«GAZPROM NEFT SHELF» LIMITED LIABILITY COMPANY
SUMMARY
OF OIL SPILL PREVENTION AND RECOVERY PLAN
IN THE OPERATING AREA OF PRIRAZLOMNYA OFFSHORE
ICE-RESISTANT FIXED PLATFORM
GAZPROM NEFT SHELF LLC
2013

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PLAN
FOR OIL SPILL PREVENTION AND RESPONSE
IN THE OPERATING AREA OF PRIRAZLOMNYA OFFSHORE
ICE-RESISTANT FIXED PLATFORM
GAZPROM NEFT SHELF LLC
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Marine Fleet (CSRIMF)
Saint Petersburg, 2013

ACCEPTED TERMS, ABBREVIATIONS AND DEFINITIONS
ERT
Emergency rescue team; PERT
Professional emergency rescue team; ERP/OSR
Emergency rescue preparedness for oil spills recovery; ERSD
Emergency rescue standby duty; (OPRC90)
International convention on Oil Pollution Preparedness, Response and Cooperation, 1990. Effective date: since 1998;
Rescue vessel
Multi-purpose or specialized vessel designed for OSR task performance and responsible for ERP/OSR at Prirazlomnaya OIRFP;
Booms
Special floating barriers designed for oil spill restriction on the water surface and its containment;
Russian Ministry of Emergencies (MChS) MD in NAA
Russian Ministry of Emergencies Main Department in Nenets Autonomous Area;
Dispersants
Chemicals specially designed for speeding natural processes of spilled oil degrading and applied for protection of especially valuable natural features and economic entities from oil affection. Dispersants application is performed in accordance with a corporate standard STO 318.4.02-2005 “Regulations of dispersants application for oil spills recovery” on condition of coordination of their application with environmental bodies upon obtaining favorable conclusion from State Environmental Expert Review (SEER);
ERT (Emergency Response Team)
Organization providing services in ensuring EPR and OSR during production wells construction at Prirazlomnaya OIRFP;
Gazprom Neft Shelf LLC/The Company
Gazprom Neft Shelf Limited Liability Company is an operating company at Prirazlomnaya OIRFP;
High-priced area, top-priority protection area
The area which offshore and onshore resources are of high economic, ecological, recreational value;
High risk area
Areas where oil spill emergency risk is most likely to happen;
IMO
International Maritime Organization;
CER EFS
Committee for Emergency Response and Ensuring Fire Safety;
OSR
Oil spills recovery, a set of actions aimed at enclosing and collecting spilled oil regardless of time, place, source and reason of oil spill;
OIRFP
The Prirazlomnaya OIRFP;
NAA
Nenets Autonomous Area;
Oil
According to MARPOL 73/78 Convention means oil in any form including crude oil, liquid fuel, petrolierous residues and other oily mixtures, oil residuals and refined products;
Operating Area of Responsibility
The Area where Gazprom Neft Shelf LLC is in charge of oil spills recovery regardless of their source;
Primary measures
Primary measures for moving the watercrafts and special equipment and personnel to oil spill place in order to minimize the spill, to contain and collect oil;
Personnel (trained personnel)
Personnel that passed special training and has practical skills in OSR offshore (requirements to personnel are defined by the training course program for vessel crews and teams for offshore emergency situations consequences recovery (KPSP-93) RD 31.75.01-93);
Oil spill at offshore zones
– of local importance
– oil and oil-products spill in amount not exceeding 500 t;
– of regional importance
– oil and oil-products spill in amount from 500 to 5,000 t;
– of federal importance
– oil and oil-products spill in amount exceeding 5,000 t;
Skimmers
Devices designed for oil collection from the sea surface;
Special equipment
Technical devices providing oil-products collection from the water surface, accumulation and temporary storage for transportation to reception centers for refining or recovery;
Special watercrafts (multi-purpose specialized vessels)
Vessels used for performance of OSR tasks with emergency rescue preparedness at Prirazlomnaya OIRFP;
Special preparation for OSR
Complex of theoretical and practical training where the crew receives knowledge and practical skills to perform OSR operations at the water area. Complex of theoretical and practical training of the personnel is defined by the Vessel crews and teams training for offshore emergency situations consequences recovery (KPSP-93) RD 31.75.01-93;
OSR technical means
Complex of technical means designed for spilled oil enclosure, containment and collection;

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OMH
Operations Management Headquarters;
ES (Emergency Situations) (Oil)
Emergency situation caused by oil spill;
CLC
International Convention on Civil Liability for Oil Pollution Damage;
SOPEP
Shipboard Emergency Plan for Oil Spill Control.

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Basic characteristics of Prirazlomnaya OIRFP and predicted pollution area in the event of emergency related to oil spill (ES (Oil))

General information on Gazprom Neft Shelf LLC and Prirazlomnoye oil field (POF)
Gazprom Neft Shelf LLC (hereinafter – the Company) owns development and operating license for Prirazlomnoye oil field and it is an operating company for Prirazlomnaya OIRFP.
Company address: 142770, Gazoprovod settlement, 101, Sosenskoye settlement, Moscow,
tel. (495) 817-11-11, fax: (495) 817-11-27, e-mail: office@shelf-neft.gazprom.ru.
Prirazlomnoye oil field is located in the southeastern area of the Barents Sea (also known as the Pechora Sea) on the shelf adjacent to the flat shore of Bolshezemelskaya tundra, 55 km to the North of the former Varandey settlement, 320 km to the North-East of the river port of Naryan-Mar (R. Pechora) and 980 km to the East of Murmansk. The Field is found prepared for industrial development (Record of State Commission for Reserves # 334 DSP d/d 30 June, 1995).
Operation of OIRFP is planned on the basis of creating and functioning of a reliable
modern oil production complex which is in compliance with applicable statutory and regulatory requirements in terms of labor protection, industrial safety and environmental safety, civil protection and health protection of the OIRFP personnel and population. The Company is responsible for any spill recovery regardless of the spill source in the operative area of responsibility of Prirazlomnaya OIRFP.

**Basic characteristics of Prirazlomnaya OIRFP**

In order to develop the field it is planned to construct 36 wells, out of them 19 are production wells, 16 – injection wells, 1 – standby wells and 1 well is designed for drilling waste disposal, besides 4 spare wells are provided. Over the period of Prirazlomnoye oil field operation it is planned to produce 74.5 mln. t of oil, and maximum annual oil production amount of 6.5 mln. t is achieved in the 6th year of the OIRFP operation.

All operations associated with drilling, oil treatment and offloading will be performed at the OIRFP. The OIRFP is located in the central part of the field and consists of two parts: a substructure (caisson) and a topside including oil producing and drilling equipment. Ice-resistant gravity-based substructure (caisson) consists of four superblocks. Caisson has 16 main sections, formed by cofferdams of overall height. All the basic elements, i.e. bottom, roof, sidewalls and cofferdams are designed with double shell, made of reinforced sheets. The concrete ballast is located inside the sides and cofferdams. It is necessary to ensure the stability of the platform on the seabed; it also allows reducing the thickness of the sheet elements. Ice and wave deflector is installed around the perimeter of the caisson; it protects the topside against ice and waves, and underpins various facilities such as cranes and shipping arms (COUPON – Aker complex direct loading system).

Storing of crude oil in the caisson is based on the “wet storage” principle. This means that the storage is constantly filled with liquid: oil or seawater. This method provides secure oil storage (absence of free gas). Intermediate deck of the platform is a steel structure between the caisson roof and the topside of the platform with height of 12.45 and size of 78X74 m. Tanks for drinking water and various drilling fluids are built in.
Utility unit is a structure which includes some auxiliary equipment and part of temporary shelter.

Living quarters is a place for recreation and life of the personnel servicing the platform.

After treatment for transportation the produced oil is stored in the storage object located in the substructure of Prirazlomnaya OIRFP with capacity of 103 thousand t, and consisting of 12 sections with capacity up to 10.5 thousand t each.

Oil offloading to ice class tankers with deadweight of 70 thousand t is performed from the storage object. Equipment of the system of direct offloading to tankers includes two offloading stations, located correspondingly on the North East and South West corners of the platform. Tankers length is 257.33 m, their width is 34.04 m, their draft is less than 14 m and their side height is 21.6 m. Cargo tanks are equipped with ten Marflex electrical submersible pumps, slop tanks have two electrical submersible tanks.

“Zero discharge” of all waste principle was implemented during wells construction. Industrial disposal of waste drilling mud, sludge and other process waste will be performed in the specially drilled absorbing well.

It is not planned to discharge oil containing water at the OIRFP. During initial operating period only fire water from volume flooding system, water from processing facilities cooling systems and domestic sewage after its treatment can be discharged into the sea. Crews are transported via passenger vessels and helicopters.

Hydro meteorological conditions
The Pechora Sea climate is more severe than the Barents Sea climate; it is explained by a decrease in the influence of warm Atlantic currents and presence of ice cover for the considerable time of the year.

Air temperature. Thermal regime significantly depends on the season and circulating processes above the sea. In general, average monthly air temperature values decrease from West to East so far as Atlantic air masses get less warm. The coldest months are January and February; the warmest months are July and August. Average annual air temperature is below zero everywhere.

Maximum air temperature values in summer months can reach 30-32 °C, minimal values are minus 42-43° C.

Fallout. Fallout type depends on the season. Snow, wet snow, snow and ice pellets are typical of the cold period, rain, drizzle and hail are typical of the warm period. Autumn and spring
periods are characterized by mixed type of fallout.

*Wind.* The Pechora Sea features monsoonal character of the wind regime with North-East winds domination in summer-autumn period and with South-West winds domination in winter period.

Average wind speed varies significantly during the year. The highest speeds are typical in November-December, and the lowest speeds are in August.

*Fogs.* Fogs above the Pechora Sea appear in all seasons; however their number and duration are distributed irregularly in the seasons. Most often fogs are observed in the warm time of the year when the heated up air is lifted out on the colder sea surface. In the cold period the number of fogs above the sea is 2-2.5 times less. Fogs duration is not long; usually it is 4-6 hours a day.

*Bottom and shore contours.* South West is the shallowest part of the Barents Sea. Depths increase from the shore up to 100-150 m.

*Hydrological conditions.* Maximum variability of the Barents Sea South-East part water temperature is typical for the surface horizon, where average annual range is 10°C. In winter period typical seawater temperature values vary in the range from minus 1.8°C to 0°C, in spring –

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8 from 0°C to 4°C, in summer – from 5°C to 8°C and in autumn – from 2°C to 4°C. Maximum warm up of the water is observed in August and in some years it can reach 15°C.

*Waters dynamics.* Currents system of the Barents Sea South East stands out of the overall currents structure of the whole sea in general. In the area of platform installation sea level fluctuations taking into account tides and storm upsurge-downsurge can be (with 100 years frequency) from –1.70 m to +2.20 m. Sea depth at the design site of the platform installation is 19.42 m. Therefore designed sea depth in the point of the platform installation can vary from 17.72 m to 21.62 m.

*Ice conditions.* Ice cover in the Pechora Sea depends on the season, ice covers sea in winter and it melts in summer. Ice conditions are one of the most important factors defining construction and drilling platform operation safety. The Pechora Sea ice cover during the year consists of first-year ice of different thickness:
thin (30-70 cm) and thick (120-200 cm) ice. The first type dominates in the Pechora Sea in December-April. Only at the end of June - beginning of July thick first-year ice moves back to the East due to melting and weakening of ice inwash from the Novaya Zemlya ice cluster. Ice coverage of the sea varies significantly in different years. Therefore ice cover in the field area stays on average 6-8 months a year.

Emergency rescue preparedness for containment and recovery (ES(Oil))
Oil spills prevention and recovery plan in the operating area of Gazprom Neft Shelf LLC Prirazlomnaya OIRFP responsibility (OSR Plan hereafter) is a fundamental document for evaluation of the Company preparedness for containment and consequences recovery operations after oil spills.
In case of oil spill the Company policy is aimed at:
- personnel and population life and health protection;
- termination of oil spill from the source;
- maximum fast and close to the source containment of the spill;
- efficient use of means to contain and recover oil spill;
- minimizing damage to the environment, property protection from the spilled oil;
- during operations avoiding larger damage than the spilled oil itself can incur;
- minimizing waste generation;
- payment of indemnity and environment recovery from oil spills.
OSR Plan includes emergency recovery issues caused by oil spills in the Pechora Sea basin.
All operations in case of Emergency at the OIRFP are regulated by the Emergency Response Plan and SOPEP.
The current OSR Plan is developed in accordance with the requirements of the following Russian Federation State Provisions:
- d/d 21.08.2000, # 613 On immediate measures aimed at oil and oil-products spills prevention and recovery;
- d/d 15.04.2002, # 240 On the organization order of measures aimed at oil and oil-products spills prevention and recovery on the RF territory;
- d/d 30.12.2003, # 794 On the single emergency prevention and recovery state system;
OSR Plan also includes requirements and recommendations of the International Conventions, where Russian Federation participated as a party or a signatory.
List of resources and manpower to recover oil spills in the operating area of the OIRFP is
defined and compiled according to the requirements of **Russian Federation State Provisions d/d**

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on the spilled oil film recovery in any spot of the operating area of the OIRFP responsibility within four hours.

In order to prevent and recover oil-products spills at the time of the OIRFP operation the Company conducts permanent emergency rescue preparedness (ERP) with attraction of the PERT OSR relevant resources and manpower. In case of spill supply vessels which are on permanent duty at the OIRFP immediately start prompt actions aimed at preventing oil film spread.

OSR Plan includes the Company sequence of operations in case of any oil spills including possible oil spills of the higher order, where the Company receives additional regional OSR resources, and under certain conditions regional spill recovery is performed according to the **Regional Plan of Oil Spill Response in the Western Sector of the Arctic.**

In this case a Representative of the Company’s Committee for Emergency Response and Ensuring Fire Safety is included in the relevant group of the senior regulatory body, and OSR resources and manpower owned by the Company are transferred to the senior Operations Management Headquarters (OMH) command.

The Company Chief Engineer is in charge of OSR Plan implementation and informing all people and parties concerned: 142770, Gazoprovod settlement, 101, Sosenskoye settlement, Moscow, tel.: +7 (495) 817-11-11.

**Purpose and Objectives of OSR Plan**

OSR Plan goal consists in timely planning of ES (Oil) prevention and recovery operations, maintaining the preparedness of recovery resources and means to provide population and territory safety, as well as minimizing damage and losses if there are any.

The main objectives of the current OSR Plan are:

– substantiation of the potential ES (Oil) level and its consequences;
– establishing main principals of the ES (Oil) prevention and recovery operations organization at the relevant level in order to define sufficiency of the planned measures taking into account possible sources of the ES (Oil), as well as geographical, navigation...
and hydrographic, hydrometeorological features of the possible oil and oil-products spill;
– monitoring and control of social and economic consequences of the ES (Oil),
monitoring the environment and situation within the OSR Plan coverage area;
– defining interaction order of the engaged organizations, the Company CER EFS OSR
resources and manpower for ES (Oil) recovery, organizing activities on providing mutual information exchange;
– justification of sufficient amount and composition of the Company CER EFS OSR resources and manpower for ES (Oil) recovery, consisting of PERT, equipped with special technical means, equipment, outfit and materials certified as appropriate;
– establishing the procedure of readiness monitoring and control operation for activities of resources and manpower management bodies actions, providing planning the exercises and trainings;
– operations providing professional training of the personnel and its qualification improvement, creating financial and material resources, as well as maintaining ERT in the relevant alert level;
– preparation of the ES (Oil) response operations situational schedule (timing schedule);
– implementation of the target-oriented and science and technical programs aimed at preventing ES (Oil) and increasing stability of regulatory bodies work in case of emergency;
– planning ES (Oil) consequences recovery operations.
According to the results of the conducted risk estimate and consideration of ES (Oil) possible scenarios in the area of the OIRFP responsibility different levels of oil spill are possible including federal level associated with the tanker’s breakdown.

This OSR Plan is valid for five years.

**Measures for Prevention of Emergency Situations (Oil)**

*Possible sources of ES (Oil) in the Prirazlomnaya OIRFP area*

The main sources of oil spills in the Company operational area of responsibility can be:
– a drilling well;
– a crude oil tank section;
– a tanker;
– loading system ( Aker complex direct loading system).

Main reasons of oil spills in the Company operating area of responsibility can be:
– loss of the well control;
– tanker accident in the Company’s area of responsibility;
– crude oil tank section loss of containment;
– failure of the loading system when transporting oil and oil-products loading from the platform to a tanker and vice versa;
– helicopter accident.

**Prediction and assessment of oil spills possible volume under emergency situations (Oil) at Prirazlomnaya OIRFP**

For each possible source of spill prediction and consequences assessment were performed for most pessimistic scenario including:
1. Well control loss
The spill is possible in the amount of 1.5 thousand t according to the Government Decree d/d 21.08.2000, # 613. According to the emergency classification given in the document the spill of this level is classified as local on condition that the emergency well is under control within twenty-four hours.
2. Loading system failure at the OIRFP
In case of loading system failure at the OIRFP with maximum transfer capacity of 10 thousand t/h, emergency protection system response time is seven seconds (in the worst-case scenario). Thus possible amount of spill in case of the loading system failure is 19.4 t.
3. Tanker accident
In case of emergency with the tanker maximum possible oil spill is 10 thousand t – the volume of two adjoining tanks of a tanker with deadweight of 70 thousand t.
4. Emergency in case of crude oil tank sections loss of containment
Possible spill volume is 8 thousand t – capacity of one section for the oil storage. Hereafter two values of spill volume will be used for calculation of OSR resources and manpower sufficiency: 10 thousand t (tanker accident) and 1.5 thousand t (well control loss), as most possible and covering all the range of ES (Oil) values.

**Boundaries of ES (Oil) zones taking into account the results of oil spills risk assessment**

Complex mathematical models (CMM) are used to assess risk of the impact on the environment and to define the ES (Oil) areas boundaries at the territory of Prirazlomnoye field.

In order to assess well blow-out frequency and duration the following original data was accepted: blow-out frequency from 19 production wells is accepted at the level equal to $0.48 \times 10^{-4}$ cases a year for one well $\times 19$ wells = $9.12 \times 10^{-4}$, that is in the OIRFP operation for 10 thousand years 9 emergencies are possible (1 emergency over 1,1 thousand years). This category of
influence according to Rostekhnadzor procedural guidelines RD 03.-418-01 is considered to be unlikely.

Boundaries of the ES (Oil) zones taking into account oil spills risk assessment at the territory of Prirazlomnoye field are shown in Figure 1 (below).

Figure 1. Boundaries of the ES (Oil) areas taking into account oil spills risk assessment at the territory of Prirazlomnoye field in July-September

Defining sufficiency of ES (Oil) recovery resources and manpower

All calculations of OSR means sufficiency are approximate and are conducted on the basis of the expert review of spills risk assessment results and modeling spilled oil behavior taking into account world experience in this field. Calculation of OSR means sufficiency is based on the requirements of the normative acts for oil spill containment at the offshore zone within four hours. While evaluating OSR means sufficiency the following features should be taken into account:

- areas of special value are of top priority while performing operations aimed at environment pollution prevention;
- the choice of OSR technologies will be defined by taking into account the results of Analysis of total environmental benefits (ATEB) according to CTO 318.4.02-2005

Rules for the use of dispersants for oil spills response, which serves as basis for evaluating the response procedures which are most acceptable from the environmental viewpoint in each oil spill occurrence at any given time. Evaluation of OSR resources and manpower sufficiency is based on:

- quantitative risk assessment – spills significance, the zone of influence, etc.;
- information on environmentally sensitive areas under threat from pollution;
- oil gathering technologies recommended for the Pechora Sea conditions;
- list of the Company OSR equipment given in the Tables 1-4.

Spill in amount of 1,5 thousand t of oil in case of well control loss

At the offshore area PERT are used for OSR. Mentioned resources and manpower are located in the areas of their usual location at the OIRFP, near the OIRFP and at the Company’s request are sent to the spill scene within half an hour after the ES (Oil) takes place. The following OSR resources in amount of 1.5 thousand t are engaged for OSR:

- offshore inflatable booms – 1.2 thousand m;
- boom-laying boats – 2 pieces;
- multi-purpose icebreaking vessels (MPIV) equipped with heavy offshore skimmer Free Floating Offshore Skimmer (FFOS hereafter) with capacity of 100 m$^3$/h – 2 pieces;
- ORS vessel – 1 piece;
- sorbent – 3,750 kg.
Total time of the ES (Oil) recovery operation is 18.6 hours, including:
- time of collecting 1.5 thousand t of oil is 16.6 hours;
- time of transferring to the ES (Oil) area with unfolding 1.2 thousand m of booms – 2 hours.
Situation modeling during the decision-type team staff exercises and expert review of specialists from Central Scientific Research Institute of Maritime Fleet (CSRIMF) confirms that PERT and the Company’s resources and manpower are sufficient for spill recovery in amount of 1.5 thousand t.

**Spill in amount of 10 thousand t in case of the tanker accident**
Spill in the offshore area is possible in case of tanker’s collision with another vessel, grounding, berthing impact on the OIRFP. Loss of containment of tanker’s cargo tanks can be the source of the spill. Resources and manpower of PERT and the Company are engaged in order to recover oil-products spill in the offshore area.

Booms delivery to the spill site and their installation is performed by MPIV with boom-laying boats on board. Each MPIV has 400 m of inflatable offshore booms with height of 2 thousand mm, FFOS skimmer with capacity of 100 m

Unfolding of the booms is performed simultaneously in two lines. Half an hour later taking into account the notification time the MPIV responsible for ERT enters the oil spill area.

In case of tanker accident the primary calculated area of the oil spill is approximately 1 km

and area of oil thick parts (10% from the total film area) is approximately 0.1 km

Correspondingly the half-perimeter is 1,772 m. In predicted situation the designed length of booms (L), required for containment of thick parts of the oil-product film, is calculated according to the following formula:

\[ L = P \]

where \( P \) – half-perimeter of spilled oil thick films – 1,772 m;

\[ L = 1,772 \, \text{m}. \]

Calculations prove that the main part of the spilled oil will be contained by offshore booms with length of 800 m, height = 2 K. mm, which are unfolded in two lines per 400 m. Besides in order to catch the remaining thin part of the film a booms line with length of 1 K m is installed on...
the anchors. In order to complete the cleanup of the water area and independent execution of OSR operations technical support vessel “Crab” is engaged; it is equipped with a device for oil gathering – Lamor conveyor type brush and band skimmers, the width of the cleaned sector is 15 m, its productive capacity is 80 m$^3$/h.

For temporary storage of the gathered oil, work with skimmers, MPIV tanks per 1 thousand m$^3$ are used, as well as an empty tanker with deadweight of no less than 10 thousand t engaged by the Company. Each MPIV has FFOS skimmer with a capacity of 100 m$^3$/h.

Operating time of skimmers (Tskimm) is calculated according to the formula:

$$T_{skimm} = \frac{V}{V_{cap} \times 0.5},$$

where $0.5$ – skimmers operation efficiency ratio (50% from maximum productive efficiency);

$V$ – spill amount (10 thousand t or 11,111 m$^3$);

$V_{cap}$ – skimmers total capacity (200 m$^3$/h – 2 FFOS skimmers per 100 m$^3$/h);

$$T_{skimm} = \frac{11,111}{(200 \times 0.5)} = 111 \text{ hours}.$$  

Oil gathered by the skimmer is pumped via hoses into MPIV tanks with deadweight per 1 thousand m$^3$. When MPIV tanks are filled the gathered oil is transferred to the tanks of the empty tanker engaged by the Company for OSR operations.

Sorbents “Vivan”, “Biosorb”, “Gazturbo” with average absorbing capacity of 1 to 4 are engaged in advanced cleanup with oil-product iridescent films trapping.

Amount of sorbents applied is evaluated according to the formula:

$$M_{sorb} = 0.01 \times \frac{M}{J},$$

where $M_{sorb}$ – sorbent mass;

$M$ – spilled oil-product mass 10 thousand t;

0.01 – oil product weight percentage, left on the surface after OSR operations and weathering, approximately – 1%;

$J$ – sorbent’s absorbing capacity = 4, 4 parts of oil-product are gathered per one part of the sorbent;

$$M = 0.01 \times \frac{10,000,000}{4} = 25,000 \text{ kg of sorbent.}$$
To recover oil spill in amount of 10 thousand t the following Company OSR means are engaged (they are transferred to PERT operating control):

- offshore inflatable booms – 1.2 thousand m;
- constant floating booms – 600 m;
- boom-laying boats – 2 pieces;
- MPIV with FFOS skimmer with capacity of 100 m³/h – 2 pieces;
- empty tanker with deadweight no less than 10 thousand t;
- Lamor technical support vessel – 1 piece;
- sorbent – 25 thousand t.

Total time of the ES (Oil) recovery operations amounts to 114 hours including:

- time of gathering of 10 thousand t of oil – 111 hours;
- time of moving to the ES (Oil) area including unfolding 1.8 thousand m of booms – 4 hours.

Spill in amount of 10 thousand t is defined as federal level spill. PERT and the Company resources and manpower are sufficient for recovery the spill at the first stage until the engaged state resources and manpower including the Federal Ministry of Emergencies, the RF naval forces, the Federal Coast Command Gosmorspasslouzhsba Rossii, neighboring countries coastal commands arrive. Besides, according to the contract of mutual help between the Company and LUKOIL-Trans LLC (Varandeysky terminal JSC) OSR resources and manpower can be additionally enhanced by the following resources of LUKOIL OJSC:

- icebreaker “Varandey”;
- supply vessel/tug “Toboy”;
- boom-laying boat “Yushar”;
- 4 thousand m of the offshore booms;
- 9 skimmers with high productive efficiency;
- auxiliary facilities and equipment (bulldozers, off-road equipment, tanks for collecting oil and etc.).

**To recover accidental spills in ice conditions MPIV has:**

- shipboard, lift-type system of oil collection from under the ice;
- ice bucket floating oil skimmer with capacity of 140 m³/h;
- floatable offshore boom with the length of 300 m and height of 2020 mm.

Offshore booms can be used in small ice pieces to enclose spilled oil. Oil gathering in small ice pieces is performed by means of the skimmer “Arctic Skimmer”, in the clearings.
skimmer “Minimax-60” is used to gather oil. Both specified skimmers are located on MPIV board which is responsible for OSR ERT at the OIRFP.
In large ice pieces bucket floating oil skimmer is used, as well as shipboard lift-type system for oil gathering from under the ice. Taking into account that brush skimmers owned by the Company gather practically clean oil MPIV tanks will be sufficient for temporary storage of gathered oil in the oil spill scenario at the OIRFP (in amount up to 1.5 thousand t, according to possible ES (Oil) scenarios). Besides in case of spill in large ice pieces and compacted ice there is a high possibility that oil would not come to the surface and would be moving under the ice. In this case oil location is defined by means of exploration ice-holes, after oil film is detected it is delimited. After the film boundaries are detected the linear ice-hole is cut in the direction of the current, and ice is removed out of it. Under the current impact oil will be gathered from under the ice in the ice-hole and will come to surface. The ice-hole edges prevent oil from spreading. Oil risen to the surface is gathered by means of skimmers “Minimax-60”, sorbents and then it is burnt. Decision on burning is made by OMH and CER EFS together with Rosprirodnadzor of Nenets Autonomous Area. During polar night lighting masts with mini electric stations as well as the OIRFP and MPIV flood lights are used.

**ES (Oil) prevention and recovery measures at the OIRFP**

In order to reduce risk possibility and to fulfill the tasks aimed at oil-products spills prevention and their containment the Company performs the following organizational measures:

– contract is concluded with the certified PERT providing ERSD/OSR, recovery of possible oil-products spills and their consequences;
– visual and automatic control is arranged for the process of oil loading from the OIRFP to the tanker;
– regular briefing on safety and environment protection requirements for the OIRFP crews is arranged;
– the OIRFP crews perform regular inspections of the cargo system technical condition, integrity of flange connections, gaskets, bolts and etc., as well as shut-off valves and flexible pipes maintenance;
– the Company performs planned preventive maintenance and technical maintenance of the equipment;
– in case of oil spill ERP is arranged with the help of MPIV which is on permanent duty in the OIRFP operating area of responsibility;
– according to the requirements of rule 26 MARPOL 73/78 MPIV has marine emergency plan associated with oil spills;
While drilling wells and the OIRFP operation in order to reduce and prevent oil spills risk
the Company uses the following engineering and technical decisions:
– up-to-date safe construction and well tests technologies are used;
– wells are equipped with blowout preventer, oil production shut-down emergency system;
– according to the approved Project wells construction on the Prirazlomnaya OIRFP wells are equipped with downhole monitoring means and choke valves;
– the use of multi-level secure unloading and emergency shutdown of the technological process and of the object as a whole;
– a strategy of “zero discharge” of all types of waste is implemented at the OIRFP, only fire water from the volume flooding system and treated utility fluids are allowed for discharge into the sea;
– drainage systems at the OIRFP are designed to gather all spills of oil containing film, contaminated rain water and snow, followed by delivering to the process for its treatment and injection into formation.
– oil production termination is provided in case of failure of water injection system;
– crude oil storage in the caissons compartments is provided according to the principle of the “wet storage” when oil flow coming to the storage replaces ballast water which is pumped into the oil containing water treatment system for the following injection to the formation; when oil is pumped to the tanker it is replaced by ballast water from the seawater storage, and oil storage is constantly filled with liquid: oil or sea (ballast) water; this type of storage provides safe oil storage (absence of free gas);
– the double bottom of the caisson is filled with water. Approximately 120,000 tons of crushed stone and stone are backfilled around the platform to prevent soil erosion at the base of the caisson by underwater and tidal currents;
– all the systems and equipment of the OIRFP are designed for ambient temperature from -40 °C to +40 °C;
– System for pumping of produced oil to a tanker is equipped with an abort loading. Special measures:
– maintaining warning and communication systems of the facility in constant readiness, its improvement and enhancement;
– replacing outdated personal protective equipment (PPE) and accumulation of PPE reserves for operating personnel;
– searching and implementing best information and process solutions in order to provide and upgrade the existing response emergency system, to increase its efficiency in complex monitoring of the environmental condition;
– conducting routine training in studying new equipment and providing communication among all participants of OSR;
– optimizing interaction and links among the organizations engaged in OSR;
– maintain close links with administration of the Federal Ministry of Emergencies bodies in all issues concerning notification and evacuation, fire-fighting measures;
– conducting drills aimed at increasing operational efficiency including training to work with documentation in case of emergencies associated with oil spills, as well
as correct and fast definition of operations performance sequence when implementing OSR Plan, especially within the framework of CER EFS operation; – daily control of the equipment, increasing labor discipline of the personnel, improvement of production standards and implementation of cutting edge scientific and technical studies in ecological safety field.

**Providing ES (Oil) recovery resources and manpower preparedness**

Ensuring the Company’s constant preparedness to response in case of possible oil spills is ensured by the following items:

- availability of relevant and sufficient material and technical base;
- availability of trained personnel for performing OSR operations.

Necessary technical means are defined on the basis of the spills risk assessment, modeling possible oil spills taking into account hydrometeorological conditions and ecological sensitivity maps of the region, as well as temporary restrictions for performance of OSR operations.

All the Company’s technical means which can be used in OSR operations are in order and ready for immediate use.

Provision of the Company’s OSR resources and manpower readiness is achieved by means of fulfilling the following basic requirements:

- permanent control of condition of the equipment used in OSR operations and in provision of such operations;
- performing regular technical maintenance of the equipment according to the established schedule;
- repair of the equipment which is used in performance of OSR operations shall be planned – preventive in nature;
- providing established storage conditions (temperature, humidity, protection against fallbacks, security protection);
- equipment maintenance operations shall be performed by personnel with necessary qualifications;
- conducting exercises and training with the use of the OSR equipment.
- readiness of PERT, being in emergency rescue preparedness at ERT vessel, as well as preparedness of MPIV crews and freelance units of the OIRFP to participate in ES (Oil) recovery are based on the following assumptions:
  a) conducting training and continuous training of the personnel (including senior management), MPIV crews and freelance units of the OIRFP engaged in OSR operations where they learn rules for performing OSR operations;
  b) conducting regular exercises in optimizing operations in oil spills recovery and containment;
  c) taking into account Gazprom recommendations 2-1.4-474-2010.

**Levels of Response**

This OSR plan for drilling and MPIV operation takes into account a three-level concept of
response to oil spills on waters and providing the readiness for their recovery, accepted in the

Russian Federation according to the Decree of the Government d/d April 15, 2002 # 240 “On procedure of activities for prevention of and response to spills of oil and oil products on the territory of Russian Federation” and in international practice, according to the Guideline for development of oil spill response plans (accepted by the IMO 35 session of the Committee for the Prevention of Pollution from Ships, 1994).

The level of response to the ES (Oil) is determined by the Chairman of the Company’s Committee for Emergency Response and Ensuring Fire Safety based on information obtained from the situation assessment group and operation team. Later, after arriving in the emergency area the regulatory bodies representatives (Russian Ministry of Emergencies, Rosprirodnadzor) the level of ES (Oil) may be reviewed or modified by them, according to the provisions of the order of Ministry for the Protection of the Environment and Natural Resources of the Russian Federation d/d March 3, 2003 # 156.

The following levels of response are established:

The first response level – local oil spill emergency response, defined by the Decree of the Government of Russian Federation d/d August, 21, 2000 # 613, as a spill from minimal established level for classifying a spill as an Emergency (Oil) (less than 0.5 t according to the order of the Ministry of Natural Resources of Russia d/d March 9, 2003 # 156) up to 500 t of oil. OSR resources and manpower of professional emergency response teams, which are at the Company’s disposal, are used for local oil spill emergency response.

The second response level – regional oil spill emergency response, defined by the Decree of the Government of Russian Federation d/d August, 21, 2000 # 613, as a spill from 500 t to 5 thousand t of oil. OSR resources and manpower of professional emergency response teams, which are at the Company’s disposal, are used for regional oil spill emergency response. If necessary the Company’s Committee for Emergency Response and Ensuring Fire Safety
requests the assistance of Committee for Emergency Response and Ensuring Fire Safety of Rosmorrechflot (the Federal Marine and River Transport Agency). The Committee for Emergency Response and Ensuring Fire Safety of Rosmorrechflot makes a decision to launch a Regional Oil Spill Response Plan for the Western Sector of the Arctic Sea (hereinafter – the Regional Plan). When introducing into effect the Regional Plan the management of OSR operations is handed over to the Regional Operations Management Headquarters (OMH), which performs its functions in accordance with the specified plan. The Company’s authorized representative is included in the Regional OMH, and the Company’s OSR resources and manpower are placed under its control.

The third response level – federal importance oil spill emergency response, defined by the Decree of the Government d/d August, 21, 2000 # 613, as a spill of more than 5,000 t of oil. OSR resources and manpower of professional emergency response teams, which are at the Company’s disposal, are used for federal importance oil spill emergency response. If it is impossible to carry out OSR using one’s own resources the Company’s Committee for Emergency Response and Ensuring Fire Safety requests the assistance of Committee for Emergency Response and Ensuring Fire Safety of Rosmorrechflot. The Committee for Emergency Response and Ensuring Fire Safety of Rosmorrechflot makes a decision to launch a Federal Oil Spill Response Plan at Sea.

In case the decision is made to launch the Federal Oil Spill Response Plan at Sea the responsibility for further emergency response activities coordination lies with the Committee for Emergency Response and Ensuring Fire Safety of Rosmorrechflot.

Composition of the Company’s resources and manpower, its disposition and delivery to the area of ES (Oil)
Carrying the duty on the ERSD/OSR on the OIRFP, OSR equipment operation, containment and response of spilled oil at sea in the area of operational responsibility of the Prirazlomnaya OIRFP is performed by professional emergency response team manpower, located at the base in Varandey port, using the Company’s equipment, handed over for operative control to
the professional emergency response team.

MPIV are on permanent standby in the area of OIRFP at a distance of up to 1.5 km. In future it is planned to use a specialized OSR vessel. OSR equipment, located at the coastal OSR base in Varandey settlement, is stored in containers. OSR equipment is delivered from the coastal base by freight helicopters. Part of OSR equipment is located on MPIV and on the deck of the OIRFP. OIRFP OSR free-lance personnel are also involved for OSR of potential ES (Oil).

SUE Joint Squadron cargo aircrafts shall be used, if necessary, for delivery of OSR resources and manpower of the third parties from other regions: 166000, Naryan-Mar, tel.: (81853) 43157, as well as the air company Arkhangelsk Airlines: 163053 Arkhangelsk, tel.: (8182) 218800. OSR equipment is delivered to Naryan-Mar airport, from where it is transported to the area of the oil spill by cargo helicopters.

Naryan-Mar SUE Joint Squadron fleet consists of AN-2 planes and helicopters MI-8T and MI-8. The airfield is classified as B class and is able of receiving aircraft AN-24, TU-134, TU-154, IL-76 planes. Estimated time of cargo delivery to the emergency scene taking into account the handling operations is 5-7 hours.

Airline fleet of Arkhangelsk Airlines includes 19 planes of series AN-24, AN-26, TU-134, TU-154. Estimated time of cargo delivery to the emergency scene taking into account the handling operations is 7-12 hours.

The following OSR equipment is stored at the coastal base in Varandey settlement in sea containers (see Table 4). Estimated time of cargo delivery to the area of ES (Oil) taking into account the handling operations using the helicopter is 1 hour.

Table 1

<table>
<thead>
<tr>
<th>Name</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harbour booms</td>
<td>1 mm high permanent floatation light booms</td>
</tr>
<tr>
<td></td>
<td>2 thousand m</td>
</tr>
<tr>
<td></td>
<td>650 mm high coast protection booms</td>
</tr>
<tr>
<td></td>
<td>300 m</td>
</tr>
<tr>
<td></td>
<td>2 thousand mm heavy booms, sections per 100 m</td>
</tr>
<tr>
<td></td>
<td>400 m</td>
</tr>
<tr>
<td></td>
<td>760 mm high fire-resisting booms</td>
</tr>
<tr>
<td></td>
<td>576 m</td>
</tr>
<tr>
<td>Vehicles for booms washing</td>
<td>1 piece</td>
</tr>
<tr>
<td>Floatation tanks</td>
<td></td>
</tr>
</tbody>
</table>
10 m³
capacity inflatable tank
4 pcs
4.65 m³
capacity collapsible tank
5 pcs

**Collected oil and oil-soil mixture recovery units**
Oil-water mixture burning unit
1 piece
Oil contaminated soil recovery unit, capacity up to 2 t per hour
1 piece

**Contaminated coast treatment units**

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lamor Ironhorse tracked vehicle</td>
<td>2 pcs</td>
</tr>
<tr>
<td>Lamor HY-High Pressure Cleaner hydraulic power unit for washing the booms and oil contaminated equipment with water under high-pressure</td>
<td>1 piece</td>
</tr>
<tr>
<td>Lamor High Pressure Cleaner diesel-powered unit for washing booms and oil contaminated equipment with hot sea water under heavy pressure</td>
<td>6 pcs</td>
</tr>
<tr>
<td>Lamor Rock Cleaner floating oil skimmer</td>
<td>2 pcs</td>
</tr>
<tr>
<td>Sorbing boom БЗС 70/120</td>
<td>625 m</td>
</tr>
<tr>
<td>Sorbent knapsack sprayer</td>
<td>20 pcs</td>
</tr>
<tr>
<td>Water-oil emulsion transfer pump</td>
<td>2 pcs</td>
</tr>
<tr>
<td>Auger type icebreaker</td>
<td>2 pcs</td>
</tr>
<tr>
<td>Swamp buggy</td>
<td>2 pcs</td>
</tr>
<tr>
<td>Motor-driven auger</td>
<td>5 pcs</td>
</tr>
<tr>
<td>Lighting mast with power plant</td>
<td>4 pcs</td>
</tr>
<tr>
<td>Entrenching tools</td>
<td>1 set</td>
</tr>
</tbody>
</table>
Rossorb sorbent  
20,564 kg

Cleanup of contaminated shoreline will be performed by a special response unit headed by a professional emergency response team representative. Oil spill recovery equipment of Emergency-rescue and environmental operations center (115088, Moscow, Ugreshskaya St., house 2, building 25, tel. (495) 665-68-45, fax: (495) 665-68-89) can also be used for cleanup of the contaminated shoreline. The equipment is ready for transport by a cargo aircraft IL-76 to the emergency scene. Time of transportation to Naryan-Mar airport with load handling time amounts to 8-10 hours.

Delivery of OSR equipment to remote and hard-to-reach areas is performed by special-purpose all-terrain Arctic service vehicles, as well as with the help of floating crafts from water area. Before starting works all participants of OSR operation will be briefed on safe practices and equipped with special protective gear.

Table 2

<table>
<thead>
<tr>
<th>Special-purpose transport modification</th>
<th>Quantity (pcs), location – OSR coastal base at Varandey settlement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-road vehicle HARP-R</td>
<td>1</td>
</tr>
<tr>
<td>Non-road vehicle URAL Polyarnik Mobile mechanical repair truck</td>
<td>2</td>
</tr>
<tr>
<td>Non-road vehicle URAL Polyarnik cargo truck</td>
<td>3</td>
</tr>
<tr>
<td>Non-road vehicle URAL Polyarnik Crew vehicle</td>
<td>4</td>
</tr>
<tr>
<td>Non-road vehicle URAL-M (crane)</td>
<td>5</td>
</tr>
<tr>
<td>Crane-trailer PrP-8Kr</td>
<td>6</td>
</tr>
</tbody>
</table>

The list of special-purpose vehicles for cleanup of shoreline during ES (Oil) and personnel transportation to hard-to-reach coastal areas, Varandey settlement.
80-100 tons capacity crane truck

Table 3
Floating crafts and equipment of Gazprom Neft Shelf LLC OSR*

<table>
<thead>
<tr>
<th>Name</th>
<th>Specifications</th>
<th>Purpose, location of OSR equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-functional icebreaking vessels</td>
<td>“Vladislav Strizhov”, “Yury Topchev”</td>
<td></td>
</tr>
<tr>
<td>Length overall 99.3 m</td>
<td>Length between perpendiculars 84.39 m</td>
<td></td>
</tr>
<tr>
<td>Moulded breadth 19.0 m</td>
<td>Moulded depth 10.5 m</td>
<td></td>
</tr>
<tr>
<td>Maximum draft 8.0 m</td>
<td>Freeboard 2.5 m</td>
<td></td>
</tr>
<tr>
<td>Deadweight 3.8 K t</td>
<td>Speed at 8.0 m draft – 15.0 knots</td>
<td></td>
</tr>
<tr>
<td>Range: 12,000 miles</td>
<td>ICEBREAKING CHARACTERISTICS:</td>
<td></td>
</tr>
<tr>
<td>Ice 1.5 m, snow 70 cm – speed 2.0 knots</td>
<td>Ice 0.8 m – speed 10.0 knots</td>
<td></td>
</tr>
<tr>
<td>180° turn time at ice thickness of 0.9 m – 3.0 min.</td>
<td>PERFORMANCE:</td>
<td></td>
</tr>
<tr>
<td>Offshore:</td>
<td>Rough sea: 7 points</td>
<td>Wind force: 9 points</td>
</tr>
<tr>
<td>The rate of surface flow: 1.5 m/sec</td>
<td>OIRFP supply:</td>
<td>Rough sea: 5 points</td>
</tr>
<tr>
<td>Surface velocity: 1.5 m/sec</td>
<td>Fire-fighting and rescue of the OIRFP staff:</td>
<td>Rough sea: 6 points</td>
</tr>
<tr>
<td>The rate of surface flow: 1.5 m/sec</td>
<td>Cargo CARRYING CAPACITY:</td>
<td></td>
</tr>
</tbody>
</table>
sorbent - 10 t;
diesel-powered unit for hot water washing
Multi-functional icebreaking vessels are also equipped with the following equipment for recovery of emergency spills in ice conditions:

- marine linkage system of oil gathering from beneath the ice;
- ice bunker floating oil skimmer 140 m³/hr capacity;
- inflatable seaboom 300 m long, 2020 mm high.
2 pcs.

**High-speed boom-laying boat**
Located on OIRFP
Length about 10 m
Draft about 1 m
Turning the booms
2 pcs.

*LC9000 type utility craft*
Delivery of personnel and equipment to hard-to-reach coastal areas, oil gathering operations in shallow waters
2 pcs.

*WB 19000 technical support ship*
Length – 19.3 m;
Width – 5.1 m;
Full speed – 10 knots;
Volume of tank for oil gathering – 30 m³
Technical support ship is used for the following tasks:
- floating booms transportation and setting up;
- loading and transportation of various cargos with total weight up to 5 t;
- oil spill response operations on the sea surface;
- equipped by Lamor conveyor type mop skimmer, the width of cleaned area – 15 m, capacity – 80 m³
1 piece

*Additional deep-sea tugs from Arkhangelsk or Murmansk are used when necessary for work during oil gathering offshore when spills of regional importance occur (with written confirmation from the owners of the tugs on consent of the involvement).*

**OSP personnel and equipment also can be delivered to inaccessible parts of the shore either on board or by external load of the Mi-8.**

Additionally on board of MPIV there are sea containers with OSR equipment, the list of which is provided in Table 4.

---

**Table 4**

*The list of OSR equipment, located on deck of OIRFP*

<table>
<thead>
<tr>
<th>Name, technical specification</th>
<th>Unit of measurement</th>
<th>Quantity</th>
</tr>
</thead>
</table>

Fire-resistant booms in complete set:
Lamor Autoboom booms, 760 mm high, sections per 12 m,
The areas of responsibility of professional emergency response team (Oil), carrying out ERSD at the OIRFP.

The area of responsibility of professional emergency response team, which is contracted to perform ERSD/OSR, coincides with the area of responsibility of OSR plan, and it is the water area of the Pechora Sea around the OIRFP. Fire-fighting operations on vessels and OIRFP related to oil spill is performed by OIRFP free-lance personnel with the help of OIRFP fire-fighting equipment. MPIV equipped with the following fire-fighting resources are used for fire-fighting:

- 4 firewater monitors with up to 554 m³/h capacity water supply;
- foam generator.

All OSR operations are stopped in case of fire occurrence, the personnel of professional emergency response team is taken to a safe location and all the management of fire-fighting operations is handed over to the OIRFP fire-fighting units management.

Management bodies

According to the Decree of the Government of Russian Federation d/d December 30, 2003 # 794 “On Uniform State System of Prevention and Recovery of Emergencies” the coordination bodies are created at each level of the uniform system, permanently functioning management bodies, bodies of day-to-day management.

The following management bodies are active in the Company at the moment:

- The Company’s Committee for Emergency Response and Ensuring Fire Safety – coordination body of ES (Oil) management;
- The Company’s Permanently Functioning Meeting – day-to-day operation.

Communications and Public Address System and Its Functioning Procedure

A Dispatcher Communications Center is set up in Varandey settlement or in the OIRFP accommodation block in order to provide uninterrupted operation during OSR in the area of operations and meetings of the Company’s Committee for Emergency Response and Ensuring Fire
Safety and for notifications and response coordination during large-scale spills (regional and federal). This Center receives all latest update on the status of OSR operations.

Diagram 1
Diagram of alarm and information sharing when an accident occurs in the OIRFP operational area of responsibility
- The Prirazlomnaya Platform Head
- Rosprirodnadzor (Federal Service for Supervision of Natural Usage) Department for NAA
- The Prirazlomnaya Platform Dispatcher
- Witness of the contamination
- Manager of PERT, carrying out ERSD/OSR at the Prirazlomnaya Platform
- Russian MChS HQ for NAA
- NAA CALL CENTER
- NAA Administration
- Federal Budgetary Institution Gosmorspassluzhba Rossii (State Marine Rescue Service)
- The Company’s Chief Engineer
- Belomorskoye Department for Process and Environmental Supervision
- PERT
- MERS, Arkhangelsk
- North-West Regional Center for Civil Defense, Emergencies and Natural Disasters Response
- The Federal Energy Agency ER & EFS
- Gazprom OJSC Central Production Dispatching Department

Operative part
Organization of oil spills recovery in amount up to 0.5 t at the OIRFP:
If there is an oil spill up to 0.5 t (less than the lowest level of oil spill for classifying the spill in the Barents Sea basin as emergency situation) in the operating area of responsibility, the
Head of the OIRFP sends to the spill site a standby vessel which is in charge of ERT/OSR at the OIRFP to clean the offshore area and gather the spilled oil and he informs Rosprirodnadzor Department and NAA Main Department for Civil Defense and Emergencies about it.

**Organization of possible oil spills recovery in amount exceeding 0.5 t at the OIRFP**

**Primary operations:**
1) In any case of oil spill or finding the causes that might result in an oil spill CCR shift supervisor at the OIRFP, that has found the spill or spill threat, informs the OIRFP dispatch operator and Master.
2) The OIRFP dispatch operator informs the Head of the OIRFP, PERT Manager (who is responsible for ERSD/OSR at the OIRFP) and the Company headquarters; he provides reporting on the spill according to the established reporting scheme.
3) Before the Company CER & FSC starts working the Head of the OIRFP acts as the Chairperson of CER & FSC and controls OSR operations.
4) PERT Manager orders the group to start operations aimed at containing the oil film and collecting the spilled oil;
5) When the Company Chief Engineer is reported on the spill, he provides call of CER & FSC.

The Company CER & FSC members are transported to the spill site by means of the air transport. Transportation time and time of the Company CER & FSC deployment is estimated as 24 hours.
6) Basing on the information received about the oil spill Deputy of the Company CER & FSC Chairperson develops an operating plan of actions.
7) The Chairperson of the Company CER & FSC approves the operating plan of actions and orders to implement it.

**The second stage of operations:**

Nest following actions are aimed at specifying the oil spill situation, oil spill response forces enhancement and updating operations on the basis of the received information. For this purpose:
1) Situation assessment group evaluates the degree of pollution and development of proposals aimed at specifying the spilled oil collection operating plan.
2) CER & FSC Chairperson – Head of the OIRFP sets the order of sea and coast pollution recovery operations according to the established operating plan.
3) If required CER & FSC Chairperson resorts to the senior OMH and issues and order to adjust the operating plant.

**The third stage of operations:**
The third stage of operations includes sea and coast advanced cleanup operations, removal of the equipment engaged in OSR operations. In case of deployment of the OMH all available resources and manpower of the Company are transferred into its disposal.

1) OSR operations are performed continuously under the safety requirements for participating personnel.
2) OSR operations are considered completed after agreement with NAA Rosprirodnadzor Department after compulsory fulfillment of the following stages:

- oil discharge stoppage;
- gathering of the spilled oil to the maximum possible level conditioned by the technical characteristics of the applied special facilities;
- spilled oil placement for its further recovery which excludes secondary pollution of the industrial facilities and the environment.

3) Equipment removal in the sea, resources and manpower withdrawal is performed by the vessels crews according to the order of PERT Manager responsible of ERSD/OSR at the OIRFP area after receiving the corresponding order of the CER & FSC Chairperson.
4) CER & FSC operation report is based on the results of OSR operations. The report is approved by CER & FSC Chairperson and is sent to the NAA Administration, NAA Main Department for Civil Defense and Emergencies, NAA Rosprirodnadzor Department, Federal Ministry of Emergencies North-West Regional Center, Federal Coast Guard “Gosmorsspassluzhba Rossii”.

**The Emergency (Oil) recovery operating plan**

CER & FSC work can be divided into three stages:

**The First stage:**

After CER & FSC call the Chairperson of CER & FSC:
- informs CER & FSC members on the emergency fact and the developed situation;
- declares the current OSR Plan to be introduced into operation;
- orders to inspect and update the information of the spill;
- transfers the Company Operations and Dispatch Service in 24-hour operating mode.

When the information on the spill is updated the CER & FSC Chairperson starts to assess the situation with the help of CER & FSC members.

If there is a risk to pollute the dock side with oil-product, interaction with companies operating at these dock sides is organized.

**The Second stage:**

During the second stage of CER & FSC operation operations started at the first stage continue.
The Company CER & FSC dispatch communication center provides operative information sharing with the operations supervisor and updates data from the emergency scene. Basing on the received data the Company CER & FSC updates the sizes of the oil spill consequences, as well as the developed situation and forecasts its development, establishes the OSR performance strategy, necessary current OSR operations and their methods, sets the operations performance order.

The Third stage:
Deployment and enhancement of forces and means to perform full-scale OSR operations is performed along with activation and advance to the area of the spill. ORS operations are performed continuously in two-three shifts and cease only in case of unfavorable weather conditions threatening life of the engaged personnel, crew members or vessels integrity. Personnel shift is carried out directly at the working places. OSR operations are stopped by the order of CER & FSC Chairperson agreed with the controlling organizations representatives, CER & FSC members in the following cases:
- oil discharge stoppage;
- gathering of the spilled oil to the maximum possible level determined by the technical characteristics of the applied special facilities;
- spilled oil placement for its further recovery which excludes secondary pollution of the industrial facilities and the environment;
- spilled oil collection and experts’ and controlling organizations representatives’ reviews on the sufficient level of the offshore surface cleanup;
- in case of vessels fire risk.
In addition the regulatory bodies’ representatives that are members of CER & FSC together with its Chairperson sign Further Oil Spill Recovery Inexpediency Act.

Response strategies in case of oil spills and operations providing people’s vital activities saving tangible assets
- Before full-scale OSR operation starts the Company CER & FSC assesses the situation at the spill site, sets goals and amount of coming operations, as well as OSR methods.
- OSR operation at the offshore area should be top-priority. According to the current OSR Plan oil film containment is performed immediately after oil-products spill and only after that spilled oil is collected.
It is necessary to take all measures to prevent oil dumping into the offshore area in case of spill at the offloading complex area. According to this strategy PERT, engaged to spill recovery in accordance with the current OSR Plan, performs oil film containment in maximum shortest time period if it is required.

– Time of oil spill containment at the territory should not exceed six hours since the moment of receiving information on the spill, and it should not exceed four hours in case of emergency at the offshore area.

– Applied OSR methods should not do more harm than the spilled oil, it means permitted oil spills gathering methods should be used, and only those sorbents that have MPC developed for use in fishery waters.

**Platform personnel rescue and evacuation concept**

Platform personnel rescue and evacuation concept includes safe evacuation methods from all areas of the platform through the escape tunnel into the temporary shelter which will provide necessary protection from fire/explosion for the period up to two hours.

Three levels of evacuation priority are planned for the OIRFP:

1) primary – in summer time safety boats are used for evacuation; in ice situation rescue vessel and SES-2D evacuation system are used;
2) secondary – evacuation is performed via SES-2Д systems to the life rafts;
3) auxiliary – evacuation is performed by means of the engaged helicopter and personal survival equipment.

Personnel rescue and evacuation at the OIRFP include the following means:

– two evacuation rescue systems of SES-2Д type for 200 people;
– eight life rafts for 280 people in the sliding evacuation bridges;
– personal survival equipment for 505 people;
– lifejackets - 582 pieces;
– wet suits - 582 pieces;
– closed safety boats of tank type - 4 pieces, for 264 people.

**Organization of procurement (materials, technical, financial and other types of procurement) for supporting the ES (Oil) operations**

PERT responsible for ERP at the OIRFP maintains in working order OSR means and equipment, which is handed over for operational administration. Consumable material resources replenishment is performed at the earliest possible date, PERT Manager is in charge of replenishment.

The Company organizes catering points, recreation areas and accommodation of the specialists and workers engaged in OSR operation.
During OSR operation catering should be arranged on board of the vessels engaged in OSR operations. If it is impossible to provide hot meals the Company arranges box lunches distribution for the personnel.

The Company finances oil spills prevention and recovery operations and preliminary preparation for OSR.

**Recording and cost accounting procedure for the ES (Oil) recovery, damage assessment**

All history of events from the time of receiving the information and to returning of vessels, floating and technical means to the points of their permanent disposition is registered in the ship’s log book, CER & FSC event log, logs kept by the departments’ heads assisting the OSR operations as well as in the reports and summaries.

**Logistics support for OSR operations on contaminated territories and water bodies**

Procurement for actions of manpower and special technical means during OSR operations performance is carried out due to anticipatory created material and technical means reserves for the purpose of their urgent use in case of emergencies related to oil spills. All OSR equipment is serviced by trained personnel; its composition and headcount are indicated in the relevant operating procedures. OSR technical means are assigned at the definite storage site or at the means of their delivery, on which the servicing specialists are also allocated.

**Spilled oil gathering techniques and methods and their application procedure**

OSR policy in case of emergency in the open part of the sea is based on the principle of gathering maximum possible amount of oil near the spill source in the shortest possible time, so at the standby OSR vessel of the PERT on duty, who is in charge of ERSD, there is sufficient number of booms to enclose oil film. Using booms reeled on storage coil allows their fast and easy unfolding. In case there is wind and current booms are installed taking into account these factors. If it is impossible to install booms and contain the oil film in the sea the Company organizes monitoring of the oil film movement from the board of the vessel or helicopter.

**Offshore sweeping technology**

To stop the oil crossing the first boom or to enclose the oil film which moves around the offshore area, several types of tugged booms shape are used. The most common shapes are:
- open U-shape;
- U-shape;
- J-shape.
1. **Open U-shape** consists of two booms sections linked together via a short opening (approximately 5 m), which then is used as standard U-shape (see Figure 1). Its purpose is to concentrate a wide oil film into a narrow one. After that the film can be collected by the oil garbage disposal vessel or a vessel with a skimmer.

2. **U-shape** – is the most common booms shape which is most convenient for maneuvering if the vessels that tug the booms move with different speed and have different capacity. In this case the additional vessel for oil gathering is necessary. If there is a strong wind the gathering vessel must stay at their end straight across the wind, and not with its head in the wind direction along the booms.

U-shape is convenient for treatment of large oil films. If the speed of oil film drifting around the offshore area is more than one knot, then the vessels of the group can choose such speed of movement that their speed in relation to the drifting speed shall be less than 1 knot. Oil gathering can be performed by the oil garbage disposal vessel with a skimmer.

3. **J-shape** – is an often used shape, especially in conditions of vessels shortage for operations.

Below you can see versions of application of this shape.

In addition V- or U-shapes can form (between the vessel hull and the boom) (Figure 4).

Vessels with short extendable booms are more maneuvering and good for oil streaks gathering. With longer extendable booms this method can be used for larger areas. And, finally, considering maneuvering control complications 50-150 m long hard booms sections can be attached to the extendable booms and tugged via auxiliary vessels, and thus larger oil areas can be
treated. If booms are installed on one side, then it is J-shape, if they are installed on two sides it is V-shape.

**Diversion/stop of drift**

This strategy is used when it is necessary to protect top-priority areas from oil drifting following the current and wind and when the offshore area is limited and it is impossible to install enclosure and gather spreading oil via methods mentioned above. This strategy also helps in OSR operations in narrow channels.

When the booms are installed using angle-setting, one end of the booms is fastened on the coast (at the mooring), and the other end of the booms is attached to the buoy, other coast, etc., so as to provide the angle of booms against the drifting direction and move the oil sport from the area of fast drifting in a calmer area, where its gathering can be organized. The angle of setting depends on the speed of the drifting of current. In the narrow channel between the islands with strong current it is advisable to direct oil to both coasts. If there are high waves at the offshore area it is recommended to choose a smaller angle of booms installation. The current along the shore is usually slower, but in some cases there can be whirlpools there, so booms must be installed behind them so as oil wouldn’t get into the pockets. If it is possible shore-isolating booms shall be installed along the coast (see Figure 5).

![Figure 5. Oil diversion into the narrow channel between the islands](image)

Oil film movement to the shore can be stopped by means of enclosing it by uninterrupted line of booms and anchoring the booms (see Figure 6).

![Figure 6. Booms anchoring in the shallow water (one anchor on the left Figure is absent and oil is getting out)](image)

When installing booms it is necessary to choose a place where waves near the shore are flat and no less than 2-3 m deep. Distance between the anchors must be 25-50 m. The enclosed film must be constantly controlled. Besides it is necessary to take into account that if there is a current, the distance between the lower edge of the booms skirt and the bottom at the installation site must
be no less than 0.5 m. Figure 8 shows the process where part of oil escapes from under uninterrupted line of booms in the shallow water.

Figure 7. Anchored booms. Oil escape at the shallow water
The described method can be used to prevent oil already thrown to the shore to be carried to the offshore area, or in case of the shore cleanup by means of water flushing. When the shore is flushed with hot water under high pressure, oil is emulsified and goes away under the booms. In this case installation of extra sorbent booms is required behind the first boom line. Enclosed oil (if the depth allows) can be collected by means of oil garbage disposal vessels.

Oil dispersal
Oil dispersal method application is performed according to the standards of the Russian Federation legislation, taking into account the results of Analysis of environmental benefits (ATEB) and after receiving State Ecological Expertise positive conclusion. Using dispersants on order to recover ES (Oil) at the sea is performed in accordance with CTO provisions 318.4.02-2005 “Rules of dispersants application for oil spills recovery”.

Booms protection of the shore
The main method of the shore line protection is protecting the shore by means of easy unfolding booms via fast-sailing shallow draft boats. Main methods of booms installation are similar to the methods in case of oil film drift diversion or stop. Shore protection, apart from intercepting deposits, includes oil film sweeping at a deeper area where it is possible to gather it by means of skimmers or oil garbage disposal vessels (Figure 9).

Figure 9. Shore line protection and oil film sweeping

Arranging temporary storage of gathered oil and waste, methods and ways of their disposal
Each MPIV, in charge of ERSD/OSR at the OIRFP area, has tanks for temporary storage of the collected oil with the capacity of per 1 thousand m³. Taking into account then brush skimmers collect almost clean oil MPIV tanks will be sufficient for temporary storage of the gathered oil in the scenario of oil spill at the OIRFP (in amount of not exceeding 1.5 thousand t, according to
possible ES (Oil) scenarios). Then gathered oil is pumped into the OIRFP storage. If it is impossible gathered oil (in case there is an empty tanker in the OIRFP area), is offloaded to the tanker, otherwise MPIV transport and transfer oil to the floating oil storage or to the treatment facilities at Murmansk port.

During the shore cleanup the gathered mix of sea bed and oil is exported for disposal to the specially created areas which location is established by Rosprirodnadzor Department and NAA Administration.

Methods and ways to rehabilitate polluted areas
According to the Russian Federation legislation the Company will be performing a long-term monitoring evaluating the unfavorable impact of the spill or spill recovery operations on the environment. Monitoring results are reported to Rosprirodnadzor Department and NAA Rospotrebnadzor. Monitoring can be reduced or stopped as agreed with the mentioned regulatory authorities.

Preparing operations for special technical means application and replenishment of financial and material resources
Material and technical means reserves (including work overalls and PPE) are created at the storages engaged to OSR operations in order to provide continuous OSR operation according to the list of equipment and facilities; they are constantly refilling. Spare parts emergency sets and mechanisms for all particular OSR equipment are provided at PERT storages in order to recover working capacity of the applied equipment and OSR technical means; their reserves are refilled when they are consumed. The equipment owner finances costs for recovery of OSR equipment after its use.

When the spilled oil collection operation is completed OSR equipment is stored in the delivery vehicles engaged in OSR operation and transported to PERT base where it is cleaned and repaired.