

“TECHNICAL ASSIGNMENT”

for the Development and approval of the independent environmental sections of the project documentation “List of Environmental Protection Measures Including Environmental Impact Assessment” (PMOOS-OVOS) and their preparation for the expert board review of the onshore capital construction project which constitutes a part of the “Integrated Development of Shtokman Oil and Gas Field. Phase 1” project

- | | |
|-------------------------|--|
| 1. Site name | Onshore capital construction facilities |
| 2. Site location | Russian Federation, Murmansk region, Kola district, Teriberka village Териберка. |
| 3. Basis for design | <ol style="list-style-type: none">1. Gazprom Board Resolution No.43 of November 15, 2007, Results of Justification of “Development of Investments to Shtokman Gas-Condensate Field Development”, and Making Decision of Further Design Engineering.2. Framework Agreement on the main conditions of the partnership during the 1st phase of Shtokman oil and gas field development signed by Gazprom, Sevmorneftegaz and Total S.A in 2007.3. Framework Agreement on the main conditions of the partnership during the 1st phase of Shtokman oil and gas field development signed by Gazprom, Sevmorneftegaz and STATOIL HYDRO in 2007.4. Resolution No. BDD/09-C-01 approved by the Board of Directors of Shtokman Development AG on March 21st 2009.5. Resolution No. BDD/10-1-1 approved by the Board of Directors of Shtokman Development AG on February 5th 2010.6. Resolution of the Technical Advisory Committee -113 dated August 31st 2011. |
| 4. Type of construction | New |
| 5. Phase | Design documentation |
| 6. Initial design data | <ol style="list-style-type: none">1. Design documentation for onshore capital construction project (GTU facilities, Operating Support Area, camp, |

LNG facilities) considering longt-term development of general infrastructure facilities under SGCF Development at Phases 1, 2, and 3.

2. Act of Land Allocation Preselection for onshore capital construction facilities and other initial permit documentation.
3. Decisions of local executive authorities on preliminary approval of facility locations within the Teriberka village area.
4. Results of environmental and other comprehensive engineering surveys performed in the area of planned construction of the onshore capital facilities for the purposes of the PROJECT and provided by the COMPANY.
5. Comparative analysis of Russian and foreign regulatory frameworks for SGCF Development facilities designing.
6. Job specifications for “Integrated Development of Shtokman Oil and Gas Field. Phase 1. LNG Plant” project.
7. Job specifications for “Integrated Development of Shtokman Oil and Gas Field. Phase 1. Gas Treatment Unit” project. SH1-60-0950-000165; SH1-60-0950-000129; SH1-60-0950-000102
8. Job specifications for “Integrated Development of Shtokman Oil and Gas Field. Phase 1. Operating Support Area” project.
9. Job specifications for “Integrated Development of Shtokman Oil and Gas Field. Phase 1. Operations Camp”.

7. Composition of design facilities

The contracts provides that the following PMOOS-OVOS sections for the onshore capital construction facilities will be prepared:

- PMOOS-OVOS section for GTU facilities including site preparation stage;
- PMOOS-OVOS section for LNG facilities including

site preparation stage;

- PMOOS-OVOS section for Operating Support Area and Operations Camp facilities including site preparation stage;
- Consolidated PMOOS-OVOS section and summary calculations of the environmental impact as required to submit documents for the state expert review.

The details of such sections are given in Annex 1 attached hereto.

8. Special conditions of construction

1. Complex environmental and climatic conditions in the project area:
 - conditions of the subarctic climatic zone in the European part of Russia;
 - as per SNiP II-7-81, seismic intensity is 7;
 - available rocky and also flooded/waterlogged areas, settled soils;
 - significant difference in altitudes;
 - special sensitivity and vulnerability of natural ecosystems of the Arctic and high north regions to man-caused impacts;
2. Available sites of cultural and historical heritage;
3. Presence of rare and endangered species of plants and animals;
4. Presence of onshore surface-water bodies of a high commercial fishing importance (rivers, lakes, brooks).

9. Regulatory and legal framework for development of design sections

Under the design documentation, OVOS-PMOOS sections shall be developed to meet the requirements of:

- Statutes and normative acts, and also regulatory and procedural documents of the Russian Federation (as now or hereafter in effect);
- International legal acts rectified by the Russian Federation.

The list of legal documents is given in Appendix 2 hereto.

The composition and stages of PMOOS-OVOS sections shall comply with the requirements of Glavgosexpertiza of Russia, the federal state institution.

10. Requirements to development of alternative designs

Not required.

11. Work stages

The scope of work includes: four (4) PMOOS-OVOS sections developed in accordance with the packages of Phase I Shtokman oil and gas field development project documentation

to be later submitted for the state expert review, the Estimated Sanitary Protection Zone Design for Phase I onshore facilities considering their further development and consolidation of the PMOOS-OVOS sections in one PMOOS-OVOS article for state expert.

Each PMOOS-OVOS section will be developed in 6 (six) stages as described below.

The COMPANY will define the necessity and duration of each stage based on the accepted engineering solutions.

Work stages:

Stage 1. Development of a PMOOS-OVOS section, Reclamation program for the land granted for the temporary use. Preparation of preliminary reports on PMOOS-OVOS section and Reclamation program for the land granted for the temporary use, their approval with the COMPANY. Preparation of final reports on PMOOS-OVOS section and Reclamation program. Preparation of non-technical summary and its approval with the COMPANY, corrective actions and translation it into English (Stage 1 is hereinafter referred to as “PMOOS-OVOS Section development”).

Stage 2. Arrangement and holding of Project public hearings including public hearings on PMOOS-OVOS section. Preparation of the Report attached with the public hearing minutes, and its submission to the COMPANY (Stage 2 is hereinafter referred to as “Public hearings”).

Stage 3. Analytical, consultancy and engineering support of the design documentation containing the PMOOS-OVOS section and Reclamation program for the land granted for the temporary use in the environmental supervisory and monitoring agencies as required to obtain approvals in accordance with applicable laws (Stage 3 is hereinafter referred to as “Approvals”).

Stage 4. Estimated Sanitary Protection Zone Design development. Preparation of preliminary reports on Estimated Sanitary Protection Zone Design and its approval with the Customer. Preparation of final reports Estimated Sanitary Protection Zone Design. Analytical, consultancy and engineering support of Estimated Sanitary Protection Zone Design in the environmental supervisory and monitoring agencies as required to obtain approvals in accordance with applicable laws (Stage 4 is hereinafter referred to as “Estimated Sanitary Protection Zone Design”).

Stage 5. Analytical, consultancy and engineering support of the PMOOS-OVOS section for the LNG Complex during the process of expert state review until unqualified opinion from the expert body is obtained (Stage 5 is hereinafter referred to as “State Expert review support”).

Stage 6. Analytical, consultancy and engineering support for consideration of the PMOOS-OVOS Section by FSI Glavgosexpertiza of Russia (Stage 6 is hereinafter referred to as

“Glavgoexpertiza support”).

Stage 7. Analytical, consultancy and engineering support for consideration of the consolidated PMOOS-OVOS Section by presentation to the internal expertise (Stage 7 is hereinafter referred to as “Internal expertise support”).

12. Requirements to work scopes

Requirements to the PMOOS-OVOS sections development

Stage 1. *PMOOS-OVOS sections development*

PMOOS-OVOS sections shall be developed to meet the requirements of the RF Government Resolution No.87 of February 16, 2008, Regulation on Composition of Design Documentation Sections and Requirements to Their Contents, applicable RF guidelines, and Gazprom standards regulating environmental activities.

As a result of performed work developed PMOOS-OVOS sections shall be coherent with the content of the relevant project documentation.

The list of facilities which to be described in PMOOS-OVOS sections is given in Annex I attached hereto.

Each PMOOS-OVOS section shall contain the following:

Text part:

1. *Data of assessment of environmental impacts* from project operations at the stages of sites preparation, construction, commissioning, operation, decommissioning, and also in emergency situations, including:

- assessment of existing environmental situation and current state of basic environmental components, based on analysis of engineering and environmental survey methods, library and stock materials, and other official data sources, including any COMPANY provided sources;
- assessment and description of environmental constraints (available specially protected natural areas and water areas; highly sensitive zones; natural, historical and archeological monuments, sites of historical heritage and spiritual legacy; water conservation zones; coastal shelter belts; etc.);
- identification and mapping of environmental risk areas and zones;
- identification of environmental impact areas at all above-listed stages of economic activities under the Project;
- influence of potential impact sources and types on the environment;
- assessment of potential impacts from identified sources

on environmental components and social infrastructure (level, character, scale, affected areas);

- forecast of environmental, socioeconomic, and other consequences of Project activities.
- calculations of quantities and concentrations of any contaminants coming into atmosphere, hydrosphere and lithosphere, and analysis of these calculation data;
- estimation of standards for permissible treated wastewater discharges into water bodies; analysis of contaminant dispersion in the atmospheric boundary layer; and suggestions on establishment of standards for maximum permissible emissions (MPE) and temporarily approved air emissions;
- assessment of potential transboundary transfer of contaminants in the atmosphere and hydrosphere at the stages of site preparation, construction, commissioning, operation, decommissioning, and also in emergency situations;
- assessment of impacts from production and consumption waste management; Description of project as waste generation source justification of generated waste volumes; assessment of waste hazard classes not included into the Federal Classificatory Catalogue of Wastes;
- determination of the scales of potential damage to natural ecosystems and biological resources in the period of design facilities construction and operation.

2. The list of measures aimed at prevention and/or reduction of potential adverse impacts from project activities on the environment, and natural resources conservation for the period of sites preparation, construction, and operation, including:

- support of solutions for wastewater treatment and neutralized elements disposal, and emergency wastewater disposal prevention;
- measures of ambient air protection;
- measures of water resources sound management and conservation, including recirculating water supply;
- measures of land resources and soil sound management and conservation, including disturbed or contaminated land/soil reclamation;
- measures of collection, utilization, neutralization, transportation and environmentally safe disposal of industrial and consumption wastes;
- measures of mineral resources and geological environment conservation;
- measures of underground water conservation;

- measures of drinking water supply sources conservation;
- measures of vegetation and wildlife items and their habitats protection, including those listed in the Red Book of the Russian Federation and the red books of Russian Federation entities;
- measures of potential emergencies prevention and minimization at onshore capital construction facilities and any consequences from their environmental and regional ecosystem exposure;
- measures of water biological resources (including prevention from fish and other water biological resources entering water intake facilities) and their habitats conservation, including spawning and fattening conditions, migration routes (if needed);
- measures to preserve cultural and historical sites, natural, historical and archeological monuments.
- Measures to increase energy efficiency (energy saving).

3. *The program of industrial environmental monitoring* of all ecosystem components changing at the stages of sites preparation, construction, commissioning, operation, and decommissioning of onshore capital construction facilities, and also in case of emergencies, including:

- evaluation of spatial and time limits for monitoring;
- the list of environment quality indices (air, water, soil) under monitoring, and correspondence of these indices with forecast characteristics;
- regularity and frequency of sampling, locations of sampling points with specification of their positions;
- condition monitoring methods and procedures for key environmental components during construction and operation of onshore start-up facilities, and also in case of emergency.
- recommendations for development of the environmental monitoring system at the stages of site preparation, construction, commissioning, operation, and decommissioning.

Details of the industrial environmental monitoring program are given in Annex. 3.

4. *The list and estimation of expenses on implementation of environmental measures and compensatory payments.*

The environmental and economic evaluation of design solutions shall include the cost estimate of environmental measures implementation at all states of Project economic activities, compensatory payments, and nature utilization, environment pollution and waste disposal charges, costs of environmental

risk insurance.

5. The reclamation design for the lands occupied for temporary utilization

The land reclamation design shall contain the following data: description of Project operations, operating procedures, HSE measures, organizational and technological diagrams, the plot plan of the sites with specification of soil and vegetation removal, basic lines of the soil removal sites in build-up areas, the site plan of removed soil and vegetation storage, demand sheets for critical construction machinery, bills of quantities, data on work completion dates and sequences, and cost estimates.

The Land Reclamation Design structure is given in Appendix 3.

6. Non-technical summary of the PMOOS-OVOS section.

It is intended to hold public hearings. It is not included into the documentation package to be submitted to the State Environmental Expertiza and Glavgosexpertiza, and will not to be approved by any state authorities.

It will be translated by a specialized translation agency aware of the principles of technical translation and familiar with the environmental terms.

Upon translation receipt, the Contractor will provide quality control for the received documentation.

English translations shall not be a part of the documentation package submitted for the State Environmental Expertiza and Glavgosexpertiza, and will not require any approvals from state authorities. Required outcomes:

Required outcomes:

Completed adequate translations (Rus-Eng) of non-technical summary of the PMOOS-OVOS sections.

Graphical part:

1. Site plan (sketch map) of the construction site with specification of boundaries for the land located in it for the onshore capital construction facilities, boundaries for sanitary protection zone, residential area, recreational areas, water conservation zones, drinking water supply sources conservation zone, habitats of the animals and plants specified in the Red Book of the Russian Federation and the red books of Russian Federation entities, and also locations of reference points;

2. Environmental sketch maps showing the affected area (scale 1:10 000);

Site plan (sketch map) of the construction site with specification of boundaries for the land allocated for the onshore capital construction facilities and air emission sources, sources of

waste generation (industrial), areas of its collection and temporary storage, drinking water supply source (water intake), waster discharge point/points (points where treated wastes will be transferred /discharged), waste treatment facilities;

4. Sketch maps and summary tables including resulting estimations of ambient air pollution at unfavorable weather conditions, and emissions by their contaminants and substance combinations with cumulative adverse effects – for production facilities;

5. Site plan (sketch map) of the construction area with specification of boundaries for the land allocated for onshore capital construction facilities location, with specification of checkpoints, control posts, wells and other facilities ensuring production ecological monitoring.

Composition and draft contents of PMOOS-OVOS sections are shown in Appendix 3 to this Technical Assignment.

Stage 2. Holding of Project public hearings. The scope of arranged and held public hearings shall include:

- Approval of locations, timing, forms, and procedures for the public hearings;
- Preparation of presentation materials to be submitted at public hearings;
- Arrangement and performance control of community liaison offices to receive comments and suggestions from the public and interested organizations;
- Advertising in federal (if required), regional and local newspapers, and also in other mass media (as agreed by the COMPANY);
- Arrangement and holding of the public hearings in the form agreed with representatives of the RF entity's executive authority and/or with the relevant local authority;
- Preparation of a final report on the public hearing;
- Obtaining approval from the RF entity's executive authority upon public hearing completion.

Required outcomes:

Protocols and Reports on the outcomes of public hearings, which is approved by the executive authority of the Russian Federation entity, including appropriate minutes and reports executed in the established procedure and supported with audio- and video materials of the public hearings.

Public hearings for GTU project documentation are not in the

scope of work;

Public hearings for LNG and infrastructure facilities will be held in parallel.

Stage 3. Approvals

Legislative obtaining of all positive conclusions and approvals on the Land Reclamation Design Projects, the Estimated Sanitary Protection Zone Design Projects, estimations of damage to water biological resources, and the measures of cultural (architectural) sites preservation as a part of PMOOS-OVOS in all appropriate state agencies, including preparation of cover letters, document replication, submission of all required documents and data to authorities, analysis of experts' comments and recommendations, and introduction of corresponding corrections into the designs.

Day-to-day interface with COMPANY and design agencies' representatives, specialists and experts of scientific institutes and state authorities.

Required outcomes:

Approval of the Land Reclamation Design Projects, the Estimated Sanitary Protection Zone Design Projects for construction sites, PMOOS-OVOS; estimations of damage to water biological resources; the measures of cultural (architectural) sites preservation as a part of PMOOS-OVOS, which are documented in the established procedure and scopes required to obtain a positive conclusion from the FSI Glavgosexpertiza of Russia.

Stage 4. Development of Estimated Sanitary Protection Zone Design

Develop Estimated Sanitary Protection Zone Design in accordance with the applicable Russian Federation laws. If required and requested by the COMPANY Estimated Sanitary Protection Zone Design will be developed for each PMOOS-OVOS section.

Estimated Sanitary Protection Zone Design drafts shall be approved by the COMPANY. Estimated Sanitary Protection Zone Design for PMOOS-OVOS section developed for LNG facilities shall be compiled based on the actual Estimated Sanitary Protection Zone Designs for particular Phase I onshore capital facilities and based on the new engineering solutions and their further development.

Final revisions of Estimated Sanitary Protection Zone Designs shall be approved by the environmental supervisory and monitoring agencies in accordance with the established procedure.

The content of a standard Estimated Sanitary Protection Zone Design for Phase I onshore capital facilities is specified in Annex 3 attached hereto.

The requirements to the graphical part is similar to those set out in Stage 1.

Required outcomes:

Issue of standard Estimated Sanitary Protection Zone Designs for Phase I onshore capital facilities with due consideration to the further development and their approval in accordance with the established procedure.

Stage 5. State Expert review support (project documentation for LNG complex) .

- Preparation of cover letters, document replication, submission of all required data and documents to State Expert board;
- Cooperation with leading and specialized experts for prompt (as work proceeds) receipt of questions, comments, and their closing up, if possible;
- Analysis of all comments and inquiries from experts in view of their regulatory and legal substantiation;
- Handover of COMPANY experts' comments and routine questions, or by direction of the COMPANY, to design documentation developers;
- Working meetings with experts as state expert review proceeds;
- Preparation of summary replies to the experts' comments and questions; approval of the summary replies with the Company;
- Generation of corrective notes to design materials, based on earlier reports, clarifications, and additional data submitted;

Assistance to the COMPANY in obtaining a positive state ecological expertize conclusion approved in the established procedure.

Required outcomes:

Positive conclusion of State Expert board approved in the established procedure;

Stage 6. Glavgosexpertiza support

- Review of the comments and requests received from the experts, analysis of their legal relevance;
- Preparation of the summary documents in response to

the expert comments and questions, approval of such summaries with the COMPANY;

- Preparation of the correction notes to the project documentation based on the received answers, clarifications and additional information.

Required outcome:

Unqualified opinion from the Glavgoexpertiza obtained in accordance with the established procedure.

Stage 7. Internal expertise support

- Review of the comments and requests received from the experts, analysis of their legal relevance;
- Preparation of the summary documents in response to the expert comments and questions, approval of such summaries with the COMPANY;
- Preparation of the correction notes to the project documentation based on the received answers, clarifications and additional information.

Required outcome:

Unqualified opinion from the Internal expertise obtained in accordance with the established procedure.

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| 1. Quality control | Work quality control shall be performed by the Designer in compliance with requirements of the ISO 9001:2008 standard. |
| 2. Customer | Shtokman Development AG |
| 3. Designers | Giprospetsgaz
Technip RUS
YUZHNIIGIPROGAZ |
| 4. Designer of the PMOOS-OVOS Package | OOO FRECOM |
| 5. Number of engineering documentation copies | Upon work completion, the Designer of the PMOOS-OVOS Packages, the Land Reclamation Designs, and the Integrated Estimated Sanitary Protection Zone Designs shall submit to the Customer, as a part of the Shtokman Gas-Condensate Field Development Project, Phase 1, LNG Complex, the following number of original documentation copies: <ul style="list-style-type: none">1. The draft of PMOOS-OVOS, of the Land Reclamation Design and of the Estimated Sanitary Protection Zone Design – an electronic copy for COMPANY’s review; |

2. For public hearings – 4 paper copies of PMOOS-OVOS and its summary without any technical details and one electronic copy – for the COMPANY;
3. Public Hearing Report – 3 hardcopies and 2 e-copies;
4. Final revision of the PMOOS-OVOS, after introduction of corrections 3 hardcopies and e-copies for Glavgosexpertiza and State Environmental Expertiza;

18. Data format

1. All reporting materials shall be delivered to the COMPANY in paper copies in solid white four-ring binders with front page, end page and spine inserts, and in e-copies in the quantity shown in par.17.

2. The Technical Documentation e-copies (digital medium composition and contents) shall correspond to the set of the reporting documentation submitted on hardcopies.

The submitted documentation format and style shall correspond to COMPANY's internal standards.

CD root directories shall contain report index files with specification of all hyperlinks to identifications and names of the documents.

3. All text sections of the reporting materials shall be elaborated in Microsoft Office Word 2003.

All text materials shall be delivered on electronic media in the original Word format, and also in *.pdf.

4. All tabulated data shall be made in Microsoft Office Excel 2003.

The tabulated data shall be delivered on electronic media in the original Excel format, and also in *.pdf.

5. All map charts shall be delivered in raster scans.

All graphical materials (drawings) signed by the DESIGNER shall be delivered in the initial AutoCAD format (*.dwg) and Adobe Reader (*.pdf) files.

All graphical materials (drawings) shall meet the requirements of SDAG CAD Specification SH1-AA-0950-000016.CONTRACTOR

**PMOOS-OVOS SECTIONS DIVIDED IN ACCORDANCE WITH PROJECT
PACKAGES FOR PHASE I ONSHORE CAPITAL FACILITIES**

a. PMOOS-OVOS SECTION FOR GTU COMPLEX

Gas treatment unit
Ancillary GTU facilities
Control room
Emergency power generation unit
Offsite utilities (facilities)
Temporary site facilities

b. PMOOS-OVOS SECTION FOR LNG COMPLEX

LNG complex:
Liquefied natural gas (LNG) plant process facilities
General purpose process facilities
LNG plant ancillary facilities
Connection lines with GTU
In-site roads and utilities
Outdoor networks
Temporary site facilities
Backfill area
Main control room
Access and muster points

POWER GENERATION UNIT (PGU):

Buildings
Utilities
Site networks and roads
Temporary site facilities

**c. OVOS-PMOOS SECTION FOR OPERATING SUPPORT AREA AND OPERATIONS
CAMP**

Operating Support Area.
Buildings.
Utilities

In-site utilities and roads.
Off-site roads and utilities;
Temporary construction stage sites

OPERATIONS CAMP

Buildings
Utilities and security systems and equipment
Site networks
Off-site roads and utilities;
Temporary construction stage sites

d. CONSOLIDATED OVOS-PMOOS SECTION FOR THE STATE EXPERT APPRAISAL

This section will include information on the all facilities listed above

LEGAL DOCUMENTATION REQUIREMENTS TO BE CONSIDERED FOR DEVELOPMENT OF PMOOS-OVOS SECTIONS

I. Statutes, normative legal acts, and regulatory and procedural documents of the Russian Federation (as now or hereafter in effect), including:

- **Federal Law No.7-FZ of January 10, 2002, Environmental Protection;**
- **RF Water Code No.74-FZ of June 03, 2006;**
- **RF Land Code No.137-FZ of October 25, 2001;**
- **RF Town Planning Code No.190-FZ of December 29, 2004;**
- **Federal Law No.174-FZ of November 23, 1995, Environmental Expert Review;**
- **Federal Law No.2395-1 of February 21,1992, Subsurface;**
- **Federal Law No.96-FZ of May 04,1999, Ambient Air Protection;**
- **Federal Law No.52-FZ of April 24, 1995, Wildlife;**
- **Federal Law No.89-FZ of June 24, 1998, Production and Consumption Wastes;**
- **Federal Law No.116-FZ of July 21, 1997, Industrial Safety of Hazardous Production Facilities;**
- **Federal Law No.49-FZ of May 07, 2001, Natural Resources Traditional Use Areas of Russian Federation North, Siberia and Far East Indigenous Minorities;**
- **Russian Federation Government Resolution No.87 of February 16, 2008; Composition of Design Sections and Requirements to Their Contents;**
- **Regulation on Environmental Impact Assessment for Project and Other Activities in Russian Federation (approved by RF Environment Protection Committee Order No.372 of May 14, 2000);**
- **Gazprom Guidelines and Standards;**
- Other applicable legal and normative acts, state standards, and regulatory and procedural documents of the Russian Federation, and also Shtokman Development AG corporate standards on occupational safety, industrial safety, and environmental protection.

II. International legal documents ratified by the Russian Federation:

- International Convention on Civil Liability for Oil Pollution Damage, 1992;
- Convention on Long-Range Transboundary Air Pollution 1979;
- Convention on Transboundary Effects of Industrial Accidents, 1992;
- UN Framework Convention on Climate Change (FCCC), 1992;
- Kyoto Protocol (1997) to Framework Convention on Climate Change.

**PRELIMINARY COMPOSITION AND CONTENT OF ENVIRONMENTAL SECTIONS
WHICH WILL INCLUDE THE ASSESSMENT OF ENVIRONMENTAL IMPACT
PRODUCED BY THE FOLLOWING FACILITIES: GTU COMPLEX, LNG PLANT,
ONSHORE INFRASTRUCTURE, PMOOS-OVOS PACKAGE FOR THE STATE
EXPERT REVIEW¹**

**BOOK 1. LOCAL NATURAL CONDITIONS. CURRENT ENVIRONMENTAL
SITUATION**

AUTHORS

ABBREVIATIONS

Introduction. State of the environmental knowledge

- 1 Overview of environmental conditions
 - 1.1 Climate and meteorological conditions
 - 1.2 Geology and relief
 - 1.3 Hydrogeology
 - 1.4 Surface water bodies
 - 1.5 Landscape
 - 1.6 Soils
 - 1.7 Vegetation
 - 1.8 Fauna
 - 1.8.1 Invertebrate
 - 1.8.2 Amphibians and reptiles
 - 1.8.3 Bird fauna
 - 1.8.4 Mammals
 - 1.8.5 Fisheries, hydrobionts and commercial fishing importance of water bodies
- 2 ASSESMENT OF ECOLOGICAL STATE OF NETURAL ENVIRONMENT
 - 2.1 Air pollution level
 - 2.2 Chemical analysis and level of underground water and aerated soils contamination
 - 2.3 Chemical analysis and surface water contamination
 - 2.4 Bottom sediments contamination
 - 2.5 Soil contamination
 - 2.6 Contamination with radionuclides
 - 2.7 Harmful physical impacts
- 3 SOCIAL AND ECONOMIC OVERVIEW
 - 3.1 General information
 - 3.2 Kola district
 - 3.2.1 Demographic situation
 - 3.2.2 Social conditions
 - 3.2.3 Consumer price index
 - 3.2.4 Social activities
 - 3.2.5 Economics

¹ The contents and structure of the documents presented in Annex 3 are preliminary and are subject to modifications as agreed between Customer and Designer.

- 3.2.6 Agriculture
- 3.2.7 Investment projects
- 3.3 Teriberka village
 - 3.3.1 Demographic situation
 - 3.3.2 Social conditions
 - 3.3.3 Economics
- 3.4 Sanitary and hygienic conditions, population health in the investigated area
 - 3.4.1 Sanitary and hygienic conditions in the Teriberka village
 - 3.4.2 Sanitary and hygienic condition of soils and surface waters
- 3.5 Indigenous minorities and traditional use of the natural resources

4 CURRENT ENVIRONMENTAL CONSTRAINTS AND RISKS

- 4.1 Specially protected natural areas
- 4.2 Water conservation zones and coastal shelter belts
- 4.3 Top fishery water bodies
- 4.4 Rare species of plants and animals
- 4.5 Hazardous exogenic processes

5 CULTURAL AND HISTORICAL SITES.

- 5.1 Identified cultural and historical sites
- 5.2 Preservation of cultural and historical sites

REFERENCES

ANNEXES

Annex 1. Map charts

Annex 2. Memo on the categories of the water bodies

Annex 3. Extract from the List of identified Cultural and historical sites

Annex 4. Letter to the municipal authorities of the Teriberka village concerning specially protected natural areas

BOOK 2. ENVIRONMENTAL IMPACT ASSESSMENT.

TEXT

LIST OF RESPONSIBLE PERSONS

LIST OF ABBREVIATIONS

Summary

- 1 Principal technical solutions
 - 1.1 Construction period
 - 1.2 Operation period
- 2 Legislation in the sphere of nature management and environmental protection (summary)
 - 2.1 International laws
 - 2.2 Laws of the Russian Federation
- 3 Assessment of impact on the ambient air
 - 3.1 General
 - 3.2 Brief description of local physiographic and climatic conditions
 - 3.3 Characteristic of the atmospheric air pollution in the project area
 - 3.4 Project impacts on ambient air and emission source description
 - 3.5 Estimation of ground-level concentrations of contaminants from project emissions
 - 3.6 Measure to regulate emissions of contaminants under adverse meteorological conditions
 - 3.7 Suggestions on maximum permissible emission standards establishment
 - 3.8 Methods and means of control (monitoring) of the environmental air condition
 - 3.9 Assessment of transboundary impacts
 - 3.10 Assessment of the impact of noise and other physical factors
 - 3.10.1 Noise impact
 - 3.10.2 Vibration impact
 - 3.10.3 Impact of heat emission
 - 3.10.4 Воздействие электромагнитного излучения
 - 3.10.5 Impact of electromagnetic radiation
 - 3.11 Justification of sanitary protection zone boundaries
- 4 Assessment of impact on aquatic resources
 - 4.1 Initial data
 - 4.2 Water supply and disposal
 - 4.2.1 Construction period
 - 4.2.2 Operation period
 - 4.2.3 Balance of water consumption and disposal
 - 4.3 Description of sources of water supply and disposal of the projected facilities
 - 4.4 Wastewater description
 - 4.4.1 Construction period
 - 4.4.2 Operation period
 - 4.5 Wastewater discharge
 - 4.5.1 Construction period
 - 4.5.2 Operation period
 - 4.6 Project impact on water resources
 - 4.6.1 Impact on superficial waters
 - 4.6.2 Impact on ground waters
- 5 Environmental impact assessment from waste management
 - 5.1 General provisions

- 5.2 Environmental aspects of waste generation and disposal
- 5.3 List and description of waste
 - 5.3.1 Construction period
 - 5.3.2 Operation period
- 5.4 Waste management procedure
 - 5.4.1 Temporary waste storage (accumulation) conditions
 - 5.4.2 Recycling solutions
- 5.5 Conclusions
- 6 Geological impact assessment
 - 6.1 Potential accident processes and factors
 - 6.2 Sources and types of impact
 - 6.3 Impact on mineral resources and geological environment
- 7 Vegetation impact assessment
 - 7.1 Short description of lands and soils of the project area
 - 7.2 Impact on land and soils
 - 7.3 Impact on vegetation
 - 7.4 Calculation of damage to vegetation
- 8 Assessment of impact on wildlife
 - 8.1 Impact on wildlife
 - 8.2 Assessment of expected damage to wildlife, including fish fauna
 - 8.2.1 Calculation of damage to ground wildlife
 - 8.2.2 Calculation of damage to fish resources
- 9 Environmental measure
 - 9.1 Ambient air protection measures
 - 9.2 Measure to reduce physical impact factors
 - 9.3 Water resources protection measures
 - 9.4 Hazardous waste collection, utilization, neutralization, transportation and disposal measures
 - 9.5 Land and soils protection measures
 - 9.6 Mineral resources and geological environment protection measures
 - 9.7 Measures to reduce impact on vegetation
 - 9.8 Wildlife protection measures
- 10 Measures to ensure compliance with energy efficiency requirements
- 11 Measures to minimize the number of potential contingencies and their consequences
 - 11.1 Analysis of principal causes of contingencies
 - 11.2 Description of the most probable scenarios of contingencies
 - 11.3 Assessment of probability of contingencies
 - 11.4 Assessment of risk of contingencies
 - 11.5 Environmental impact assessment for contingencies
 - 11.5.1 Ambient air impact
 - 11.5.2 Impact on water resources
 - 11.5.3 Impact on vegetation and land
 - 11.5.4 Impact on biological resources
 - 11.6 Measures to prevent emergencies and localize hazardous emissions
- 12 Ecological and economic assessment
 - 12.1 Regulatory framework of economic relations in environmental protection
 - 12.2 Calculation of costs related to compensation of damage to vegetation
 - 12.3 Assessment of damage to wildlife
 - 12.4 Assessment of damage to fish resources
 - 12.5 Justification of land reclamation cost
 - 12.6 Calculation of payments for water bodies use
 - 12.7 Land rent price (land tax)
 - 12.8 Environmental monitoring

- 12.9 Payment for ambient air pollution
- 12.10 Payment for discharge of pollutants into surface springs
- 12.11 Charge for production and consumption waste disposal in environment
- 12.12 Cost of waste exchange
- 12.13 Ecological insurance
- 12.14 Merged indicators of environmental costs and charges
- 12.15 Financial resources reservation for accident consequences containment and management

Conclusions

BOOK 3. ENVIRONMENTAL IMPACT ASSESSMENT.

Annexes

Annex 1. List of laws and regulatory acts used for preparation of the PMOOS-OVOS section of the design documentation

Annex 2. Annexes to “Assessment of impact on ambient air” section

Annex 3. Annexes to “Assessment of impact on water resources”

Annex 4. Annexes to “Environmental impact assessment from waste management” section

BOOK 4. LAND RECLAMATION DESIGN

LIST OF RESPONSIBLE PERSONS

LIST OF ABBREVIATIONS

- 1 Introduction
- 2 Short description of natural conditions
 - 2.1 Description of climatic and meteorological conditions
 - 2.2 Geological setting and topography
 - 2.3 Hydrological conditions
 - 2.4 Soils
 - 2.5 Soil pollution level
 - 2.6 Vegetation
- 3 Impacts on land and soil
- 4 Soil and land conservation measures
 - 4.1 Fertile soil layer conservation and sound management
 - 4.2 Reclamation of lands disturbed during site facilities construction
 - 4.2.1 Technical reclamation
 - 4.2.2 Biological reclamation
- 5 Conclusions

Local budgets

BOOK 5. PRODUCTION ECOLOGICAL CONTROL AND MONITORING PROGRAM

LIST OF RESPONSIBLE PERSONS

LIST OF ABBREVIATIONS

- 1 General requirements for the program
 - 2 Production ecological control
 - 2.1 Control of the ambient air chemical pollution level
 - 2.2 Control of the ambient air noise pollution level
 - 2.3 Control of wastewater quality
 - 2.4 Control of potable water quality
 - 2.5 Control of waste management
 - 3 Types and stages of the monitoring
 - 3.1 Background (preconstruction) monitoring
 - 3.2 Planned ecological monitoring
 - 3.2.1 Ambient air and snow cover monitoring
 - 3.2.2 Superficial waters monitoring
 - 3.2.3 Ground waters monitoring
 - 3.2.4 Soil monitoring
 - 3.2.5 Vegetation monitoring
 - 3.2.6 Wildlife monitoring
 - 3.2.7 Monitoring of radiation pollution and hazardous physical impacts
 - 3.2.8 Monitoring of hazardous geological processes
 - 3.3 Distant monitoring
 - 3.4 Ethnosocial monitoring
 - 3.5 Archeological supervision
 - 3.6 Monitoring regulation rules
 - 3.7 Emergency-rescue monitoring
 - 3.8 Adaptation procedures in the Environmental Action Programme functioning system
 - 3.9 Presentation of the monitoring results. Reports
 - 4 Metrological provision of production ecological control and monitoring
 - 4.1 Measurement means calibration
 - 4.2 Methods of measurements
 - 4.3 Metrological provision of the measurement means applied
- Annex 1. Map of ecological monitoring stations

BOOK 6. ASSESSMENT OF DAMAGE TO FISH RESOURCES

Introduction

1. Material and method
2. Brief description of local physiographic conditions
3. Hydrological and fishery description of the water bodies located in the construction area
4. Project solutions for the organisation of work
5. Assessment of adverse impact on biota
6. Calculation of damage to water biological resources
 - 6.1. Calculation of damage to water biological resources in kind
 - 6.2. Calculation of capital investments required to compensate for the prognosticated damage
7. Recommendations

Conclusions

List of sources