. This way the company does not allow the period of operations and the period when the number of animals on the rookery grows to overlap. The marine mammal protection plan as an impact mitigation measure sets certain rules for offshore operations, which allow to proceed with work without doing harm to marine mammals. The plan calls for establishing spatial (buffer zone) and speed restrictions for vessel operations. Additional monitoring measures were also implemented, such as nighttime observations using infrared cameras, and acoustic monitoring to minimize impact of noisy operations.

The current state of the seal rookery in the Piltun Bay mouth is estimated as satisfactory. There have been no recorded cases of injuries to animals during the operations. Data analysis is currently ongoing, and associated scientific papers are being published.

The latest results of studies are set out in papers that have been or are being published.


Materials of this study were also reported at the 10th International Conference Marine Mammals of Holarctic dedicated to the memory of A.V. Yablokov (October 29 – November 2, 2018, Arkhangelsk, http://marmam.ru/upload/conf-documents/Abstract_book_2018.pdf):

Steller’s Sea Eagle Monitoring Program

Steller’s sea eagle (Haliaeetus pelagicus) is listed in the RF Red Book, in category 3 (rare species with limited range), and is an endemic species of the Far East. A significant part of the bird’s area of distribution falls within oil and gas field development areas. Its nesting areas are located, in particular, near ENL facilities.

Steller’s sea eagle is included in the Strategy of Biodiversity Preservation in Sakhalin Oblast as biological species used as an indicator of environment condition. ENL representatives participate in meetings of the biodiversity task force and workshops arranged by the Sakhalin Oblast Ministry of Natural Resources and Environment Protection to discuss the methodology, biodiversity study and monitoring results, including those associated with Steller’s sea eagle. Three types of mitigation measures are taken to mitigate impact on this species.

Measures to avoid potential impact include monitoring of Steller’s sea eagle distribution areas and nesting areas (to obtain information that could be used to further develop mitigation activities), as well as temporal and spatial restrictions based on the information acquired during the monitoring program that is periodically carried out since 2005.

Since 1995, ENL has conducted a comprehensive program for monitoring the Steller’s sea eagle population as one of the most distinctive endemic species of the Russian Far East and the indicator species for the status of shore ecosystems within the scope of Sakhalin-1 Project in northern Sakhalin. The focus of monitoring is on the study of key population characteristics of the species and determining its stability under changing environmental conditions. These characteristics include demographic parameters such as population growth rate, population size, and sex and age structure of the population, as well as changes in the occupancy of nesting sites. In addition, the impact of predation by bears and the impact on the population of certain types of human economic and recreational activities are investigated.

Spatial restrictions are also applied as a mitigation measure: buffer zones are established that restrict the company’s activities, especially those with noise impact, nearby sea eagles’ nests.

There is also the third type of mitigation: remediation. Measures were taken to improve the structure of sea eagles’ habitat in cooperation with ornithologists that study sea eagles: construction of roost sites, nests and protective covers to prevent nests from being pillaged by bears. The monitoring program and ENL’s activities to protect Steller’s sea eagle are examples of virtual positive effect on the population of this protected species. Bioengineering work is done regularly to maintain the eagle population. The work includes: construction of artificial nests, construction of artificial perches, and fitting nesting trees with protective covers to prevent the destruction of nests by brown bears. Observations show that the birds readily use artificial perches for hunting and rest. Artificial nests serve primarily as places for overnight stops, handling of prey, and in some cases chick incubation and breeding.

During the program period, considerable factual material that comprehensively characterizes the state of the Steller’s sea eagle population has been collected. Nesting areas are stable: they are constantly occupied, and the activity and productivity vary from year to year. It has been noted that the birds’ behavior is dependent on the forage supply. The birds demonstrate their ability to adapt in the conditions of human-induced disturbance.

Program of Monitoring Rare Bird Species Listed in the Red Book of the Russian Federation and the Red Book of Sakhalin Oblast

The Piltun Bay water area and the adjacent part of the Sea of Okhotsk are of great importance as the feeding area supporting migratory and nomadic birds. The Red Book species nest here (dunlin, Aleutian tern, black-tailed godwit, Steller's sea eagle, etc.). There are major nesting colonies of gulls and terns at the Wrangel Islands and marine sand bars. Birds’ overwintering migration routes pass near ENL facilities.

ENL conducts monitoring of the bird species listed in the Red Book of the Russian Federation and the Red Book of Sakhalin Oblast, as well as migratory, nomadic and colonial nesting species.

There are two types of mitigation measures to reduce impact on the protected avifauna species.

The measures used to avoid impact are the avifauna condition monitoring (as background information to be used for further mitigation measures development), and time and space restrictions based on the information received from the monitoring. The monitoring program has been performed on regular basis since 2004. ENL monitors the bird species listed in the Red Book of the Russian Federation and the Red Book of Sakhalin Oblast, as well as migratory, nomadic and colonial nesting species. The Company conducts studies on the state of populations of rare and endangered species and assessment of the types and level of impact of facilities on migratory and nomadic bird species. The rare avifauna species subject to regular monitoring, the species indicating ecosystems status and the periodicity of monitoring have been defined based on the analysis of the species populations and of the potential impact of the facilities on environment as well as with account for the RF regulatory requirements.

Studies on the state of populations of protected indicator species and assessment of the types and level of impact of facilities on migratory, nomadic and colonial nesting species birds are conducted in control areas in the immediate vicinity of major production facilities. A network of observation and monitoring stations provides for:

- representativeness of data on assessment of the status of species populations at different stages of project implementation;
- managerial decisions aimed at minimization of potential impact on wildlife;
- calculation of compensation payments for measures of response to potential impacts on wildlife.

Observations for assessment of the populations’ status are conducted in the period of the relative bird population stabilization – the reproduction period.

Impact mitigation is provided by means of space restrictions – buffer zones limiting the company’s operations around the birds’ habitats.

The monitoring results demonstrate that nesting and feeding areas of the species of interest were exposed to practically no impact of construction and operations. Birds continue nesting and feeding in the same areas as before construction. Ornithological monitoring during the nesting period has not revealed any changes in distribution and abundance of the key controlled bird species and groups. The numbers of colonial nesting species have been stable for the last several years. No increase in direct impact of the Sakhalin-1 facilities construction and operation activities has been revealed within the monitored area.

The findings from the monitoring and research of various bird species were presented at the Session of the Work Group on Biodiversity of the Sakhalin Oblast Interdepartmental Ecological Council on 28 May 2019:

- I.B. Zykov. Avifauna Monitoring in the Area of the Sakhalin-1 Production Facilities

In 2010, company specialists prepared, and have since been using, the Field Guide for Identification of Rare Birds Listed in the Red Book of the Russian Federation and the Red
Book of Sakhalin Oblast and Encountered on Sakhalin Island as well as in the vicinity of the Sea of Okhotsk and Tatar Strait. The guidebook was provided to concerned specialists and libraries in Sakhalin Oblast.

In 2016, Birds of Piltun Bay thematic calendar for 2017 was published within the framework of the Year of Ecology. The publication was distributed to libraries, schools and NGOs of Sakhalin Oblast.

List of indicator and specially protected bird species inhabiting the zone of impact from construction and operation of Sakhalin-1 areal and linear facilities, which are subject to regular monitoring:

<table>
<thead>
<tr>
<th>Species</th>
<th>Status in the Red Book of Sakhalin Oblast</th>
<th>Status in the RF Red Book</th>
<th>IUCN:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Swan Goose (Cygnopsis cygnoides)</td>
<td>Category 1. Rare nesting species</td>
<td>1 - endangered species</td>
<td></td>
</tr>
<tr>
<td>2 White-tailed (gray sea) eagle (Haliaeetus albicilla)</td>
<td>Category 3. Rare nesting and migratory species</td>
<td>3 - rare species</td>
<td></td>
</tr>
<tr>
<td>3 Osprey (Pandion haliaetus)</td>
<td>Category 3. Rare nesting species</td>
<td>3 - rare species</td>
<td>Least Concern</td>
</tr>
<tr>
<td>4. Spotted (Nordmann's) Greenshank (Tringa guttifer)</td>
<td>Category 1: Rare nesting and migratory species</td>
<td>1 - endangered species endemic to Russia.</td>
<td></td>
</tr>
<tr>
<td>5 Dunlin (Calidris alpine actites)</td>
<td>Category 1: Rare nesting species endemic to northern Sakhalin</td>
<td>1 - endangered species, relict, endemic to northern Sakhalin</td>
<td></td>
</tr>
<tr>
<td>6 Aleutian Tern (Sterna aleutica)</td>
<td>Category 3. Rare nesting species</td>
<td>3 - rare species</td>
<td></td>
</tr>
<tr>
<td>7 Long-billed Murrelet (Brachyramphus marmoratus)</td>
<td>Category 3. Rare nesting species</td>
<td>3 - rare species with limited distribution, endemic to North Pacific</td>
<td></td>
</tr>
<tr>
<td>8 Long-toed Stint (Calidris subminuta)</td>
<td>Category 3: rare nesting species at range periphery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Black-billed Capercaillie (Tetrao parvirostris)</td>
<td>Category 3. Rare sedentary species</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Green sandpiper (Tringa ochropus)</td>
<td>Category 3. Rare nesting species at range periphery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Ruff (Philomachus pugnax)</td>
<td>Category 3. Rare nesting species at range periphery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Northern Hawk Owl (Surnia ulula)</td>
<td>Category 3. Rare species at range periphery with local distribution and low abundance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 Great Gray Owl (Strix nebulosa)</td>
<td>Category 3. Rare species at range periphery with local distribution and low abundance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 Siberian Grouse (Falcipennis falcipennis)</td>
<td>Category 2: Rare sedentary species</td>
<td>2 - sporadic species with decreasing numbers, endemic to Russia</td>
<td></td>
</tr>
</tbody>
</table>
15. "GREEN" OFFICE INITIATIVES

ENL E&PS draws up an annual Environmental Business Plan that lays out fundamental strategic principles and long term plans for environmental protection. E&PS leads company employees, clients, contractors and other organizations and individuals involved in environmental protection. The environmental business plan lists priorities and routine tasks for each of the company’s business units each year. Their performance in achieving the objectives is also rated on an annual basis.

The key focus areas for E&PS include:

1 – Strict compliance with RF environmental laws, assessment and management of potential risks;

2 – Cascading information to employees in the field about the environmental protection requirements and the company’s programs for waste reduction and prudent consumption of water and power. Employees’ responsibility awareness, enhanced involvement and participation by contractor personnel and the employees of recruiting and service companies, understanding of the need to mitigate the potential environmental impact;

3 – Waste management including development and implementation of measures to minimize waste generation, to re-use and recycle waste;

4 – Prudent water and power use management, including reduced consumption;

5 – Setting up, development and expansion of natural complexes at Sakhalin-1 facilities, participation in strategic partnership programs to conserve nature and promote biodiversity;

6 – Setting up, development, and expansion of Sahalin-1 "green" facilities, including creation of an environmental responsibility culture and ensuring of personnel’s sound health and safety;

Environmental protection program implementation relies on documented corporate programs and on environmental protection initiatives coming from company employees, contractors, clients and other stakeholders among organizations and individuals.

Corporate Environmental Protection Initiatives

- “Enhance personnel involvement” through heightening field personnel and contractor awareness of the need to take stock of their behavior and to replace habitual behavior with environmentally safe actions;

- “Remember the switch” drive is intended to induce employees, contractors, visitors and partners to turn off the equipment and appliances which are no longer in use to save electricity and to heighten the feeling of being involved and of responsibility for the facility environmental stability;

- “Environmentally responsible use of office equipment” is a drive which ensures safe and environmentally responsible operation of equipment and appliances which consume materials, water, and power;

- “Power consumption audits” call for regular reviews of the general configuration of facilities, type and quality of power systems used – for the purpose of their optimization and improvement, they are also used to assess and identify opportunities to save power by the local personnel, drawing on minimal resources;

- “Effective use of cups” is a drive to encourage employees, visitors, and partners to refrain from using disposable tableware to minimize waste;
- “Tame the paper tiger” is a drive to reduce purchases and use of paper;
- “Eliminate construction trash” is an initiative to reduce trash and debris, to fine-tune trash segregation, to recruit local waste management companies;
- “Report leaks and stay aware of your responsibility” promotes company personnel and contractor in detecting and timely reporting of water leaks;
- “Creation of effective comfort zone” is a drive to create an attractive and comfortable ambience and to optimize the local ecosystem outside of the office building, etc.

- “Support of Biodiversity within the Office Premises” has been developed based on the high environmental standards of ExxonMobil corporation and is implemented for the purpose of progressing biodiversity, identification and implementation of measures for protection and mitigation of impacts on flora and fauna habitats and species.

In 2018, a detailed examination and re-inventory of all 246 tree plantings was performed in the office premises including that of the Russian Federation and Sakhalin Oblast Red Book trees (5 Japanese yews, 3 omatsu trees, 4 Sargent cherry). The work was done by the employees of FEB RAS Sakhalin Botanical Garden: Director A.A. Taran, Cand. Sc. (Biology); Chabanenko S.I., Deputy Director for Scientific Research; A.A. Rogazinskaya-Taran, Head of
Introduction Laboratory, Cand. Sc. (Biology); Zubareva M.D., Junior Research Associate; and M.N. Nikchemny, a lab assistant.

<table>
<thead>
<tr>
<th>Effectiveness Indicators of the Ecological Office Program</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Star® Rating</td>
<td>63</td>
<td>63</td>
</tr>
<tr>
<td>Reduction of energy consumption *</td>
<td>52%</td>
<td>56%</td>
</tr>
<tr>
<td>Reduction of water consumption *</td>
<td>10%</td>
<td>12%</td>
</tr>
<tr>
<td>Reduction of waste generation volumes *</td>
<td>53%</td>
<td>52%</td>
</tr>
<tr>
<td>Percentage of wastes directed for recycling and reuse</td>
<td>25%</td>
<td>20%</td>
</tr>
<tr>
<td>Reduction of disposable paper cups use *</td>
<td>70%</td>
<td>73%</td>
</tr>
<tr>
<td>Reduction of office paper used **</td>
<td>24%</td>
<td>17%</td>
</tr>
<tr>
<td>Biodiversity Index in the office premises</td>
<td>60%</td>
<td>60%</td>
</tr>
<tr>
<td>Number of new trees planted in the office premises</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Educational sessions for office employees on the initiatives in the sphere of environmental protection and resource saving</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

* the data vs 2010

** the data vs the previous year

In 2017, the ENL’s Green Office Program for Measures to Support Biodiversity passed a regular certification of the Wildlife Habitat Council; the Certificate is valid through December 31, 2019. Since 1988, the Council supports and certifies programs for protection of environment in lands of industrial enterprises acting via cooperation and education.
Wildlife Habitat Council proudly awards this program Conservation Certification through December 31, 2019.

**ExxonMobil**
**Exxon Neftegas Limited**
**Sakhalin**

Certified Silver

[Signatures]

**President**

**Chairman of the Board**