Actual Problems of the Environment Protection and Natural Resources Development on the Arctic Shelf

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ABSTRACT

The problems of the environment protection take important place in the processes of the natural resources researching and management in the Arctic. The planning development of oil and gas resources on the shelf of the Russian Arctic can cause great impact on ecosystems. It’s important to estimate possible consequences of anthropogenous influence and protect nature from dangerous activity. Carrying out of proper environment monitoring and resources development regulation are becoming of great significance. International and national legal bases and norms play a key role in supporting of safety of the life and resources development in the Arctic. The authors present the basic documents on environmental safety for offshore operations. Regulations for emissions in atmosphere, emissions in the marine environment, wastes are presented. Guidelines for environment control, safety and monitoring are studied. Oil spills response measures and international co-operation are presented. Legal support of new technologies development is given. National particularities of existing Russian norms on environment protection are also investigated. The results of the study can be used for the management of perspective projects on the territory of the Russian Arctic shelf and for farther development of normative and legal support of future safe activity in the Arctic Ocean.

KEY WORDS: Ecological impact; Resources development; Russian Arctic; Environment protection; Norms and legal documents; International regulations; Offshore operations; New technologies.

INTRODUCTION

Perspective development of oil and gas fields in the Arctic Ocean causes not only great scientific and commercial interest. It also excites world public opinion about the possible changes of a state of environment and consequences of these processes for northern hemisphere. These problems are defined by the complicated environmental conditions of the Macro Region, uniqueness of biota and high sensitivity of environment to the anthropogenous influence. Therefore ecological researches are getting the exclusive importance. They are especially important to the state and regional institutes connected with monitoring of a condition of natural complexes in the frames of obligations according to the Declaration of eight subarctic countries about Arctic environment protection. The ecological investigations have growing value for operators of oil and gas projects and companies developing Arctic oil and gas resources. They need the initial information about the background state of the marine environment in the areas of possible environmental impact where the objects of oil and gas extraction infrastructure are planning to be constructed.

ECOLOGICAL PROBLEMS IN THE ARCTIC OCEAN

Ecological Investigations

It is very important to estimate the level of already existing anthropogenous influence (transformation) on the environmental components as a result of carrying out economic activities. It is also important to designate and estimate significant ecological restrictions and risks, to define resistance of the different environmental components to the planning impact. The results of such researches will allow to choose the most suitable (from the ecological point of view) areas for the location of the projected constructions, to optimize selection of technological decisions, to define necessary terms of building and to carry out development of the most effective nature protection actions. The great attention should be given to preservation of the marine biological resources which are of great importance for existing wildlife management.

Ecological Impacts Reduction

Among the possible most significant potential impacts on marine biota (during the carrying out of the works on the shelf) are the followings: pollution of the sea water by mineral oil, heavy metals and other compounds; increase of a suspension and increase of turbidity in the water column during the underwater constructing. These influence on a forage reserve of fishes and fish resources, and also on the factor of “anxiety” (Ecological, 2007). Experimental studying of the possible negative acoustic influence on the sea mammals during the realization of the hydraulic engineering works (first of all for whale species) is very actual. Such technical decisions as fish protecting devices on the water fences are applied. The seasonal preferences for the periods of works (according to the periods of spawning etc.) are taking into account to minimize the environmental influences. Rehabilitation actions are conducting.

Ecological Monitoring

The continual ecological monitoring and control are important measures of nature protection. It is necessary to supervise a condition of components of environment at different stages of Arctic shelf resources development in the frames of the actions of environmental protection. Comparison of the results of monitoring with background data will allow to reveal negative changes of an environment and to take correcting measures (Ecological, 2009). The results of the environment managing in the Arctic are to a great extent defined by the joint accurately coordinated efforts of the subarctic countries. General principles approaches, methods and tools of an estimation of a