

Scenarios on Estimation of the Ecological Risks of Oil Transport Activity in Russian Far East Offshore Regions

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ABSTRACT

In this study the authors are looking at the environmental risks of oil transport activity in the Russian Federation's Far East offshore regions. The ecological risks which emerge during the functioning of the pipeline system and oil trans-shipping terminal are presented. A modeling of oil spills spreading are suggested and discussed. The estimation of the risks from the ecological accidents to the recreation activity and fishing industry in the Primorye Territory is presented. The ways of ecological risks reduction and protective measures for ecosystems including economical sanctions are worked out.

KEY WORDS: Ecology; risk; oil; spills; exploitation; pollution; Russia.

INTRODUCTION

The purpose of this paper is to estimate the ecological risks which emerge during the expected economical development of the coastal areas of the Russia's Far East Regions and to work out the methods of analyzing the impact of economic activity on the ocean environment. The authors are modeling the oil spills spreading, estimate the risks from the ecological accidents for the Primorye Territory, analyze different methods of spill mitigation and its financing. The results of the study can be used for the long-term planning of offshore regions development.

CONSTRUCTION OF THE RUSSIAN'S LONGEST PIPELINE

The Russian Federation's United Oil Pipeline System

In December 2004 the government of the Russian Federation decided to initiate a project and construct the united oil pipeline system East Siberia - Primorie. Its main route will be as follows: Tayshent (Irkutsk's area) – Skovordino (Amur's area) – Perevozochnaya Bay (Primorye Territory). One of the pipeline branch goes to China's Datsin and another to Prymorie terminal. About 80 million tons of oil is planning to transport annually by supertankers of 300,000 tons displacement from the oil trans-shipping terminal in the Perevozochnaya Bay for export mainly to the countries of the Asian-Pacific Region. The cost price of the pipeline confirmed by the order of Fradkov is 11,5 milliards USD. Various importers such as China, Korea, Japan, USA will be the basic buyers of oil in Primorie (Protsenko, 2003). The oil trans-shipping terminal can be the "window" to the Asia and base for the economical growth of Russian's Far East.

Significance for Russia

The pipeline will be the longest in the world. Its planned length is about 4,200 km. The construction of main oil pipeline from the Eastern Siberia to the southern part of the Primorye Territory is the largest Russian's project. It can realize economical and geopolitical interests of the Russian Federation in the Asian-Pacific Region. First of all it's an appearance of Russia on the new fast growing Asian-Pacific markets of oil and oil products. That means the growth of the Federal revenues and the profits of non-budgetary funds. In the second place are the growth of the geopolitical potential of the Russian Federation in the East and strengthening of the Russian's authority in the Asian-Pacific Region.

Existence of Ecological Problems

It is important to serve the ecological problems during the construction and exploitation of the Russian Federation's united oil pipeline system. This can minimize the ecological damage connecting with the pipeline functioning and negative consequences of the natural resources exploitation in the territory of unique natural complexes. The most essential ecological problem is connected with the final part of the pipeline and sea oil trans-shipping terminal (Arzamastsev, 2004). These problems are mainly caused by the ecological risks of the oil spills spreading. In this study the scenarios for the modeling of oil spills were calculated for two different versions.

THE MODELING OF THE OIL SPILLS SPREADING

The First Scenario

The first model of the oil spills is calculated on the basis of the data of the small oil leakages during the period of port and terminal exploitation in the Perevozochnaya Bay. The oil leakages are subdividing into the following three types (Kamenev and Marachev, 1985). The first type of the pollution origins from the exploitation of the vessels, port and ship-repair enterprises. The main pollutant is oily waters. The volume of pollution is depending on the total volume of the passing oil through the pipeline. For the beginning of the terminal's work in account were taken 20 millions tons of crude oil. The second type of leakages is tanker's spills. It is connected with the coaling of oil by tankers and service vessels. In account were taken 0,5 millions tons of oil. Another type is mixed spills. The origin of these spills is connected, for example, with such operations as ballasting of the vessels and washing the tankers. These data also were taken into account in the beginning of the terminal's work and amount to 20 millions tons. The