Offshore Projects. Achievements and Prospects
Gazprom Neft’s offshore projects
Oil companies’ efforts to develop their resource base are increasingly focused on hard-to-recover and technologically complex reserves.

In 2019, Gazprom Neft’s offshore project management structure underwent organizational transformation in order to cover the entire range of operations related to the development of offshore oil fields: geological exploration, design, infrastructure development and operation.

**Gazprom Neft Shelf**
- offshore project management center
- key management competence center

**Gazpromneft-Sakhalin**
- geological exploration operator

**Gazpromneft-Prirazlomnoye**
- operator of offshore oil and gas facilities

**Morneftegazproject**
- engineering company (technical competence center) performing the full range of front-end loading and design work for offshore projects

- 5 years of continuous oil production on the Arctic shelf
- 1000 employees
- 7 promising offshore projects
- 2 oil fields in the top 10 largest discoveries globally in 2017 and 2018*
- 1st Russian oil production project on the Arctic shelf
- 9 years of research confirming environmental safety of our projects

Project geography:
- from the Arctic seas to Sakhalin Island

*According to Wood Mackenzie
OFFSHORE STRATEGY

Gazprom Neft understands the importance of implementing offshore projects in partnership with top players of the global oil and gas industry.

- In order to replenish its resource base, Gazprom Neft not only carries out geological exploration in conventional production regions, but also brings special attention to the development of offshore production on Russia’s continental shelf.

As a pioneer in the development of Russia’s Arctic shelf, Gazprom Neft strives to assert its leadership and sustainably develop the resource potential as part of the new offshore projects.

According to the global practice, only 10% of offshore projects are developed by companies independently. This is happening due to the fact that companies need to diversify the risks associated with expensive exploration drilling.

The Company is open to cooperation on both oil field development projects and the joint development of technologies and competences.

Targets for the long-term development of Gazprom Neft’s offshore operations:

1. Development of expertise and technologies for the development of offshore fields of any complexity level
2. Development of new production hubs
3. Development of an efficient offshore project portfolio
Oil-producing asset on the Arctic shelf
More than 5 years of continuous oil production on the Russian Arctic shelf

In 2018, 3D seismic surveys covering 387 km² were conducted at the oil field using sea-floor recording equipment. Their findings will help to obtain more detail on the geological structure of target formations and identify new opportunities for expanding the resource base.

Since 2019, the Prirazlomnaya offshore ice-resistant fixed platform has been operated by Gazpromneft-Prirazlomnoye LLC.
The Center will be devoted to the implementation of the most recent IT tools and analytics in order to increase the economic efficiency of the Prirazlomnoye oil field.

The Company plans to establish a Production Optimization Center. This project will consolidate the Poseidon Program, which integrates Gazprom Neft’s digital projects supporting offshore oil production.

The Poseidon Program has already enabled digital modelling of optimization measures, more accurate oil field development forecasts, and improved production process control and safety. In addition, it provides a shared information space for continuous monitoring of production processes on the Prirazlomnaya platform through the use of digital twins of equipment.

In medium and severe ice conditions, oil can be safely offloaded onto tankers only if active ice management techniques are used. An icebreaker allows a tanker to get access to the platform and leave it without obstacles, and ensures its safety in the offloading sector by reducing the negative impact of ice formations.

Due to the use of various ice management tactics in the 2018 winter and spring navigation season:

- The duration of the available offloading window increased by 38%.

351 kt of oil, which otherwise would have been impossible to offload due to severe ice conditions, was shipped out fully.

The system is designed to provide secure and efficient logistic support for the Company’s projects in Arctic and freezing seas through the use of state-of-the-art technology.

The Company is creating an Ice Management Center, which will be able to process large sets of hydrometeorological data using digital technologies. The analysis of this information will enable the Company to:

- plan optimal routes and operating windows in Arctic and freezing seas;
- reduce non-productive tanker downtime;
- reduce the probability of accidents.
EXPLORATION

Promising oil fields
Sea of Okhotsk

**Phase**

- **60-80 m** sea depth in the area of the fields
- **1300-1800 m** occurrence depth of promising reservoirs

**137 MT OF OIL**

- According to the classification of oil reserves and resources of the Russian Federation
- Ranked 7th in terms of recoverable reserves – Top 10 largest oil and oil & gas discoveries globally in 2018*

**415 MT OF OIL**

- According to the classification of oil reserves and resources of the Russian Federation
- Ranked 3rd in terms of recoverable reserves – Top 10 largest oil and oil & gas discoveries globally in 2017*

**AYASHSKY LICENSE BLOCK**

**TRITON OIL FIELD**

**GEOPHYSICAL RESERVES**

- **1300-1800 m** occurrence depth of promising reservoirs
- **60-80 m** sea depth in the area of the fields

**Background and technologies**

The Neptune and Triton oil fields were discovered on the north-eastern shelf of Sakhalin Island in 2017 and 2018. During drilling operations, the Company has used the riserless mud recovery technology for the first time. It leads to a reduction in the well construction time and an improvement in well stability and helps to prevent potential blowouts and contamination of water with drilling waste (which is removed and processed onshore).

**Prospects**

The Neptune and Triton oil fields comprise a major oil production cluster on the shelf of Sakhalin Island, transforming it into a new strategically important region on Gazprom Neft’s project map.

---

*According to Wood Mackenzie*
In 2017, 3D seismic surveys covering 1,070 km² were carried out at the oil field. They will allow to evaluate reserves more accurately and identify promising formations in Devonian sediments. The Company is processing and interpreting the obtained data in order to develop a further work program.
In 2017 and 2018, 3D seismic surveys covering 5,125 km² were carried out at the block. The Company is currently processing and interpreting the obtained data.

In February 2019, the Company obtained a license for geological exploration, prospecting and production of hydrocarbons at the Yuzhno-Obsky license block. The Company is currently developing a geological exploration program.
KHEISOVSKY LICENSE BLOCK

Desktop studies and basin modelling have been completed and a geological conceptual model has been prepared for the license block, and its resource potential has been estimated. The Company is currently seeking technological solutions for the development of the license block.

SEVERO-WRANGELEVSKY LICENSE BLOCK

In 2018, 2D field seismic surveys covering 5,123 linear km were carried out at the license block. Exploration of the license block continues.

1580
MTOE according to PRMS

2200
MTOE according to PRMS

100–500 m
sea depth within the boundaries of the block

40–200 m
sea depth within the boundaries of the block

Exploration phase

2D seismic
Technological strategy and human resources
Prioritized areas of technological development include the following:

1. Seismic equipment
2. Power supply equipment for offshore platforms
3. Oilfield services for offshore well construction
4. Emergency and rescue equipment, oil spill response technologies for use in the Arctic

Innovative technologies are being developed on the initiative of Gazprom Neft in order to support the implementation of its current and future projects. The technological strategy adopted by the Company is aimed at achieving the leadership in offshore oil production by developing domestic technologies.

The Company has formed a portfolio comprising over 100 initiatives in the following areas: Safety, Geological Exploration, Drilling, Production, Operation, Logistics, IT and Digitization, Conceptual Design and Development of Offshore Infrastructure.

Further technological development of the offshore business is based on projects developed in close cooperation with internal customers.
An Upstream Faculty specializing in offshore projects has been established at Gazprom Neft’s Corporate University.

A unique training program titled ShelfProject has been developed in order to provide employees with systematic knowledge and practical skills in the field of offshore project management.

Gazprom Neft’s partners comprise Russian and foreign specialized universities. The Company supports a joint international Master’s degree program in Offshore Field Development Technology run by Gubkin Russian State University of Oil and Gas and the University of Stavanger (Norway).

Implementation of offshore projects requires extensive experience, unique competences and expertise extending beyond standard training programs. Accordingly, Gazprom Neft attaches special importance to personnel training and development and implements in-house employee training and professional development programs.
Safe offshore development
Many years of operation of the Prirazlomnaya platform provide evidence that oil production in the Arctic can be safe.

After the start of its operations on the Sakhalin shelf, Gazprom Neft has joined a project to monitor the gray whale population in the Sea of Okhotsk.

Monitoring findings show that the Company’s operations do not affect the gray whale population.

As part of its operations on the Arctic shelf, Gazprom Neft is implementing a number of environmental initiatives:

1. Regular environmental monitoring
2. Replenishment of aquatic resources
3. Program to study and preserve the Atlantic walrus
4. Conservation of biodiversity

In 2019, the Company published an Ecological Atlas, which is one of the most detailed and up-to-date collections of scientific information about the Pechora Sea. The electronic version of the Atlas is available on the website of Gazprom Neft Shelf.
The Prirazlomnaya platform is used for year-round oil production under the most challenging conditions of the freezing Arctic sea.

State-of-the-art technological solutions help to preserve the natural environment of the Far North.

**Zero discharges**
Technologies used in the course of operation of the Prirazlomnaya platform effectively prevent the discharge of industrial and consumer waste, lubricants, process water and industrial wastewater into the sea.

**Unique caisson**
The Prirazlomnaya platform has been installed directly onto the seabed, with all the wells drilled inside it. The reinforced base of the platform is a reliable buffer between the wells and the open sea.

**Automated response**
For additional safety, the wells are fitted with special equipment that can automatically and reliably block the oil lifting at depth in emergency situations.

**“Wet” storage**
The “wet” oil storage technique is applied in the storage tanks, which are always filled with either oil or water to prevent the risk of explosion.

**Safe air transport**
Helicopters servicing the Prirazlomnaya platform fly over the sea at an altitude of 500 meters or more in order to reduce the impact of noise on local fauna.

**Safe offloading**
Oil offloading commences only if 30 conditions are met simultaneously. Moreover, the offloading line connecting the platform to a tanker is equipped with an emergency shutdown system.

**Icebreakers fitted**
Icebreakers fitted with cutting-edge oil spill clean-up equipment are on permanent standby around the platform.

**State-of-the-art technological solutions**
help to preserve the natural environment of the Far North.

**TECHNOLOGICAL SOLUTIONS FOR SAFE OIL PRODUCTION IN THE ARCTIC**
As a socially responsible company, Gazprom Neft supports the publication of books describing the unique nature of the Arctic region and its inhabitants.


  For the past 8 years, Alexander has been working above the Arctic Circle, where he studies and photographs wildlife of Russia's Arctic seas. This is a unique and wonderful world, and all one needs to do in order to see its beauty is to dive underwater.


  The authors of the book have worked for a long time at Roshydromet stations in the Far North and the Arctic. The book is written in an accessible language and contains numerous illustrations and a wealth of interesting facts about researchers studying the Far North.


  The Ecological Atlas of the Pechora Sea is a summary of results of Gazprom Neft's long-term programs aimed at preserving biodiversity in the sea around the Prirazlomnaya platform, which is the first oil platform built on the Russian Arctic shelf.