

Abstracts

The modern paradigm of development of the Arctic zone of the Russian Federation

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The author's paradigm of development of the Arctic zone of the Russian Federation, based on the principle of systematic approach to decision making and implementation, is proposed. The geopolitical role of the Ural region in the Arctic exploration is substantiated. The recommendations on transport and energy development of the region, its institutional and food support, improvement of the state policy on development of the natural resource potential of the Arctic, preserving of the ecosystem, defense of the interests of indigenous ethnic groups. An option of stable financial support of the Russian Arctic is proposed.

Key words: the Arctic zone of the Russian Federation, transport and energy development, institutional support, innovative agriculture system for food supply, ecology, state policy, natural resources, financial stability, state-private partnership.

Geodynamic evolution of oil and gas basins of Russian Kara-Barents Sea shelf

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The issues of multistage development of Russian Kara-Barents Sea shelf and its surroundings are considered. The spatio-temporal laws of interaction of geodynamic processes, affecting the accumulation of hydrocarbons in sedimentary systems of shelf seas, are grounded. Four age levels of oil generation processes are defined, the genetic characteristics of the formation of oil and gas basins of the region and identified.

Key words: geodynamic evolution, the Arctic, shelf, oil and gas content, hydrocarbons.

Deep sedimentary basins in the waters of the Russian Arctic: mechanisms of formation, oil and gas potential, the rationale of belonging to the continental shelf

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It is shown that highly thinned consolidated crust with increased velocity of longitudinal waves in the Submariner trench, the Lomonosov Ridge and Mendeleev Rise is the upper part of the continental crust modified by metamorphism. Under the Moho interface, the lower part of the continental crust is underlain, in which the gabbro came to eclogite with increasing velocity of longitudinal waves up to the mantle characteristic values. The existence of the continental crust in these structures allows attributing them to the extended continental shelf of the Russian Federation.

Key words: ultra deep sedimentary basins, stretching of the lithosphere, eclogitization, fast crustal subsidence, oil and gas content, the outer boundary of the continental shelf.

Hydrocarbon gases and permafrost of the Arctic shelf

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The characteristic features of interference of the processes of hydrocarbon gas emission and evolution of permafrost conditions on the shelf of the Arctic seas taking into account formation and decomposition of gas hydrates are considered. The research results will help to optimize the costs of engineering investigation.

Key words: permafrost, the Arctic, shelf, gas hydrate, emission.

Expeditionary activity of Lomonosov Northern (Arctic) Federal University

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The experience of expeditionary activities of the Lomonosov Northern (Arctic) Federal University in the Arctic is summarized. The results of the development and implementation of innovative scientific and educational project «Arctic Floating University», which efficiently combines education and research work of students, bachelors, masters and PhD students, are given. Improvement of learning technologies in accordance with the modern achievements of science and technology in various fields provides training of highly qualified specialists. The views on topical issues related to system fundamental and applied research in the Arctic are presented.

Key words: *expeditionary activities, research in the Arctic, Arctic Floating University, training of scientific and industrial work staff, education program.*

The expedition in the Kara Sea opens the heroic pages of Arctic Defense in the Great Patriotic War

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During the field research on the multifunction salvage vessel «Spasatel Zaborschikov» in September 2014, the exact coordinates of death locations of legendary icebreaker «Alexander Sibiryakov» and tragically lost ships «Marina Raskova» and TSH-114 of BD-5 convoy were recorded. The expedition was organized by Fertoing Company with the participation of member of public project «Kara expeditions» of the Governor of the Yamal-Nenets Autonomous District.

Key words: *icebreaker "Alexander Sibiryakov", Arctic sea convoys, the Northern Sea Route, ship "Marina Raskova".*

The intensity of oil and gas generation in the western sector of the Russian Arctic

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The methods and objects of study are described. Density and scale of emigration of liquid and gaseous hydrocarbons in the Paleozoic-Triassic strata of Barents and Jurassic-Lower Cretaceous strata of South Kara regions is calculated.

Key words: *scale of emigration of hydrocarbons, oil and gas matrix strata, katagenesis, Barents and South Kara regions.*

Placer deposits of the Arctic zone of Russia: the current state and development of mineral resources

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Placers of the Arctic region of Russia are represented by deposits of gold, platinum group metals, tin, diamonds, rare metals and titanium. While many deposits were developed for over 50 years, and now they are increasingly exhausted, the remaining resources are represented by deposits that reach the scale of large and medium-sized fields. There are three directions of development of mineral resources of these fields: (a) study of developed area potential of non-traditional types of placers; (b) use of new methods of mining of traditional placers related to off-balance deposits because of technical conditions of mining; (c) search of traditional placers in the unexplored areas. Investigation of techno genesis processes, use of new technologies for extraction and enrichment, as well as reconnaissance on the shelf and in unexplored areas will allow increasing the mineral resources of the Arctic.

Key words: *Arctic zone, placer, gold, tin, diamonds, rare metals, resources.*

Development of maritime activities in the Russian Arctic

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The current state and prospects of development of maritime activities in the Arctic, creation of effective, reliable and secure facilities for the exploration, production and transportation of hydrocarbons are investigated. The expedient types and designs of the facilities are analyzed. The prospects of Arctic shipping are considered. The designs of promising vessels for life in the Arctic are presented.

Key words: *The Arctic, The Northern Sea Route, Arctic shipping, ice shipbuilding, shuttle tankers and deliveries, floating semi-submersible drilling rigs, floating life support facilities.*

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The duration of the navigation period and changes for the Northern Sea Route: model estimates

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Estimates for duration of navigation period and its changes for the Northern Sea Route in 1980-2013 are obtained from satellite data on the concentration of sea ice in the Arctic basin. The ability of current climate models to reproduce the current conditions of sea ice in the Arctic and its change in comparison with satellite data are assessed. The model estimates of possible prospects of the Northern Sea Route in the XXI century are made.

Key words: *The Arctic, The Northern Sea Route, navigation period, climate change, sea ice, satellite data, modeling scenarios.*

Mining in the traditional territories of indigenous peoples: features, problems and regulatory mechanisms

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The problems associated with the interests of indigenous peoples of the Russian North in the projects of development of mineral resources are discussed. The experience of the Murmansk region - one of the most industrially developed regions of the Russian North - is presented. The existing regulatory mechanisms of relations between indigenous people and business are analyzed on the example of the Kola mining facility. Proposals for mining companies to form a policy against indigenous peoples in the framework of development of corporate social responsibility are given.

Key words: *development of resources of the North and the Arctic, sustainable development of mining sector, indigenous peoples, social responsibility.*

On creation and development of radiation safety system at nuclear icebreaker fleet

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The issues of radiation safety during the work of the author on the nuclear-powered icebreakers and in the special group of Technical Supervision over design and construction of nuclear-powered icebreakers of the Murmansk Shipping Company in 1961-1998 are covered.

Key words: *nuclear icebreaker, The Northern Sea Route, radiation safety, operation of marine nuclear power plant.*

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В электронную версию статьи указанное исправление внесено.

