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В XXI веке Арктический регион играет исключительную роль в геополитике. Богатейшие природные ресурсы (в том числе энергетические), развитие технологий, позволяющих эти ресурсы использовать, рост значения северных морских коммуникаций и другие факторы активизировали стремление ведущих государств занять в Арктике прочные позиции. При этом колоссальный потенциал Заполярья интересует далеко не одни арктические государства, но и те, границы которых лежат от него на значительном удалении. В этом свете особую значимость приобретают исследования, направленные на изучение континентального шельфа и уточнение его морских границ, анализ проблем, связанных с хозяйственной деятельностью человека в новых условиях, с акцентом на негативные последствия этой деятельности для экологии, в том числе решение задач обороны, предупреждения и ликвидации техногенных катастроф, развитие человеческого капитала и сохранение историко-культурного наследия Арктики.

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Ответственный за выпуск: *Е. А. Самыловская*

Ответственные редакторы: д-р истор. наук, проф. *С. В. Кулик*,
канд. истор. наук *Е. А. Самыловская*

Технический редактор: *Р.-Е. А. Кудрявцева*

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Arctic: History and Modernity : works of the Annual International Scientific Conference, St. Petersburg, 18–19 April 2018. – SPb. : POLYTECH-PRESS, 2019. – 180 p.

In the XXI century the Arctic region plays an exceptional role in geopolitics. The richest natural resources (including energy ones), the development of technologies that allow these resources to be used, the growing importance of Northern sea communications and other factors have intensified the desire of the leading states to take a strong position in the Arctic. At the same time, the enormous potential of the Arctic region is interesting not only for the Arctic States, but also for those whose borders lie far away from it. In this light, the research aimed at studying the continental shelf and clarifying its maritime boundaries, the analysis of problems associated with human economic activity in the new conditions, with an emphasis on the negative consequences this activity brings to the environment, including the solution of defense problems, prevention and elimination of man-made disasters, the development of human capital and the preservation of the historical and cultural heritage of the Arctic are of particular importance.

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CONTENT

HISTORY OF RESEARCH AND DEVELOPMENT IN THE ARCTIC

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LAUTER Olga
École des Hautes Études en Sciences Sociales, PhD candidate,
France, Paris, 75006, boulevard Raspail, 54;
e-mail: olya.lauter@gmx.net

PROTESTANT AND ORTHODOX MISSIONS IN ALASKA: SHELDON JACKSON'S AND IVAN VENIAMINOV'S ACTIVITIES

Abstract. *During a recent fieldwork in Anchorage and Kodiak, Alaska in summer 2017, the name of Sheldon Jackson, the general agent of education in Alaska constantly came up, in particular, while discussing punishments for speaking Native languages at schools and their consequent loss. In 1982, the anthropologist Richard Dauenhauer compared in his article two missionary strategies in Alaska in the 19th century: that of Sheldon Jackson, the Presbytarian missionary, and that of Ivan Veniaminov, the Russian Orthodox missionary. The same year, Stephen Haycox wrote an article arguing that Dauenhauer had failed to develop a sufficient historical context for the two missionaries and provided more details on Sheldon Jackson's strategy. The goal of both missionaries was to convert Native people to Christianity, thus, to eliminate their traditional religious beliefs. To reach the goal, both of them gathered ethnographic material, carried out missionary work, founded schools. In Veniaminov's and the Russian Orthodox Church's case, the elimination of Native traditional customs and beliefs was progressive and the approach was bilingual while Sheldon Jackson, like many other Protestants, insisted on Christianization, civilization and the exclusive use of the English language as the only possible means for indigenous people to become 'citizens' of the United States. This work acts as a survey over the existing literature and compares the respective missionary approaches.*
Keywords: *Orthodox, Protestant, Alaska, Church, missionary.*

In August 2017 during our first field work in Alaska, we had a opportunity to listen to two presentations of the Orthodox Church of America's Archivist Alexis Liberovsky about the relationships between the Orthodox Church and the government agent and Presbyterian missionary Sheldon Jackson after the sale of Alaska to the United States by Russia in 1867. The presentations took place in the Holy Resurrection Cathedral in Kodiak and in the Saint Innocent Cathedral in Anchorage.

There were several negative reactions parishioners manifested while the complicated relationships between Sheldon Jackson and the Russian Orthodox Church were being presented. During the same field work, in particular, during interviews with Native Orthodox parishioners and with Native clergy, the subject of Sheldon Jackson's missionary and education policy regularly came up. In particular, several interviewees spoke about their education, punishment for speaking their native languages and their consequent loss, as a result of Sheldon Jackson's education policy. In spring

1982, The Pacific Historian published an article by Richard Dauenhauer that compared Sheldon Jackson with the early Russian Orthodox missionary, Father Ivan Veniaminov, Bishop Innocent (canonized in 1977 as Saint Innocent). In this article, the author argued that "Veniaminov, with his emphasis on bilingualism, epitomized a positive, culturally supportive approach to proselytizing and education which was characteristic of the Russian Orthodox mission in Alaska" and that, by contrast, Jackson and other Protestants insisted on the elimination of native languages and their replacement by English which was "individually and culturally destructive" to Native people [4].

Stephen Haycox claimed that Dauenhauer failed to develop a sufficient historical context for the two missionaries in comparison, as they appeared isolated from the historical background. Haycox emphasized that in Jackson's case it led to important misunderstanding of his activities and motivation [4].

In the present article, two missionaries' strategies is goin to be compared and reexamined in order to give a new interpretation of those strategies in the given historical context. In the first section, the historical background will be examined. The second section is going to be dedicated to the missionary approach comparison and the relationships of the Protestant and the Orthodox Churches, while the third section is going to focus on the main differences in these missionary strategies.

As for the historical background, the future Russian Orthodox Church missionary and Metropolitan of Moscow, Ivan Veniaminov was born in the Irkutsk province of Siberia in 1797 and was first named Ioann Evseevich Popov. At age nine he was sent to Irkutsk Seminary where his name was changed to Veniaminov. After his graduation from the Seminary in 1823, he was sent to Unalaska Island, Alaska as an ordained priest [15].

Veniaminov had stayed in the Eastern Aleautians for ten years and became fluent in the Eastern Aleut language [12]. Not only he became bilingual, he also "developed kinship ties through the marriage of a brother to an Aleut woman and the marriage of a daughter to a Russian-Aleut man" [9]. In parallel to his duties, such as converting the Aleuts to the Orthodoxy, founding a boys' school, he learned Aleut, invented an Aleut alphabet, translated the liturgy, catechism and the gospel of Matthew into Aleut [15].

In 1839, after the death of his wife, he became a monastic and was chosen to be the bishop [9]. Veniaminov moved to Sitka in 1834 to continue his missionary work among the Tlingit [8]. He learned the language, carried out translations. He also wrote the first large Tlingit ethnography published in 1840 [3].

In 1841-1842 Veniaminov carried out his first tour through his diocese. In 1868 Veniaminov was chosen to the Metropolitan of Moscow that he held until his death in 1879 [9].

In 1834, the same year when Veniaminov started his missionary work in Sitka, the future first general agent for education in Alaska and a Presbyterian clergyman, Sheldon Jackson was born in New York.

Jackson was educated at Union College and Princeton Theological Seminary [15]. Before his work in Alaska, he worked as a missionary among Indians in the west of the country for more than ten years; he was one of founders of fourteen schools and of numerous churches.

After 1877, Jackson carried out education and missionary work in Alaska. He founded Presbyterian mission schools in six Alaska communities and raised funds among religious and political circles for education in Alaska [4]. To raise funds, he had to be very persistent and energetic. For instance, in 1880 he "*personally invited every member of Congress to attend one of three different lectures*" he was going to give on Alaska's resources, climate, inhabitants, living conditions and needs [5].

In 1880, under Jackson's supervision, the "comity agreement" took place with the participation of Protestant missionaries in order to divide Alaska into several different missionary areas to set up missions and schools. Alaska was divided among the Presbyterians, the Episcopalians, the Baptists, the Methodists and the Moravians and the Congregationalists [16]. The Catholics and the Orthodox were not invited to the meeting. This goes into contradiction with the statement that "Orthodox, Protestant and Catholic clergy seem to have agreed quickly on a division into zones of influence" [2].

In 1885 Jackson was appointed as the general agent for education in Alaska [16]. When he became the general agent, he discovered Russian-Greek Orthodox churches throughout Alaska. Initially, the Protestants thought of not "*interfering with the Russian-Greek Orthodox work among the Natives*" [13]. Moreover, Jackson considered Ivan Veniaminov to be "the one among all the Russian priests to Alaska that has left an untarnished reputation and seemed to possess the true missionary spirit" [6]. Jackson thought of Veniaminov as a remarkable missionary on the north-west coast of America, among other two Protestant missionaries, starting as a priest in Alaska and having become the Metropolitan of Moscow.

However, Jackson's attitude towards the Orthodox Church was not favorable upon the whole: "*And in response to that call it was to be expected that the churches of the United States, with their purer religion and greater consecration, would send in more efficient agencies than Russia had done*" [6]. Hence, Jackson considered the Russian Church as an inferior one as compared to the Protestant Churches. In this respect, the question of Nicholas, a bishop of the Orthodox Church, late of Alaska and the Aleut Islands in his demand to the President William McKinley dated from October 5th, 1898 is notable: "*It was the Orthodox Church which brought the light of truth to that country; why then try to drive her out of it*

by every means, lawful or unlawful?" [17]. Hence, the relationships between Jackson and the Orthodox Church clergy were adversarial and they had tensions.

While comparing the Protestant and Orthodox missionary strategies and speaking about Christian denominations' adversary, it should be noted that it also might be natural for Veniaminov to 'defend' the Orthodox Church from other Christian denominations' missionary interference to the Alaskan Territory. For instance, he agreed with Governor Etholin's decision to build a Lutheran church for the Finns in Novo-Arkhangelsk (today Sitka) but he forbade any Lutheran missionary work among the Tlingit, thus, maintaining the "exclusivity" of the Orthodox Church in the area [10]. Thus, Jackson and other Protestants' intentions to dominate the area and to protect it from their 'Christian adversaries' might not be that different of that of Veniaminov's and of the Russian Orthodox Church in Alaska.

Like Veniaminov, Jackson was a missionary, he also founded schools, and at the time of his death occupied the highest position in his church [1]. Being Christian missionaries, both of them disapproved of original 'pagan' beliefs and both of them might contribute to the destruction of indigenous religious systems.

To understand these religious systems, Veniaminov published his first large Tlingit ethnography in 1840 that primarily contained the description of social organization, customs and beliefs and might be of particular interest for him, as a priest [3]. Indeed, in his instructions to the Missionary at Nushagak, Theopahnus, Veniaminov emphasized that the latter one should "make it [his] business to find out all about the religion, rites, customs [...] of [his] parishioners, more especially in order to be able the more surely and easily to influence them [17].

Jackson also traveled a lot in Alaska; he described indigenous customs and religious beliefs [6, 7]. However, most of his descriptions were taken from other sources for public relations purposes [5].

In the 1880s Jackson, established an anthropological museum in Sitka with collections of Native Alaskan artifacts. In 1892, for the purpose of Eskimo subsistence, Jackson organized the importation of domestic reindeer from Siberia. He continued his duties as the general agent inspecting schools and reindeer herds in Alaska until his resignation in 1906 [15].

As for differences in Jackson's and Veniaminov's strategies, the most important one was that Veniaminov's approach to proselytizing and education was bilingual, it was based on the preservation of native languages, while Jackson, like other Protestant missionaries insisted on the elimination of native languages and their exclusive replacement by the English language [1].

Concerning the bilingual approach, Veniaminov learned the Aleut language together with the Aleut chief, Ivan Pan'kov and invented an Aleut

alphabet to elaborate liturgical translations [11]. As not all other Orthodox priests were as good at learning Native languages as Veniaminov was, the bishop opened a seminary in Novo-Arkhangelsk in 1845 to bring up the Native bilingual clergy [10]. As a nowadays result of this bilingual strategy, one of our interviewees (Taisia A.,Yupik, in her sixties) managed to revive her mother language (lost because of Jackson's strategy) by going to the Orthodox Church where the services were conducted in this mother tongue (as a result of Veniaminov's strategy).

As for Native customs and traditional religious beliefs, according to Veniaminov, "*ancient customs, so long as they [were] not contrary to Christianity, [did not] need to be too abruptly broken up; but it [needed to] be explained to converts that they [were] merely tolerated [...] for nothing [insulted] and [irritated] savages so much as showing them open contempt and making fun of them*" [14]. Thus, his goal was a consistent and progressive elimination of Native traditional customs and beliefs while tolerating some of them and, hence, showing respect to the Native people.

On the contrary, Jackson did not differ from many Protestant reformers and missionaries in their conviction (like the Board of Indian Commissioners established in 1869) that "the only hope of survival for the American Indian was his rapid adoption of Christianity and Anglo-American culture" [13]. Indeed, Charles Bryant from Special Agent Treasury Department cited in Jackson's Report on Education in Alaska, published in 1886, described the Aleuts as having "natural gifts" that made him believe that "*the Aleuts might become as good as American citizens as any admitted under the 15th amendment to the Constitution*" [7]. According to many Protestants' opinion, "Christianization" and "civilization" were indispensable for the Natives to become "citizens" of the United States and "*the only mean by which Indian people would achieve some form of parity with whites*" [13].

Because of all these reasons, the Protestants believed in very strict English-only policies and punished the disobedience [16]. Native languages were supposed to disappear as quickly as possible. "*The Tlingit language is doomed to speedy extinction, the sooner the better for the Native*s". Children "*were required to speak and write English exclusively*" and "*the use of Indians dialects was prohibited*" at schools [1]. One of our interviewees of Alutiiq origin, Rosabel B. (in her eighties) mentioned that not only Native children in her class were physically punished for speaking their Native language but their parents were threatened to speak it either. As a result, she lost her Native tongue as the majority of all Natives.

Hence, Jackson's and other Protestants' language policy was destructive for indigenous people as compared to that of Veniaminov and of the Orthodox Church in that it imposed on Native people the Anglo-Saxon model without any compromise. Jackson, like other Protestants,

believed that it was the means to protect the Native people by making them equal to the white population of the American society.

However, Jackson's education policy was still different from Indian Office policy: the commissioner of Indian affairs assessed Jackson's policy at the transfer of Alaska native services from Bureau of Education to the Bureau of Indian Affairs in 1931 in the following way: "*The Alaskan education enterprise has been carried out in the past with a different philosophy and a different practice [than that of the Indian Office]. In contrast to the Indian Service, with its boarding schools, the office of Education in Alaska […] confined its effort to local community schools and a program of education that took into account in an amazing way the health and social and economic life of the native group*" [4].

Thus, Jackson avoided sending Alaskan Native children to remote boarding schools preferring local schools organized by the Protestant missionaries.

We consider that, while the missionary strategies of Ivan Veniaminov and of Sheldon Jackson were both aimed at the elimination of Native traditional religious beliefs by converting them to Christianity and by educating indigenous people according to Christian standards, Sheldon Jackson's approach, in the context of the Protestant missionary strategy, had a more destructive character. Veniaminov's approach was based on using Native languages, on tolerating and showing respect to some of pre-contact religious beliefs of the Native population. The Orthodox approach was to proselytize more gradually by using the Native languages at school and in the Church.

Like the majority of the Protestants, Sheldon Jackson saw Christianization and civilization as the only means of protecting the indigenous people. In order to protect the Native population, he aimed at shaping out of them the citizens of the United States, equal to the white Americans. For him, one of the measures to undertake was the immediate abolishment of Native languages and the exclusive use of the English language. However, in contrast to many other Protestant fellows, Jackson insisted on building local schools rather than sending the Alaskan Native children to remote boarding schools. Hence, his strategy was more tolerant in this respect as compared to other Protestant missionaries.

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SHRADER Tatjana
Dr., Senior Researcher, Peter the Great Museum of Anthropology and Ethnography (Kunstkamera) Russian Academy of Science,
Russia, St. Petersburg, 199034, Universitetskaya emb., 3;
e-mail: tatyana.schrader@gmail.com

LEONID BREITFUSS AND HIS CONTACTS WITH NORWEGIAN POLAR EXPLORERS

Abstract*. Leonid Breitfuss (1863-1950) - the scientist, the investigator of the Arctic regions of the European part of Russia. Norwegian and Russian governments decorated him with high awards for his valuable contribution to the science according studying of the Arctic regions, for saving some Russian polar expeditions. He was widely known by polar scientists in many countries. L. Breitfuss had published 213 scientific works.*

L.Breitfuss was born in the German family in Petersburg, lived in the capital of Russia since XVIII century. In the youth he took part in one of revolutionary organizations and was exiled to Germany, where he lived from 1890- to 1897. In Berlin he studied biology and hydrography. In Russia he took part in the work of the Committee for helping the pomors, was a leader of Murman expedition. Since 1901 to1912 according the task of the International Conference of studying North and Baltic seas he send scientific facts to the Research Centre in Copenhagen. .L.Breitfuss had composed the map of depths and streams in Barents sea. In 1914 he took part in organization of Polar Commission. His big polar library is in Petersburg now. Since 1912 L.Breitfuss worked in Hydrographical Marine Department. L.Breitfuss and Yu. Schokal'sky were the members of International Commission of studying of North-European seawater. He took part in saving the three Russian polar expeditions and there for he visited Norway to find a good polar ship to find the expeditions. In this country he had many friends-polar explorers (Fr.Nansen,R.Amundsen,Yo.Hjort and other)who helped him. In 1919 L.Breitfuss emigrated to Germany. There he was one of the organizers of society "Aeroarctic",(leader was Fr.Nansen), composed the map for flying of German airship "Count Tseppelin", collected a library of polar investigations history. L.Breitfuss died 20. July 1950, 86 years old.

Keywords: *Leonid Breitfuss, Arctic, Norwegian polar explorers, Norway, Breitfuss Cape, Historical Geography.*

In the late XIX- early XX centuries, scientists from many countries showed interest in the remote areas of the globe - the Arctic and Antarctic, wanting to conquer the North and South Poles, or explore the polar regions.

Russian scientists took an active part in polar expeditions. The country had specialists of different nationalities, including Germans. Let us get acquainted with the fate of Leonid Breitfuss, a German who lived most of his life In Russia, in St. Petersburg. He devoted himself to a comprehensive study of the Northern regions of the European part of Russia. The Russian government noticed his contribution to the study of

the Northern outskirts of Russia, awarding the State Councilor, the gentleman Leonid Breitfuss with the order of St. Anna of the 3rd degree for the leadership in Murmansk expedition, with the order of St. Vladimir of the 4-th degree for the organization and management of the rescue campaigns in Murmansk, with the medal of the Imperial Russian Geographical Society named after F. Litke for his scientific contributions to the study of the Northern water areas of Russia; the government of Norway acknowledged him with the II class order of St. Olaf for organizing the rescue of several expeditions. The name of this researcher was given to the Wet Cape on the Severnaya Zemlya and Breitfuss Cape in the South-East of the Hoover island in the archipelago of Franz Joseph Land [1, p. 1,2].

Until 1920, L. Breitfuss lived and worked In Russia, and then moved to Germany, lived there until he got 86 years and died, revered by researchers of the Arctic regions of almost all European countries. He was personally acquainted with most of the outstanding polar scientists, including F. Nansen, R. Amundsen, F. Malgren, U. Nobile, and O. Nordenskiöld, U. von Drygalsky, G. Sedov, N. Zubov, V. Vise, E. Shekelton and many others [2, P. 20]. His activities were scientific and practical, 117 out of his 213 works were published In Russia before 1919. The books were devoted to the main directions of scientific work — systematics and faunal studies of calcareous sponges of the European seas, and the hydrography of the Northern waters. In addition, his works of a purely geographical nature were published [3].

Leonid Breitfuss came from a German family on his father's side. In 1732, his great-grandfather, together with other fellow-Protestants, was forced to leave Salzburg and settled in Rastenburg; in the late eighteenth century, the grandfather, Daniel Gottlieb, moved with his two brothers to St. Petersburg, where he started a family, worked as a jeweler. The researcher’s father Ludwig Breitfuss (1826-1893), a Russian industrialist, was married to a girl of Swedish origin from Estonia — Emma Soldenschloh (1845-1921). Ludwig Breitfuss had 6 children — 4 sons and 2 daughters: they lived permanently in St. Petersburg, keeping the Lutheran religion and German citizenship. The eldest son, Leonid Breitfuss, was born on November 19 / December 1, 1864 [2, p. 6]. According to his passport of 1901, he was a dark brown-haired man with blue eyes, handsome and tall [4].

Ludwig Breitfuss’ sons studied in Petrischule, in their early years they took part in gatherings of Torchinsky’s revolutionary group "Fellowship of St. Petersburg workmen". In 1888, after Torchinsky was arrested, Leonid Breitfuss headed this organization for some time, for which he was arrested too and after a short imprisonment in “Kresty (Crosses)”-prison, was sent to Germany as a German citizen. As a young man, he showed interest in natural sciences, while in Germany, he attended lectures in zoology and biology at the University of Berlin and the

Polytechnic College, as well as traveled to various biological marine stations in Germany. His exile lasted from 1890 to 1897 [2, p. 7].

During this period, a tragedy broke out in Northern waters of Russia — in the autumn of 1894, during a storm, 25 Pomeranian vessels were lost. This event elicited a response from the citizens of Russia, including the scientific community. In 1898, the Northern Commission was founded at the Committee to assist Pomerania, it composed of Russian scientists who had had research experience in Northern regions. One of the tasks of the Commission was to conduct scientific fishery research. At the beginning, this Commission's activity was headed by a young scientist-biologist Nikolay Knipovich who, having worked for one year in this position, refused the management role. To the great joy of Leonid Breitfuss, who had returned from Germany by the time, he was invited to lead a scientific expedition. A hostile relationship between L. Breitfuss and N. Knipovich lasted for many years. The activity of the Murmansk expedition under the leadership of L. Breitfuss was aimed at the development and implementation of plans on improving the processes of fishery in the Northern waters of Russia. The result of the expedition was recognized by the international community, and this is a great merit of Leonid Breitfuss, Doctor of Natural Sciences. On the instructions of the international conference on the study of the Northern and Baltic seas, since 1901, L. Breitfuss' expedition ships regularly collected data on hydrology, zoology, meteorology in these areas and sent information to the Research Center in Copenhagen. It is necessary to underline the diversity of the expedition's research work, as evidenced by the first detailed map of the depths and currents of the Barents Sea. For the first time after years1822-1832, the data of the depths along the coast of the Kola coast were clarified, and L. Breitfuss, on the instructions of The Chief Hydrographic Office, prepared a note on the boundaries of the territorial waters of European Russia in the Arctic Ocean. Both expedition and scientific work of Murmansk campaign lasted for 10 years [5, p. 294].

In 1909, L. Breitfuss began to process the richest scientific material. In 1912, having adopted the Russian citizenship, he began working in the Hydrographic Department of the Russian Navy, and in 1913, the Ministry of the Sea appointed an honorary officer of the Management Department, General-Lieutenant Y. Shokalskiy and the head of the Hydrometeorology Department State Councilor L. Breitfuss to take part in the International Commission for the study of Northern European waters in Copenhagen [6, p. 10].

In the early twentieth century, both foreign and Russian polar explorers made plans to conquer the North Pole and the Central part of the Arctic Ocean. In 1912-1913, almost simultaneously, three Russian expeditions headed by G. Sedov, V. Rusanov and G. Brusilov went to the Arctic Ocean. There was no news from them for a long time. In 1914, the

government decided to organize a rescue expedition on a Norwegian ship. The hydrographic office instructed L. Breitfuss to find a vessel for this expedition in Norway. He was fluent in German and had extensive contacts with Norwegian polar explorers.

G. Sedov had work experience in the North as a member of several expeditions of Hydrographic Management Office. Over the years, he had been developing a plan for his own expedition, which was not approved by the special Commission of the Hydrographic Management Office. L. Breitfuss was a member of this Commission [7, p. 510]. State didn't subsidize the expedition, the money was collected by private investors, such as a publisher A. Suvorin, singers F. Shalyapin, L. Sobinov, A. Nezhdanova, who did not skimp on resources, as the implementation of the campaign in the North was of a patriotic character, but still there was not enough money, the preparation was conducted in haste, there was no radio operator on board of the old schooner "St. Foka". The hastily assembled team came out of Arkhangelsk in August 1912.

In the same years, two Russian polar explorers G. Brusilov and V. Rusanov, leading two expeditions, went to sea with their plans to explore the Arctic Ocean, having no radio operator on any of the ships [5, P. 186].

St. Petersburg sent dispatches to Bergen, to the famous Norwegian oceanographer, Y. Hjort (9), to Lyusaker, (a suburb of Christiania (Oslo)), to F. Nansen, to the small Northern towns of Norway — Tromsø, Vardø, where the consular representatives of Russia were located [8, p. 23-25, 32]. They immediately received response dispatches with a variety of proposals. Y. Hjort and F. Nansen replied urgently: they advised to buy a well-proven rescue ship "Gerda" in Sandefjord city [8, p. 51-52]. From 14 offered ships the Russian naval authorities chose the vessels recommended by the Norwegian polar explorers. On 13 February 1914 Navy Ministry urgently seconded L. Breitfuss to Norway to procure a suitable vessel. On February 18, a telegram came from Lyusaker to St. Petersburg, the Hydrographic Office: "Visited Nansen. Consul tomorrow. Going Sandefjord to inspect the vessel". L. Breitfuss had previously been F. Nansen's guest.

In the spring of 1914, L. Breitfuss carried out active work on selection of vessels to search for the expeditions. He wrote from Christiania to the Hydrographic Office: "Having arrived on February 17 in Christiania, I was studying the issue of the most appropriate equipment of the expedition in search of Lieutenant Sedov, Brusilov and Rusanov, for which I immediately connected prof. Nansen, captain Sverdrup, a member of the now being equipped expedition to the North Pole headed by Roal Amundsen, a physicist Birkeland, the secretary of this expedition Leon Amundsen (R. Amundsen's brother — T. Sh.), Dr. Yort and others". While in Norway, L. Breitfuss did not forget about professional interests. In one of the telegrams, he said: "I will go to Bergen this evening for a meeting with Dr. Y. Hjort and to learn the modern news, with the production of

hydrographic studies in the marine laboratory" [8, p. 258]. As it can be seen from the letter of L. Breitfuss, meeting with a famous polar explorer, an ally of F. Nansen, Otto Sverdrup, and purchasing the second ship "Eclipse" there, also for the salvation of Russian expeditions, L. Breitfuss offered the Navy Department to invite the polar explorer O. Sverdrup as the captain of this vessel [8, p. 107].

Not without some hesitation, the Department representatives agreed. In correspondence with the Hydrographic office, L. Breitfuss described the Norwegian polar explorer as follows: Captain Sverdrup is a very respectable and serious - looking man of about 50 years. He has, apparently, very good health [8, p. 197]. At the same time, L. Breitfuss met R. Amundsen, who, planning a trip to the North Pole, expressed a desire to receive from Russia a set of maps of the shores of Siberia, indicating the recently discovered lands [8, p. 291reverse]. Yet, R. Amundsen's expedition was delayed, so he decided to transfer the previously collected supplies to "Eclipse" vessel, which was being sent to the Kara Sea [9, P. 237 reverse].

In 1915, L. Breitfuss came to Norway again to organize the rescue of two Russian icebreakers "Taimyr" and "Vaigach", which were blocked by the ice of the Kara Sea while moving from Vladivostok to Arkhangelsk. O. Sverdrup took an active part in the rescue of these ships.

In 1918, L. Breitfuss restored the work of the biological station on the Kola Peninsula. At this time, the Russian ship "Solovey Budimirovich" with 85 passengers – emigrants from Russia, got into dire ice conditions, and if L. Breitfuss had not organized the rescue of this vessel by the icebreaker "Svyatogor"(now "Krasin"), under O. Sverdrup's leadership, the fate of the people could have been tragic.

It should be noted that in 1914 the Polar Commission was established at the Russian Academy of Sciences in St. Petersburg. The main task of this Commission was to coordinate the work of Arctic research In Russia. The Commission consisted of outstanding polar explorers of the country; the head of the Commission was Grand Duke Konstantin Konstantinovich. L. Breitfuss was one of the founders of the Polar Commission. The attraction of this Commission was an extensive library of Polar subjects, and now the library of the Polar Commission, stored in the fund of the Academy of Sciences library, includes 300 books from L. Breitfuss' library with notes of the owner, as well as several donated books. Earlier in the article it was stated that in 1919 L. Breitfuss emigrated to Germany, to Berlin, taking his archive with him.

In Petrograd, in Tserkovnaya street (Blokhin street now) he left his big polar library. In November 1918, shortly before leaving, he received a certificate of protection from the Library Department of the Commissariat of Public Education stating that his personal library was managed and protected by this institution [10, l. 4]. In mid-January 1919, L. Breitfuss'

library was delivered "to the Polar Commission premises of the Academy of Sciences" [12, l. 5].

What kind of gift books from the Norwegian polar explorers are now decorating shelves with the Polar Commission books?

First, the book is in French. The title page reads: "An Pole Sud. Expedition du Fram. 1910-1912. Librairie Hachette et Cie: Paris, 1913". On the flyleaf of this book we can read "Dr. Breitfuss fra Roal Amundsen. 8.7.14“ (To Dr. Breitfuss from Roal Amundsen.8.7.14). Next to the specified book by R. Amundsen, the library of the Polar Commission keeps the book by F. Nansen “Fritj of Nansen. The Oceanography of the North Polar Basin. Christiania: Printed by A. W. Brogger,1902, autographed by “Leonid Breitfuss. In besondere Verehrung ergebenst űbereicht. Fritjof Nansen.Lysaker.1902” (Awarded to Leonid Breitfuss, with my great respect. Lyusaker.1902). Then, on the shelf of the Commission, there is a book by Johan Hjort “Report on Norwegian Fishery and Marine Investigations. V. I. Ed. by J. Hjort. Kristiania: Oscar Andersens Bogtrykkeri, 1900” autographed without a date: “Dr. Breitfuss. Von seinem Freund. Johan Hjort" (To Dr. L. Breitfuss. From his friend, Johan Hjort) [11, p. 184, 187, 189].

The motives of L. Breitfuss' emigration to Germany are unknown. In Germany, he had to change his citizenship again. Once in Germany, L. Breitfuss, whose age was approaching 60 years, changed the focus of his activities. In the 1920s, he was one of the organizers of "Aeroarctic" society whose task was to study the Polar Regions with the help of an airship. The President of this society was F. Nansen. In 1928, in Leningrad, L. Breitfuss met Russian colleagues, supporters of the study of Polar Regions from the air. In 1931, L. Breitfuss together with German scientists made a map for the flight of the German airship "Count Zeppelin". In the 1930s, he published a number of monographs on the history of polar research.

Working in the Zoological Museum of the Berlin University, he was engaged in the systematization of the world scientific polar literature and all polar research at all times. Unfortunately, his work, which included 66,000 titles of books, compiled in alphabetical and systematic catalogues, ready to publish maps made during the air raids in 1943 burned in a bomb shelter [11, p. 19]. It was an irreparable loss.

After the war, working at the German Hydrographic Institute in Hamburg, L Breitfuss still managed to publish a part of his work saved during the war — thatw as about the Antarctic continent. Despite this failure, he continued to work in the libraries of Prague, Vienna and other European cities. L. Breitfuss repeatedly visited the Scott Polar Institute in Cambridge, where he was always met with great respect and offered to move to England with his new library and archive. But L. Breitfuss remained in Germany and died July 20, 1950 [12, p. 216].

Very little is known about L. Breitfuss' personal life. All his life he was a bachelor, and throughout his stay in Germany until the end of 1944, he lived with his sister, an economy was a responsible housekeeper. Little is known about the fate of his brothers and sisters. One of the brothers, Eduard Breitfuss, after 1917 worked as the Director of an orphanage in Leningrad, then in the 1930s - in the editorial and publishing department of the Institute of the Arctic in Leningrad, where he, together with the Director of the Institute, R. Samoylovich, in 1937 were arrested and shared the fate of many of his compatriots. Another brother of his worked as a fireman in Leningrad before the war [2, p. 35]. His sisters lived a life in Leningrad-Petersburg; his niece, a dentist, lives in the city now.

Here is a short description of a polar scientist's life. His research talent discovered in his younger years served the development of the Russian North, and at the end of his bright life, his broad knowledge of the history of the Arctic development gave a wide range of specialists –polar explorers the opportunity to learn the predecessors' work.

Having lived more than 20 years in Germany, in his declining years, his thoughts often returned to Russia, and not by chance in his last, 213th work "Erzwingen aber verspätete Aufschlűsse űber die Umstimmigkeiten in der Murmansk-Expedition. Hamburg, 1949" (Forced, but belated explanation of disputes in the Murmansk expedition), published in limited quantities, he analyzed the events of almost fifty years ago.

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INTERNATIONAL COOPERATION IN THE ARCTIC

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MATVEEVSKAYA A.
St. Petersburg Stat University, Candidate of Geographic Sciences,
Russia, St. Petersburg, 199034, 7/9, Uniersitetskaya nab.;
e-mail: annamatveevskaya@mail.ru

POGODIN Sergey
Doctor of History, Professor, Peter the Great St. Petersburg Polytechnic University,
Russia, St. Petersburg, 195251, Politekhnicheskaya ul., 29;
e-mail: pogodin56@mail.ru

OBJECTS OF NATURAL AND CULTURAL HERITAGE OFARCTIC AS TOURIST BRANDS

Abstract*. Russia has a huge territory in the high latitudes of Europe and Asia. Attention to the problems of the development of the Arctic is increased. Tourist potential of the Arctic region of Russia is high. Unique natural and cultural resources and terms allow organizing various types of tourism. Features of the perception of tourist space it is necessary to take into account at advancement of regions at the tourist market, realization of advertisement campaigns and creation of tourist brand of territory. The creation of a tourist brand assists forming of a positive, recognizable image of country and promotes the competitiveness of country's tourism industry in the world market of tourist services. The annual National Tourist Rating in 2017 was conducted on purpose to set the most attractive for tourist's brands on territory of Russian Federation. Its technology is original. Queries were directed in regional ministries and departments on a culture and tourism with a request for information on promoted regional tourist brands. Experts were also consulted and information was collected from open sources. As a result, "Top-100 tourist brands of Russia" was formed. All of it were divided into five categories: "Objects of show (sights, recreational facilities, geographical and industrial objects)", "Tourist routes", "Events of event tourism", "Gastronomic brands", "Folk artistic trades". Specialists in the field of tourism business, developers of tourist brands in the Arctic regions, it is necessary to take into account the results of the research driven to the general list of Top-100 brands In Russia. Results should be the basis for consideration of prospects for designing and organizing new interregional tourist programs on territory of several subjects included to Russian Arctic.*
Keywords: *arctic tourist brands, natural conditions and cultural resources of tourism, national tourist rating.*

A tourist brand promotes formation of positive, recognizable image of the country or the region and increases competitiveness of the state's tourism industry in the world market of tourist services. The tourist brand is understood as a well-known single or complex object of natural or cultural heritage, as well as routes that involve visiting these objects, unique events, crafts, services attracting large tourist flows.

Technology of formation of the tourist brand assumes the algorithm

of actions: formulation of the ideal image of the country in the eyes of the target audience, formation of the brand identity, identification of unique features of the brand by which it differs from competitors, construction of a communication system, and evaluation of branding effectiveness. It is necessary to consider that the brand of the territory is formed on the basis of already stablished stereotypes, study and accounting of which is the obligatory condition for the formation and promotion of the country's brand [1].

The factors that comprise the tourist image are a good geographical location; capacity and variety of tourist-resource potential, including the abundance of unique natural and cultural attractions; the level of tourist infrastructure development (facilities of accommodation, transport, communications, catering, trade, entertainment, etc.), as well as the level of service and qualification of the staff; stability of the political situation and crime safety; the degree of well-being ecological situation etc. However, we recognize such a basic parameter as fame, popularity. Assessment of tourists' demand for visiting the object, positive attitude of tourists toward an object, attention of the media and Internet users determines the popularity of the tourist brand.

The concept of "tourist brand" is systematic and characterizes strategy of creating competitive advantages of tourist products, the prospects for the development of tourism activities, involves the maximum socio-economic effect. Projects on the organization of event tourism and the creation of entertainment centers and complexes are the most modern directions to enhance the brand's competitiveness. Creation of new and reanimation of old myths are important at creation of tourist brand. Formation of new places, objects, events is the necessary condition of the effective activity aimed at creating a unique tourist-resource potential of the center or region [2].

Tourist brands have classification, being base on different criteria. The following types of tourist brands exist:

- region, district, center, locality (for example, North-West, Yaroslavia, Moscow region, Kuban, southern coast of Crimea, etc.);
- natural objects (for example, the Volga, the Lena delta, the Baikal, the Valley of Geysers, the Kungur cave, etc.);
- natural processes and phenomena (for example, white nights, Northern lights, steppe flowering, bird migration, etc.));
- cultural heritage sites (Livadia Palace, Pashkov House, Cathedral of Christ the Savior, the Diveevo monastery, Snow Maiden's Tenement, the residence of Santa Claus, etc.);
- outstanding historical figures and places associated with their life (Pushkinogorye, Spasskoe-Lutovinovo, Lenin's mausoleum, the Trinity-Sergius Lavra, etc.);

- services and places of their delivery (the Caucasian Mineral Waters, the sanatorium "Elton", Russian baths, etc.));

- food and beverages (for example, Smelt Festival "Everything will be cool", gastronomic fair "KhreNovy festival In Russia," folklore and gastronomic festival " dumplings at Nicholas Winter" milk festival "Za Okoi pasutsya KO..." etc.);

- events, festivals, holidays (Shrovetide celebrations, Sabantuy, Spasskaya tower festival, "Scarlet sails" festival, Window to Europe film festival, etc.));

- brand tourist routes (for example, "Crimean around the world", "Silver necklace of Russia", "Golden ring of Altai", Pearl necklace of Saint-Petersburg, etc.) [5].

In 2018 the Federal target program "Development of internal and entrance tourism in the Russian Federation (2011 – 2018)" ends. The program is a set of activities to improve the tourism industry and optimize the conditions of travel and recreation of people in our country. The program provides activities aimed at increasing the efficiency of the national tourism product's promotion in the internal and international markets. The priority task of Program in this direction consists in advancement of home tourist product on world and internal tourist markets. Information and propaganda campaigns, networks of information centers and points, interregional, all-Russian and international exhibitions, forums and other events were the solution to this problem. The conducted events had an impact on creation of a positive image of Russia as an attractive tourist destination. The total budget planned for the implementation of these measures amounted to 3,7 billion rubles [11].

The Center for Information Communications "Rating" and the magazine "Rest In Russia" are compilers of the annual National Tourist Rating. In 2017, they conducted a unique study to establish the most attractive brands for tourists in the Russian Federation. This technology is original. It is possible to solve two tasks: to assess the level of recognition of regional tourist brands among Russians and to identify the tourism attractiveness of the brands, that is, the desire to travel to the region where the brand is located. The developers sent requests to the regional ministries and departments of culture and tourism with a request to provide information about the promoted regional tourist brands. Specialists also conducted a survey of experts and collected information from public sources. As a result, the list of 1000 regional tourist brands was formed. All tourist brands were distributed in five categories: "Excursion Objects (sights, recreational facilities, geographical and industrial objects)", "Tourist routes", "Activities of Event tourism", "Gastronomic brands", "National art crafts". The final list consisted of 425 items included in the table for interviewing citizens. The survey was conducted from 13 to 19 February 2017. More than a thousand people from all regions of Russia

took part in this survey. The final table of the "Top-100 tourist brands of Russia" were received.

The data obtained during the research are of interest to professionals involved in the search for ways to develop the tourist sector, both in each individual region and in the country as a whole. Some results were unexpected for the experts. So, for example, six objects from the following regions appeared in a rating of Top-100: Vladimir region, Moscow region. Krasnodar region, the Republic of Crimea, St. Petersburg and Tula region have five objects. Four objects represent the Vologda region. The best tourist objects of Kaliningrad region, Karachay-Cherkess Republic, Kostroma and Rostov region are mentioned three times in the rating list.

We will present the first ten objects that led the rating table of Russia's tourist brands: the Tretyakov Gallery, the Moscow Kremlin, the State Hermitage, the Peterhof Museum-Reserve, the Bolshoi Theater, St. Isaac's Cathedral, Tula Gingerbread, Red Square, VDNH, Sochi.

The regions of the Arctic are represented in the Top-100 rating by next objects (in brackets, a line "place" in the rating list is indicated): 16 - Valaam Island; 80 - Stroganina (Republic of Sakha (Yakutia)); 100 - The Arctic Circle (Yamal-Nenets Autonomous District). Objects of the List of the World Natural and Cultural Heritage located on the territory of the Russian Arctic were included in the Top-100: 21 – "Kizhi Pogost"; 37 and 81 - "Volcanoes of Kamchatka" in the "Volcanoes of Kamchatka" (37) and "Route "Valley of Geysers"(81); 51 - "Historical and Cultural Complex of the Solovetsky Islands".

An unexpected result was the fact that the rating did not include the most visited objects from the UNESCO Heritage List in the Arctic: the Lena Pillars in Yakutia, the Putorana Plateau in the Krasnoyarsk Territory, the Wrangel Island in Chukotka, the Virgin Komi Forests, located within the western slopes of the Subpolar and Northern Urals.

Naturally, people answered with regard to whether they even know about such objects at all or not. It is necessary also to suppose that in some popular tourist programs, the respondents may already have participated, so the new proposals were more interesting for them. Perhaps some routes did not receive the status of especially perspective, as they were estimated by people who are well aware that the cost of such interesting but expensive programs for them will be prohibitive.

In the category "Tourist routes", the Arctic Region is represented by 7 proposals. Expedition tours on icebreakers in the White Sea and in the seaport of Arkhangelsk (Arkhangelsk region); a trip to the cape Dezhneva and the route "Fiordy Bay Providence" (Chukotka Autonomous District); tourist route "Hunting for a bear" (Magadan region); ski tours around Kamchatka and the tourist route "Valley of Geysers" (Kamchatka Territory).

"Events of event tourism" in the Russian Arctic also attracted attention of respondents. The events included: the Ladoga Skerries Festival, the Kizhi Regatta Festival and the Olonets Games of the Father Frost Festival (Republic of Karelia); Holidays in Khanty-Mansiysk - the New Year capital of Russia (Khanty-Mansi Autonomous Area - Yugra); National Day of Reindeer Herders (Yamal-Nenets Autonomous District).

The category "Gastronomic brands" presented by such arctic dishes: stroganina (Republic of Sakha (Yakutia)); cod (Arkhangelsk region); sausage from venison (Khanty-Mansi Autonomous Area - Yugra). "National art crafts" are represented only by bone artifacts and the Kargopol toy (Arkhangelsk region).

It should be noted that experts in the field of tourism business, developers of tourism brands in the Arctic regions, should take into account the results of the research driven to the general list of Top-100 brands In Russia. Results should be the basis for consideration of prospects for designing and organizing new interregional tourist programs on territory of several subjects included to Russian Arctic.

The realized programs in the Arctic usually attribute to polar (or northern, or arctic) tourism. Such tourism differs in a high cost, however, it attracts thirsty exclusive suggestions. At the international tourist forum in Naryan-Mar in 2016 it was decided to develop the tourist potential of the high latitude territory. A single brand "Accessible Russian Arctic" was created. The major task is development of tourist routes, the cost of which could attract attention of a wide range of people.

To identify the most attractive regions of Russia, at the end of 2016 a research was conducted by the Center for Information Communications "Rating" together with the magazine "Rest In Russia". In the Arctic region, the highest rating appeared at the Murmansk region - 26, Arkhangelsk region - 31, Krasnoyarsk Territory - 34, Khanty-Mansi Autonomous Area - 47, Sakha (Yakutia) – 59, Republic of Komi - 61, Yamalo-Nenets Autonomous District – 63, Nenets Autonomous District - 81, Chukot Autonomous Region – 85 [3].

Arctic seas are in demand by modern tourists. The Northern Sea Route is promising in terms of tourism. The main barrier for a navigation is numerous ice massifs, because of which the navigation terms on the Northern Sea Route change greatly in certain years.

Expedition cruises to Arctic are accomplished on icebreakers and ice class vessels, on that comfort terms are created for trips for the Arctic circle. One of the most popular routes is expeditionary tours to Spitsbergen and Franz Josef Land, where it is possible to see walruses, seals and whales, visit picturesque bays with bird bazaars, and polar bears sometimes come straight to the icebreaker standing in ice.

For most potential tourists, Arctic is a "territory of extreme". Especially attractive in Arctic lands are off-road trips, which are

undertaken on snowmobiles or off-road vehicles. Snowmobile tours are held on the Kola Peninsula, the Polar Urals, Taimyr, Kamchatka.

Tourism in Arctic quite often contradicts the need to protect vulnerable natural complexes of arctic regions. Therefore, ecological tourism has good prospects here. Lapland, Pechero-Ilych, Nenets, Gydansky, Big Arctic Reserve and Ust-Lensky nature reserves should be recognized as promising for ecological tourism. Protected natural sites and territories of the Russian Arctic open great prospects for the development of ecological tourism. Some resources are unique. For example, the Republic of Sakha uses a "mammoth route", passing through places where thousands of copies of mammoths' remains survived. In the world there are no such analogs. The most famous park in the Chukchi Autonomous District is Beringia. Visiting it is the desire of many tourists, including foreign ones. In 2009 in the Arkhangelsk region the national park "Russian Arctic" was founded. It is the northernmost and greatest on a size among the specially protected territories of Russia.

Within the high-latitude regions of Russia live as indigenous people (Nenets, Enets, Karelians, Kola Sama, Yukagirs, Chukchi, Koryaks, Nganasans, Dolgans, Evenks, Khanty, Ketas, Evens, etc.), and descendants of Russian settlers - Kolyma, Gzhigans, Pomors, Markovites, Ust-Cilemts. All of them are of interest to the organizers of ethnic tourism. Not far from Syktyvkar there is a village Yb mentioned in the XVI century. The unique ethnographic complex "Malye Korely" was opened in 1964. Tourists have the opportunity to become acquainted with the world-famous examples of northern wooden architecture.

National arts and crafts are famous for the Russian Arctic. It is woodcarving and bones, artistic metalworking, weaving, weaving of birch bark, embroidery with beads, lacework. The centers of these crafts are Kargopol, Vologda, Veliky Ustyug, Arkhangelsk. From the walrus tusks, the inhabitants of the Chukchi coast two thousand years ago made different objects - knives, harpoons, amulets. This tradition is continued by the master of the Uelen carving workshop (since 1931) [2].

Tourists are increasingly oriented not to passive recreation for the sake of pleasure, but to an active, aimed at enlightenment. This, among other things, provides growth in demand for industrial tourism. More and more popular are trips to the Arctic region, the program of which includes excursions to industrial enterprises. In October 2015, an agreement was signed between the government of the Arkhangelsk region and the leadership of the First State Test Cosmodrome Plesetsk on the organization of new tourist routes. Visiting abandoned objects is one of the most common types of industrial tourism in the Arctic. One of the famous objects for visiting tourists is the Kola super-deep well or as it is also called "Well in Hell". It is located in the Murmansk region.

Atomic tourism - comparatively new type of trips. It is connected with visits to museums of nuclear weapons, places of nuclear disasters. The main destinations for nuclear tourism are located in the countries that first mastered the use of the atom for military and peaceful purposes, as well as survivors of catastrophes associated with the operation of nuclear facilities. In Soviet times, a test site for nuclear testing was created on Novaya Zemlya. For this reason, the archipelago is of particular interest to some tourists.

In our opinion, it is important once again to point out: the given data of the National Tourist Rating of Russian brands got by selecting the objects by whom the further development of tourism, including entry, depends in the regions of the country. The final rating is based on the opinion (knowledge, interest) of potential tourists. Tourist potential of the Arctic region of Russia is high. Unique natural and cultural resources and conditions allow organizing various types of tourism, developing Arctic tourist brands. The most promising in the high latitudes of Russia are expeditionary-cognitive, ecological, ethnic, sports and event-based types of tourism. And this means that the attention of tourism professionals should be aimed at developing Arctic tourist brands to create a positive, recognizable image of the Russian Arctic.

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TRAVKINA Ekaterina
The Herzen State Pedagogical University of Russia, student,
Russia, St. Petersburg, 191186, Moika river embankment, 48;
e-mail: ektravkina95@gmail.com

FEDOROV Alexander
The Herzen State Pedagogical University of Russia, student,
Russia, St. Petersburg, 191186, Moika river embankment, 48;
e-mail: AlexSerFedorov@yandex.ru

INTERNATIONAL CONFRONTATION OF THE USA IN THE ARCTIC REGION

Abstract. *The history of the development of the Arctic is a process of joint efforts of northern countries. Each country contributed to the research. The Arctic is a region with harsh climatic conditions, where a person feels defeated by nature. Today, the Arctic is rich in energy resources and its development is not as difficult as it used before. The international community is waiting for a decisive action. States are fighting to dominate in the Arctic region. The countries that do not belong to northern region have already entered the race, more than eight participants. Today, China has its own national interests in the Arctic. America is the leader on the world stage, and it intends to defend its military presence in this region. Military strategy and confrontation are the main instruments of US policy. Russia is the main rival of the USA in the Arctic territory. All other participants can be neutralized by NATO pressure. The USA has a small part of the territories in the Arctic, but the US has a lot of ambitions in this region. America cannot take a passive approach being the leader on the world stage and its status must be kept in check in the Arctic territories. The US policy in the Arctic is not certain, but due to the strengthening of Russia's influence in the Arctic macroregion, the United States has to react, and react only aggressively. The history of the Arctic braces back the purchase of Alaska. The US needs new energy resources; the Americans understand that the war for their possession has begun.*
Keywords: *arctic, confrontation, partnership, united states, arctic territories, macroregion, declarations, national interests, natural resources, security.*

The international community, States and transnational companies have a lot of reasons for cooperation, but they have reasons for confrontation. The Arctic, as an independent region, has become another reason to play ahead of schedule. The Arctic is the Northern part of the globe, which occupies one sixth of the entire earth's surface. It is not secret that today the Arctic is considered a promising region. The urgency to develop the development of the Arctic region is due to the following factors:

1) it has large natural resources; hydrocarbon reserves are in priority.

2) the region has significant perspective in the development of sea transport routes.

3) in domination in the Arctic is a national security of the Arctic States.

4) the Arctic is a unique natural object, strongly affected by human activities and in need of reliable protection.

5) climate change facilitates the exploration and development of the Arctic. We can talk endlessly about the importance and relevance of studying and advancing the Arctic region, but we will focus on these points.

The development of the Arctic began 10 thousand years ago. The first wave of European colonization started in the 15th century. Denmark, Norway, Finland developed new territories [1]. Russia was beginning to explore the Northern territories, too. The 17th century was a century of strategic discoveries in the Arctic. Martin Frobisher, John Davis, Henry Hudson, William Buffin and Willem Barents became researchers of the time.

The starting point of the USA's entry into the circle of nations interested in the Arctic region is the sale of Alaska by the Russian Empire to the USA in 1867. Andre's brothers tried to climb in a balloon in 1897, but they died tragically. Richard Byrd and Floyd Bennett flew over the North pole in 1926. George Hubert Wilkins flew from Alaska to Spitsbergen in 1928. Britain, Holland, Norway, the USSR, Canada and America sent many field expeditions to learn more about the Arctic in 1937-1938. The United States and Russia have established a drifting observation stations on ice floes for the purpose of strengthening scientific research since 1954. The warning system was created by the United States in 1993. Nuclear submarines were used for navigation in the Arctic waters. The Nautilus was the first nuclear-powered submarine of the U.S. Navy to cross the North pole under the sea in 1958. The submarine skate was the first boat to float at the North pole in 1960. The Arctic became a place of intensive exploration of mineral and natural resources in the 1960s. [2]. The researchers found reserves of oil in Alaska in 1968 and the island of Ellesmere in 1972. These reserves led to intensive oil exploration in other places. The Manhattan steamship was designed to search for oil and became the first icebreaker to function as an Oceanographic research vessel. Scientists discovered a hole in the ozone layer over the Arctic in 1986. Scientists are observing a decrease in the ice cover in the Arctic and this has caused interest in the resources that have been discovered [3].

The main players in the Arctic region, the division into sectors and reasons. The legal protection of US interests in the Arctic region depends on a clear understanding of the international regime in Arctic macroregion and in the further use of its main provisions in government activities from a practical point of view. International legal acts have different interpretations of the Arctic region. For example, «Canada has defined its Arctic region comprising all the lands North of the parallel of 60

degrees including coastal areas of the Hudson and James bays. The Islands of Greenland and Faroe Islands belong to the Arctic region approved by the national legislation of Denmark» [4]. The United States refers to its Arctic territories that, extend to the North from the Arctic circle, areas of the Arctic ocean, and the Bering sea. Arctic States " are two groups of States. In the first group is of five States has direct interaction with the Arctic region (Denmark, the United States, Russia, Canada, Norway), "the coast of which goes to the Arctic ocean, which has, in accordance with the Geneva conventions of 1958 [5] on the definition of Maritime spaces and the UN Convention on the law of the sea 1982, [6] inland sea, territorial sea, exclusive economic zone and continental shelf. This term is used in the Ilulissat Declaration of 2008 [7] supported by five Arctic States (Denmark, Canada, Norway, Russia and the United States) devoted to the questions of the marine Arctic "the Ilulissat declaration"». In the second group are included Finland, Sweden and Iceland as well. The Declaration on the establishment of the Arctic Council states that these eight countries are members of the Arctic Council since 1996. It was also adopted by the eight countries mentioned above.

From the historical point of view, the acquisition of the Arctic was being accompanied by the legal registration of the process, where initially governing was carried out only de-facto. This registration was carried out through the publication of regulations, the purpose of which was determined the national status of specific territories, the legal regime of certain activities within the limits. For a long time the Arctic region was being inaccessible for ships of other States. As a result, we can conclude that coastal countries have special rights and their own interests, as a consequence of the practice in the development of the region.

The Arctic polar sector is the space within the established lines drawn from the North pole to the Northern land borders of this state. According to the concept of polar sectors it is considered to be recognized that an integral part of the territory of a state, the coast of which goes to the Arctic ocean, are the lands, including the lands of the Islands, North of the mainland coast of such a state within the sector formed by the coast and meridians converging at the point of the Northern geographical pole and passing through the Western and Eastern extremities of such a coast. In this sector the relevant Arctic state realizes certain target jurisdiction (primarily for protection the extremely vulnerable Arctic environment, biodiversity conservation, ecosystem balance). In the legal literature in this regard, it is stated: "the main principle in solving the problem of the legal regime of the Arctic should be considered a sectoral principle" [8].

It is worth noting that the boundaries of the Arctic sectors should not be considered as state borders, the establishment of which is implied in accordance with the Convention "on territorial waters and the adjacent zone" in 1958. It is necessary to understand that the sector is a zone for the

realization of historically established rights, defense, economic, nature-resource, nature protection interests of a particular Arctic state.

The latest trend is considered to be that the Arctic should be in the free use zone of all States, as the heritage of mankind. The given trend can be explained from the position that some countries that do not have influence in the Arctic region or influence does not satisfy their national interests are ready by any means to get at least some of the hidden resources. Such requirements arise from the understanding that the process of depletion of the hydrocarbon deposit is nearing and it is necessary to look for new ways to extract it.

The sectoral division of the Arctic spaces by the US position was supported by legal science. American lawyer D. Miller had substantiated reasons for the benefits of sectoral division macro-region. Miller believes that the establishment of the legal framework for the division into Arctic sectors for the United States is the Convention between Russia and Great Britain of 1825 the contract of purchase and sale of territories of Russia and the United States, where the sectoral boundaries of the United States are established: the laws of Canada and the Convention of 1825 on the Eastern side of Alaska and on the West side of the Alaska Treaty between America and Russia of 1867. The final delimitation of these spaces was fixed " in Article #2 Of the agreement of the USA and the USSR on June 1, 1990, on the line of delimitation of Maritime spaces specifying its passage.

The sectoral division of the Arctic spaces by the US position was supported by legal science. American lawyer D. Miller substantiated the reasons for the benefits of a sectoral division of the macroregion. Miller believes that the establishment of a legal basis for the division into Arctic sectors for the United States is a convention between Russia and the United Kingdom in 1825, as well as a contract for the sale of territories of Russia and the United States, according to the contract the US sectoral boundaries were established: Canada's legislation and the 1825 convention on the east side of Alaska, and from the western side of Alaska the treaty of America and Russia in 1867. The final demarcation of these spaces was enshrined "in Article #2 of the Agreement of the United States and the USSR on June 1, 1990, on the line of demarcation of maritime areas specifying its passage.

Despite the seemingly established system of work, the next steps of the USA towards the Arctic were contradictory. The US officially declared its disagreement with the sectoral division of the Arctic region. The United States opposes Canada in realizing its rights in the Artic. The "big brother" is putting pressure on Canada, and is trying to change its attitude to the sectoral principle, which will allow the US to reduce the risk of legal dependence on Canada in the Arctic macroregion.

US national interests in the Arctic. The "Cold War" became an outset of US strategic interests in the Arctic. At present the economic

significance of the Arctic for the United States is increasing. A lot of activity comes from Chevron, Exxon-Mobil, Conoco-Phillips, Royal Dutch Shell, Statoil, Shell, ConocoPhillips. Also, we see that the Italian oil and gas company Eni received permission from US President Donald Trump's administration to drill in the American part of the Arctic Ocean.

We formed America's interests in the Arctic in three groups: 1) military-strategic. (the creation of a missile defense system, the development of tools for the transfer of military contingent to the Arctic, marine operations). The United States is ready to act unilaterally to implement its national interests.2) internal security. (prevention of terrorist acts or other criminal acts in the Arctic region). This paragraph provides an explanation for Washington's desire to legitimately pursue military policy in the region. 3) politico-economic (demonstration of maritime power and economic benefits). The US will "beneficial" control over the territory of interest

Trend for rivalry. In its report, the Center for Strategic and International Studies (CSIS) states that despite of signed documents on cooperation in the Arctic region by the Nordic countries (the agreements in Illulisate 2008, the agreement in Nuuk 2011), all states clearly defined the boundaries of their national interests in Arctic strategy within the state. It was announced about a permanent military presence, the creation of military infrastructure in the Arctic to ensure the security of national interests.

The CSIS report further notes that it is not clear yet which international institutions will solve the problems of collective security in the region. Despite the aforementioned theses, the American establishment maintains the position that the Arctic Council should be maintained as a forum for discussion, and in case of escalation of conflict situations, decisions should be transferred to the global level. And this is beneficial for the US because their authority at the international level is higher and they will feel free to act. Although Washington did not ratify the 1982 Convention on the Law of the Sea and cannot participate effectively enough in the work of the Arctic Council, including discussion. America puts forward the intention to take an active approach and develop an international security system in the Arctic region, but the US does not want to lose its free position. The Arctic Policy Directive of January 12, 2009 states that "in the Arctic, the US has broad fundamental interests in the sphere of national security and is ready to act independently or in union with other states to protect these interests" [9]. In other words, the US is ready to act unilaterally.

At the domestic political level the United States established interdepartmental institutions to coordinate Arctic policy. This is the Arctic Policy Group in the State Department, which represents the US position in the Arctic Council. Another organization is the Operational Group on

Ocean Policy subordinated to the Council for Environmental Quality in the Office of the President of the United States, which oversees marine and oceanic routes. Under the National Security Council, an Interdepartmental Committee on Arctic Policy has been established, which oversees the US Arctic policy as a whole [10].

As an institutional basis for the international Arctic security policy the United States continues to nominate NATO as the most "natural" candidate and opposes clearly an alliance to the Arctic Council the United States is much less influential there. The argument boils down to the fact that four of the five Arctic states (except Russia) that have access to the Arctic Ocean are already members of NATO. The NATO zone of responsibility has already transcended the European continent and the Arctic has become an important security factor. This position was officially expressed by former NATO Secretary General Skeffer, who called on the members of the alliance to make this organization the main instrument for ensuring security in the Arctic [11], [12].

Conclusion:

1. The relations between the States in the Arctic region are friendly.
2. America does not agree with the division into Arctic sectors.
3 the US is pursuing an aggressive policy against the Arctic.
4. Russia is a competitor in the Arctic for the United States.
5. The us hopes for NATO's help in resolving conflicts in the Arctic.
6. America has a leading position in international relations, and does not want to give up these positions in the Arctic.

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GUREEV Danila
The Herzen State Pedagogical University of Russia, student,
Russia, St. Petersburg, 191186, Moika river embankment, 48;
e-mail: gureewdanila@yandex.ru

LOGINOVA Elizaveta
The Herzen State Pedagogical University of Russia, student,
Russia, St. Petersburg, 191186, Moika river embankment, 48;
e-mail: lizochka-loginova@mail.ru

PARTICIPATION OF THE UNITED KINGDOM IN THE ARCTIC

Abstract. The article deals with the participation of the Northern Kingdom in the Arctic. The United Kingdom is a Maritime power, known primarily through an extensive trading system, as well as a member of the UN security Council, one of the main observers in the Arctic Council. Great Britain as observer country cannot claim the extraction and exploitation of fossil resources, but is actively showing interests in the development of the Arctic region. In addition, the UK is geographically close to the Arctic region. The United Kingdom is an important actor in the development of the Arctic. The greatest interest in the Albion (as well as other States) called Northern hydrocarbon resources. Great Britain is an oil and gas producing country, which in recent years has faced a shortage of raw materials. It is for this reason that Britain is forced to establish close cooperation with the most full-fledged strange of this region, namely with Russia. However, the specificity of London lies in the desire to abstract from Moscow politically, but the British oil and gas corporations on the contrary is aimed to work closely in the extraction of oil and gas with Moscow. It is this problem that causes disputes over the "exploration of the Arctic" both in the Northern Kingdom and abroad.
Keywords: Arctic, Great Britain, oil and gas sector, Russia, oil and gas corporations.

The Arctic shelf is in the sphere of influence of the majority of Northern countries and the competition in this region is maximal as anywhere else. So why is it that one of the most remote regions in the world is the most attractive? A quarter of the world's carbon reserves are located on the Arctic shelf. Large oil reserves are located in the Arctic. The flight of strategic nuclear missiles across the Arctic is the shortest. The Northern sea route is the shortest waterway from Europe to Asia. That is why the development of this sector is a priority for most Northern countries.

The international legal field was formed when the process of development of the Arctic was going on. Accordingly to 1920 Treaty the Arctic why divided into five polar sectors by the coastal States (the USSR, Norway, Denmark, the United States and Canada). The top of each of them is the North pole, and the base is the Northern border of

each state. The USSR got the largest sector, but over time the agreements were revised. However, this fact does not prevent other countries from participating in the Arctic process and pursue their geopolitical interests.

The Arctic region had become a point of conflict of interests of several States by the second half of the 1990s. The international forum Arctic Council was established to avoid open military confrontation on 19 September 1996. The Arctic Council is a platform for constructive dialogue between the Arctic member countries, but this process proprovides observer status to non-Arctic States, intergovernmental, inter-parliamentary organizations and non-governmental organizations.

Observer countries are actively showing interest in the development of the Arctic region. They cannot claim the extraction and exploitation of fossil resources in the Arctic. All observer countries are active participants in the international political process and they influence the situation in this region through other projects. These observer countries are: Great Britain, Germany, Spain, Italy, China, Republic of Korea, Netherlands, Poland, France, Japan, India, Singapore, Switzerland.

Britain, being closed to the Arctic region, also has its own geopolitical interests. The key interests are:

1)the study of climatic features and their impact on the flora and fauna of the region.

2) the Use of new trade routes.

3) the Full participation of the UK in the oil and gas sector as an economic partners.

4)the Arctic as a promising military platsdarm.

The last two factors are the most promising and require more detailed consideration, but first we need to deal with the status issue of British participation.

Until recently, the Arctic issue was not particularly interested in Britain and the state did not have a clear strategy for participation in this sector. Arctic issues were raised in the House of Lords in 2007 and 2010.[1,70] As yet as in 2013, Arctic question about Britain's participation in the Arctic was discussed in the project "in defense of the Arctic" where the key issues were the development of oil and gas sectors for the needs of the country.

Generally, speaking about the oil and gas situation in Britain, it should be noted that to date, the Northern Kingdom is hardly engaged in the search for new oil and gas fields and available ones may soon be exude. The hydrocarbon deficit is covered by imports. Britain uses its hydrocarbon reserves as carefully as possible, and the total number of them is not particularly large. Gas deposits are located mainly on the Northern coast of Scotland, and they are almost exhausted. Until

recently, Britain actively supplied blue fuel to continental Europe via pipeline, but now it is an importer from Norway.

At the same time, British oil and gas corporations are one of the most powerful representatives in the market. According 2016 ROYAL DUTCH SHELL Britai's turnover was in the third place, and BP 6 [2, 19]. At the same time these corporations are engaged in production of oil and gas worldwide, having about 4 thousand branches on oil worldwide production. BP acquired almost 20% of Rosneft's shares, prescribed its participation in the Arctic.

And it turns out that the UK, without showing its active participation in the Arctic, but still actively participates in the region, as well as it is interested in further scientific progress on more efficient production of Northern fuel.

The modern specificity of the Arctic is limited to the establishment of a certain hegemony of Western countries to form a counterweight to Russia. The so-called" little NATO "forms a stage for the countries of Canada, Sweden, great Britain and Norway. Although Sweden and Finland, are not in NATO, they still are partner states. The current situation forms a single competitive space directed against the Russian Federation.

The Northern European military bloc project, which is capable to protect the interests of the European North in the Arctic, was first proposed by the Norwegian part in 2009 [3,47].

Britain as a member of NATO was initially interested in this project, finding common prospects for themselves in the creation of any military political bloc, especially in the Arctic. Moreover, as a key player in NATO Britain could easily take the most favorable position for itself. In such a context, Russia takes the most unprofitable position and can expect the military presence of the Alliance in the Arctic, the necessary measures to strengthen the military potential of the Western fleet in the region, which leads to a response from Russia.

However, Britain's position can be described as "friends with everyone" and the recent poisoning of Screpal and the subsequent expulsion of Russian diplomats did not affect the Russian-British relations in the Arctic. Britain aims at joint cooperation and the opening of new joint ventures on the Territory of the Russian shelf. At the same time, Britain uses methods of pressure on Russia to achieve the maximum benefit for itself, since Russia has a modern potential in the development of the Arctic. Britain understands this fact and actively uses it.

The United Kingdom relies on the conclusion of diplomatic treaties in its methods of manipulation in order to improve its position in the political pressure on Russia. Being a observer country in the inter-row organization, Britain also supports the different participants in the

discussion. And develops cooperation with the United States and its European partners. It allows to diversify its pressure on the Russian side using diplomacy for other countries [4].

The UK is able to manipulate the Russian Arctic through international discussions. As well the key method of manipulation is ecological discourse. However, Britain, in this issue is not the initiator. For example, the Norwegian environmental company Bellona, accusing Russia of non-environmental use of oil production in the Kara, Pechora and Barents seas, and the Northern Kingdom was connected to this accusation.

It is necessary to identify the key factors of hydrocarbon cooperation between Russia and the UK.

First, the decision of British oil and gas companies through the Russian market has become a tradition. Russia became a key hydrocarbon market just after the collapse of the USSR.

Secondly, the way to develop the Arctic through cooperation with Russia is the most profitable and simple. Russia with the help of UN declares its rights on the Lomonosov ridge, because about 60% of the reserves of all hydrocarbons in the region are located. And today Rosneft produces a large amount of gas in the Arctic regions of Russia.

Thirdly, the UK takes account of the total Arctic discourse. Britain also uses all possible forces to creation various political organizations to involve the maximum number of players. Many countries do not have a common access to the Arctic (China, Japan) insist on creating of a regime of shared access to Arctic resources in contrast to the existing policy of dividing the Arctic into a coastal zone.

Fourthly, it is worth noting that there is the increase in the degree of hostility towards Russia. Although the cold war is over, Britain's rhetoric about "potential danger from Russia" has not faded until now. The British see the threat from Russian nuclear submarines as that Russia is the most dominant military player in the region [5].

Summing up, it should be noted that the British activity in the Arctic is not unambiguous and has a complex structure. The British are extremely interested in developing the Arctic, while understanding the role of Russia in the development of the Arctic sector. Therefore, the political decisions of the British resemble the policy of "We are with you and we are against you". The British actively cooperate with Russia and receive their material benefits while doing everything possible to reduce Russia's influence in this sector. Britain intends to take a leading position among the observer countries of the Arctic Council.

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SAMSONENKO Yelizaveta
St. Petersburg Stat University, bachelor,
Russia, St. Petersburg, 199034, 7/9, Uniersitetskaya nab.;
e-mail: samsonenko97@gmail.com

MAIN INTERESTS OF SPAIN IN THE ARCTIC REGION

Abstract. *This paper analyzes the main interests of Spain and the role it is left to play in the Arctic region. Although, Spain does not obtain an official arctic strategy, it was mentioned in the Guidelines for Spanish Polar Strategy that the Arctic region has become one of the country's national interests. The government of Spain is also deeply concerned about the problem of climate change and how it affects economic and social aspects of life. Nevertheless, although it is clear now that Spain does have interests in the region, they do not seem very concrete. That is why it is important to determine them in the framework of this paper.*
Keywords: *Spain, non-arctic state, climate change, arctic policy.*

The problem of climate change has been the topic of scientific interest for a very long time and remains a controversial issue when it comes to domestic and foreign politics of countries. It is clear now that climate change does not only affect discussions about the environment, but also touches such spheres as politics, economics, energy and international cooperation. Moreover, the Arctic has become a strategic region where interests of the world's most developed countries collide. Being the center of everyone's attention, the Arctic is rich in natural resources, such as gas and petroleum, fish, flora and fauna. More and more countries show interest towards this region and Spain is no exception. Though Spain takes part in the exploring of the Arctic as a part of the European Union and various international organizations, it is interesting to understand its own interests and how they evolve.

Despite the geographical remoteness, the Spanish justify their claims towards the Arctic by citing their historical legacy. Since the discovering of America, Spain was the maritime nation that opened new oceans and new continents for the rest of the world. Their contribution to the exploring the Antarctic and Northway Passage search expeditions on vessels Cabrillo (1542), Gali (1582) and Vizcaino(1596-1602) left a significant impact in history and in the minds of the Spanish people [1].

Nevertheless, Spain's modern day interest in the Arctic evoked rather late in comparison to other European countries, in years 2006-2007. During that time, Madrid started to involve more institutes and incorporate more scientific missions towards the exploring of the Arctic. Thanks to numerous research missions carried out by Spanish scientists, in 2006 Spain became one of the 12 observer countries in the Arctic council, in 2009 became a

member of the International Arctic Science Committee (IASC) and in 2011 the Spanish government appointed the first Ambassador in charge of Arctic Affairs [2, p. 24-25]. Since then the understanding of the Arctic has taken a different turn: from a remote region in the far north, the Arctic has transformed into the object of political interest.

The legislative part of Spain's presence in the Arctic is based on the 1982 United Nations convention on the Law of the Sea, allowing the state to perform various activities in the special economic zone and the high waters [3, p. 2].

The organ coordinating Spain's polar activities is called The Spanish Polar Committee. Spanish Navy administers the National Polar Data Centers and different research institutes – all of the abovementioned structures enable Spain to develop an internationally renowned arctic approach [4].

As it was stated above, Spain's interests in the Arctic do not seem concrete. This statement has a point, considering that Spain does not obtain an official polar strategy as other countries do, for example, Italy. However, Spain does have interests in the Arctic, mainly concerning scientific research, navigation routes and the fishery.

It is known, that Spain does not have a long history of scientific missions in the Arctic, but in the past few decades, their numbers increased for a reason. Spain has for a long time been committed to the European and international standards for preserving the environment, such as Kyoto Protocol and European directives on climate change. The government of Spain showed the concern about the climate situation, especially the melting of glaciers and the rise of the sea level in the Arctic. This is one of the reasons why Spain activated its Arctic policy – to study the conditions and changes, occurring in the region.

Despite fighting climate change, Spain also has strategic interests in the Arctic. It is widely known, that Spain is highly dependent on imported energy resources from the Middle Eastern countries. It is also know that the Arctic possesses 25% of the world's resources of gas, 27, 6 % are not yet discovered [3, p. 4-5]. The energetic potential is what captures the attention of the Spanish government the most. Yet it does not have access to these resources according to the law, but as long as Spain is dependent on the imported energy material from the arctic countries. Moreover, Spanish company "Repsol" is one of the world's 500 biggest transnational companies and the world's largest gas and oil importer [5, p. 76]. That is why it is important to enhance the security of supply, especially if the energy products come from countries with unstable political situation. Moreover, Gas Natural Fenosa and Gazprom's deal over Yamal SPG one more time proves the importance of the research base in the arctic, taking into account that Spain's energy security depends on it. Scientific research in the Polar Regions is especially vital because of the global processes and

discoveries that happen there and their huge influence on the rest of the planet.

As it was stated above, scientific interest of the Spanish researches date back to the 16th century. Since then more and more expeditions have been taken to the polar region, especially the Antarctic. Today Spain possesses a permanent research base in the Antarctic, but still the arctic route is being developed as well by Spanish scientists and also as a part of international research groups with their European colleagues. The scientific programs are based on the platforms of Spanish universities, such as Polytechnic University of Madrid, University of Barcelona etc., and are of a non-governmental character. In most cases, such programs are financed by the EU and usually involve a bigger group of participants from various countries. This is the consequence of the distance, separating the areas and the need for specific infrastructure, complex logistics and long-term financing that scientific research requires.

In the Arctic Spain does not have town land infrastructure, despite two water vessels – the Hesperides and Las Palmas, that is why it is important to maintain relations with other countries in order to get access to equipment in different areas and to promote research in the Arctic waters through oceanographic campaigns [6]. Among the arctic countries, Spain mostly interacts with Canada, the USA, Norway and Iceland, where they have common interest in the scientific field and in the field of tourism . The autonomous University of Madrid develops scientific programs along with University of Laval in Canada and Center of Nordic studies in Quebec. All of these research centers participate in various international programs, such as Joint Operation for Ultra Low Emission Shipping (JOILT), Svalbard Integrated Earth Observing System (SIEOS). Spain is also subjected to the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) and the ACCESS (Arctic Climate Change, Economy and Society), which is aimed at evaluating the Arctic Climate Change scenarios and their impact on specific economic sectors and human activities over the next decades [7]. Each of this program pursues similar goals, such as observing of the consequences of climate change of economic and social life, the processes in the Arctic and how the influence the economic situation in the high waters and changes in biodiversity.

To sum up, it became clear that the scientific research is one of the main, if not the most important topic when it comes to Spain's interest in the Arctic. Taking into account the geographical remoteness and lack of proper financial initiative from the government, Spanish research initiatives should be taken seriously.

Only 5% of Spanish fisheries is happening in the Arctic. Nevertheless, the fishing industry traditionally remains one of the most important economic objectives in the Arctic, especially for the small arctic

countries. Spain is the largest fishing nation in the European Union and the interests of Spain in the fishing industry matters are modulated by the fact that since the accession of Spain to the European Communities, were attributed to the institutions of the competences in the field. The Common Fisheries Policy of the European Union regulates the fishery of Spain in the Arctic. The so-called "Northern Agreements", concluded by the EU with Norway, Iceland and the Faroe Islands, manage fisheries in the North Sea and the North East Atlantic.

Spanish interests focused on the exploitation of living resources of the Arctic are or may be susceptible to clash with interests the two great Arctic States - Canada and Norway.

A potential conflict between Canada and Spain appeared on the surface when Canada adopted authoritarian measures concerning the coastal waters. Canada was planning to extend its continental shelf and tried to claim sovereign rights over the existing resources. It is also hard to forget the turbot war between two countries.

Spanish interests against Norwegian interests in the Svalbard: Spain has been fishing habitually in the waters of the archipelago Svalbard for fundamental exploitation of cod. The Svalbard regime is regulated by the Treaty of Paris of 1920, which establishes Norwegian sovereignty over the archipelago, but recognizes other contracting parties the right to equally access the natural resources. This has resulted in the possibility for Norway to take measures for the conservation and management of marine resources; however, among the competences that Norway enjoys, there was no evidence of the right to inspect any other ships nor the right to arrest for the violation of an alleged fishing infraction. Since 2006, ten arrests of Spanish fishing vessels that worked in the Arctic have happened. The tense situation has reached a meeting point in January 2013, since the establishment of the memorandum of understanding between the respective authorities to monitor each other in the development of the fishing activities they carry out in the Arctic fishing grounds [8, p. 26]

Spain's interest in the Arctic navigation routes seems obvious. As it was previously stated above, since the 16th century Spanish explorers searched for famous North West Passage. Nowadays Spanish interests are more focused on the North East Passage because of the geographical proximity and its obvious trade benefits. This way comprises a series of routes that allow reducing the distance between Europe and Asia by 40%.

In the field of international cooperation Spain develops different routes of interconnection. As it was previously mentioned, educational ties are very developed, whether in the energy sector, Spain cooperates with Norway and Russia, securing safe energy supply. Generally, Spain mostly interacts with EU and NATO partners. When it comes to Russia, the current cooperation is strictly limited and is only motivated by the means of economic benefits, although Spanish authorities did not express their

dissatisfaction with Russia's actions, Spanish scientists haven numerously stated the ecological risks of exploring the carbon in the Far North.

It is obvious that nowadays every developed country is interested in the Arctic region. The Arctic is very rich with natural resources and every country would like to have a hold of them. Luckily or unfortunately, only a limited number of countries have full access to these gifts of nature. Many countries are "looking" North and Spain is one of them. This paper determined Spain's main interests in the Arctic and described the role that the government plays there. Spain is definitely moving in the direction of the EU when it comes to the Arctic, mostly putting emphasis on research purposes. What matters, is that Spain does have interests in the region, but without a proper national strategy, they will continue to be seen as diffuse and will not be taken seriously.

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ZHURAVEL Valery
Institute of Europe RAS, Head of the Center for Arctic studies, leading fellow, candidate of sciences, docent,
Russia, Moscow, 125009, Mokhovaya St, 11-3;
e-mail: zhvalery@mail.ru

KABELIS Tomas
Faculty of International Relations, MGIMO Russian Ministry of Foreign Affairs, graduate student,
Russia, Moscow, 119454, prospect Vernadskogo, 76;
e-mail: tomas.kabelis@sciencespo.fr

CHINA'S "WHITE PAPER" ON THE ARCTIC AND EUROPEAN STATES

Abstract. *The article analyses the content, features and main ideas of China's «White Paper» on the Arctic, published at the end of January 2018. Special attention is paid to the analysis of the current situation in the Arctic. The aims, principles and policy of China concerning the participation in Arctic affairs in the 21st century is considered. Russian-Chinese relations, as well as China's policy towards European countries in the Arctic, at the present stage, is examined. The article highlights Russia's strategy and policy in the Arctic. It is emphasized that the current foreign policy of Beijing towards Russia in the Arctic region is positive, business-like and benevolent in its nature.*
Keywords: *China, "White Paper" on the Arctic, Arctic, Russia, European countries, Arctic Council.*

On the 26 of January 2018 the State Council Information Office of the People's Republic of China (PRC) published the "White Paper" on the Arctic (hereinafter - the Document). Structurally, it consists of an introduction, four sections and a conclusion.

This great work was written under the coordination of the Arctic and Antarctic Administration of China, which is responsible for the implementation of the governments scientific programs and the development of strategic plans in the Arctic region.

The main ideas, statements and innovations of the Chinese "White Paper" on the Arctic. The introduction of the Document states that in recent years global warming has accelerated the melting of ice and snow in the Arctic. According to the "White Paper" in the future this will have a major impact on global shipping, international trade and energy supply, which will lead to significant socioeconomic changes in the Arctic region. Working and living conditions of residents of the Arctic, including indigenous peoples will be significantly affected.

The first section of the Document discusses the current status of the Arctic. It is noted that currently the significance of the Arctic already goes

beyond the Arctic states or the Arctic region as such. In addition, it is stated that non-regional states, although lacking territorial sovereignty in the Arctic, have the right to conduct scientific research, take part in navigation, overflight, fishing, lay submarine cables and pipelines on the high seas and other marine areas in the Arctic Ocean. All the states are also free to explore and exploit resources in the Arctic region in accordance with general norms of international law.

In the second section of the Document, an attempt is made to present a "new point of view" on the role and purpose of China in the Arctic. In this section, China calls itself a “Near-Arctic State”- one of the continental states situated the closest to the Arctic Circle. It is quite obvious that with this statement, the Chinese authorities are attempting to consolidate the status of the PRC as an interested party in the Arctic.

Moreover, the statement that China is actively involved in solving trans-regional and global problems in the Arctic, especially in such areas as climate change, environmental protection, scientific research, use of sea lanes, exploration and exploitation of resources, security and global governance, in our view, demonstrates the Chinese intentions and ambitions for the future, especially given that the PRC is a permanent member of the UN Security Council and has an important mission of promoting peace together and security in the Arctic.

This section also lists events and facts that point to the role, importance and success of China in the study and development of the Arctic. It is emphasised that since 1998, Beijing has been conducting regular Arctic expeditions. By the end of 2017, a total of eight expeditions have already been conducted.

In the third section of the document, for the first time, the political goals and basic principles of China's policy towards the Arctic have been publicly formulated. It is noted that China's political goals in the Arctic are to understand, protect, develop governance mechanisms, and participate in them. All of this is done in order to defend the common interests of all the states and the international community, as well as to contribute to the sustainable development of the region.

In order to achieve these goals, it is planned:

- to increase the volume and potential in the field of scientific research in the Arctic;

- to actively respond to climate change in the Arctic region;

- to protect its unique natural environment and ecosystem, to encourage its climatic and ecological sustainability and to respect the diverse cultural and historical traditions of the indigenous peoples of the North;

- to increase the volume and utility of cutting-edge Arctic technologies, to strengthen the innovative technological base, to make

environmental protection more robust and to increase the use of resources and develop navigable waterways in the Arctic;

- to contribute to the economic and social development of the Arctic, to improve the living conditions of the local population and strive for shared development;

- to participate in the development of projects related to the Arctic and their implementation on the basis of compliance with the existing framework of international law, paying due attention to the interests of other countries and the broad international community, taking into account the importance of the protection and development of the Arctic and maintaining an appropriate balance of current and long-term interests in order to promote sustainable development.

Finally, it is also emphasized that to achieve its political goals, China will participate in Arctic affairs in accordance with the principles of "respect," "cooperation," "win-win result," and "sustainability."

The fourth section of the Document is the most substantive. It gives in detail the policy and position of China on participation in scientific research, environmental protection, legal management and the development of international cooperation in the Arctic. At the same time, the PRC undertakes to maintain a peaceful, safe and stable order in this region. It should be noted that the policy issues discussed in this section (about 60% of the text) are written carefully and in detail, while taking into account the country specific and historical features, as well as the desire to dominate the Arctic region.

China's cooperation with Russia in the Arctic region. In the “White Paper” on the Arctic, cooperation with Russia, transportation of cargoes along the Northern Sea Route (NSR), development of hydrocarbon fields are emphasised as having great importance.

Firstly, cooperation with Russia is seen as a central requirement for the merging of the initiative of the Great Eurasian Partnership and the Chinese project "One Belt - One Road". China looks at the NSR as a potential branch of its new "Silk Road".

Secondly, without a doubt it can be stated that the "Yamal LNG” project is one of the main driving forces behind cooperation [1]. In December of 2017 the first technological line for the production of liquefied natural gas (LNG) was launched at the Yamal LNG plant on the Ob Bay in the port of Sabetta. At the occasion of the dispatch of the first gas carrier of the “Yamal LNG” company from the port of Sabetta on December 8, 2017, the president of Russia Vladimir Putin at a meeting with representatives from China stated: "The Silk Road has reached the North. By uniting it with the Northern Sea Route we will have what is needed, and Northern Sea Route will be made into a Silk one "[2]. All of this contributes to the annual growth of the volume of cargo transported along the Northern Sea Route.

Moreover, in 2014, PJSC Rosneft and the Chinese oil and gas corporation CNPC agreed to jointly explore the Zapadno Prinovozemelsky site in the Barents Sea, as well as the Yuzhno-Russky and Medyn-Varandeysky sites in the Pechora Sea. Moreover, there is also an agreement between CNPC and Gazprom on exploration of oil and gas fields in the Arctic. Chinese investors have expressed their readiness to invest in the construction of a new deepwater Arkhangelsk commercial sea port and the Belkomur (White Sea - Komi - Ural) railroad, which will cut the path from Siberia to the White Sea by 800 km. The cargo turnover of the new section of the port will be up to 30 million tons per year [3].

For the PRC the use of the NSR would signify an operational expansion of its largest ports. According to Chinese forecasts, by 2020, up to 15% of China's foreign trade traffic will go through the Northern Sea Route, mainly in the form of container traffic, which corresponds to approximately 800 billion euros [4].

China understands that participation in the development of the Arctic and the NSR is possible only through cooperation with Russia. As a consequence, within the framework of its Arctic doctrine, China stated that it will play by the already existing rules in accordance with the requirements of international law. In addition, fiercer interstate competition and the complexity of the current international situation caused by US and European Union sanctions against Russia has caused both states to view each other as allies.

However, it is also obvious that for China the multilateral approach for the development of the Arctic as a whole, is the most important goal. If there ever is a time when Beijing will not be able to extract benefit from the use of the NSR, in our view, this will work as a catalyst for the weakening of the spirit of cooperation between the two states. The main reason for such a development may be the forthcoming global decision on the division of the continental shelf of the Arctic Ocean between the Arctic states.

China views Russia as only one of many sources of energy resources. It is successfully pursuing the policy of diversifying its suppliers. Consequently, no country, including Russia, has a dominant position in the Chinese energy market.

The PRC is also using contradictions between the major powers in the region. Beijing hints to Moscow that the prospects of mutually beneficial projects in the face of the threats and economic sanctions from the West are more important than its counteraction to China's penetration into the Arctic. China persistently attempts to persuade Russia that it will not be able to independently master the resources of the Arctic. It offers investments to create tripartite joint ventures with the use of advanced Western (Norwegian) technologies, without which the Russian Federation is allegedly unable to extract raw materials from great depths.

Beijing also seeks to supply its geophysical and drilling equipment to Russian enterprises. Chinese manufacturers want to carry out technical support of their products themselves, as well as to monitor the use of the drilling equipment in the difficult arctic conditions. China also intends to acquire a permanent "polar" fleet and accelerated work on its creation is already underway. The PRC also expects to have a special aviation force, whose aircraft will be able to land at the North Pole. Thus, the scope of China's activity in the Arctic is growing, as it has scientific, economic and financial capabilities to expand it.

Taking into account all of these factors it can be stated that when building relations with China, we should maintain and observe our national interests and the corresponding level of national security.

China and the European countries in the Arctic. Dissatisfaction with the Chinese activity in the Arctic is expressed by the Arctic countries, as well as by the European observer countries of the Arctic Council, who consider it a potential and dangerous competitor. Ignoring the discontent of these countries, Beijing prefers to team up with states who do not have a strong position in the Arctic when compared to the major powers in the region, and to achieve benefits by actively working with "small" countries [5, 6].

One of the most attractive partners for China is Norway. Both sides are actively discussing cooperation in the energy sector. Chinese companies are very interested in the experience of Norway in deep-sea drilling, and for their part they are ready to invest in Scandinavian projects [7].

Cooperation between Denmark and China, which initially expressed itself in the strengthening of trade relations between the two countries, is gradually evolving into a close partnership. The reason for such an evolution is the abundance of mineral resources in Greenland. Copenhagen hopes to benefit from the reduction of the ice cover of Greenland, which will allow it to extract rare-earth metals. At the same time, China intends to become the main buyer of these resources [8].

Iceland is important for Beijing as a springboard into the Arctic. In the midst of the financial crisis of 2008 China provided the country with a currency swap of 406 million euros to support the banking system and issued several significant loans on extremely favourable terms. In 2012, China signed an agreement with Iceland on cooperation in the Arctic, as well as an agreement on a free trade zone, which entered into force in 2014. Consequently, today Iceland is the main lobbyist for Chinese interests in the Arctic council.

In 2016, in the Swedish city of Kirun China launched its first satellite communication station situated outside of China, which is capable of operating under all weather conditions [9].

In recent years the representatives of the PRC and Finland have started to actively discuss the issues related to cooperation in the study of environmental problems in the Arctic. With respect to a number of European observer countries of the Arctic Council (Germany, Great Britain, Spain, Netherlands, Poland, France) [10-13], Beijing has not yet decided what position to adopt. It is studying their strengths and weaknesses in the Arctic region.

By developing relations with European states, as this analysis has shown, China seeks to avoid conflicts, support favourable conditions for cooperation and create the necessary material and political prerequisites for changing the situation in its favour.

In China's "White Paper" on the Arctic global conditions affecting the arctic are analysed. The possible role of China in the Arctic is discussed. This document also presents for the first time China's political goals and main principles of activity in the Arctic. Special attention is given, as well to its policy and long-term ambitions in the Far North.

Analysing the content of the "White Paper" is important for the understanding of both the formal and the objective aspirations of China in the Arctic. It indicates a change in China's perception of its own image in the international arena. One of its aims is a full or at least a partial revision of the views of the Arctic states, as well as national elite and business structures of these states, on the place of the PRC in the Arctic.

In the Arctic, the PRC intends to make greater use of its capabilities for implementing regional and global political goals. One of the main features of China's foreign policy in the Arctic is avoiding conflicts by waiting for favourable conditions and creating the necessary material and political prerequisites for changing the situation in its favour.

The current Chinese foreign policy in the Arctic in relation to Russia can be described as positive, business-like, mostly benevolent and aiming at long-term goals. The arising problems and difficulties are solved through negotiations. It is important that on the issues of development and exploitation of the Arctic China emphasizes its commitment to the principles and norms of international law. This provides some hope that the Arctic will remain a zone of peace and constructive cooperation between states.

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ZALESOVA Olga
North-West Institute of Management, 2nd year master's degree student,
Russia, St. Petersburg, 199178, Sredniy Ave. of Vasilievsky Island, 57/43;
e-mail: zalesovao94@mail.ru

RUSSIA'S ARCTIC PROJECTS: EXPECTATIONS AND REALITY

Abstract. *After the dissolution of the USSR the role of the High North in domestic policy greatly diminished, while the Soviet achievements in the Arctic exploration and study were almost forgotten. The new era for the Arctic began after Vladimir Putin became President of the Russian Federation. Along with creation of new legal and regulatory base and revival of polar researches, Russia launched several promising projects in its Arctic zone. The article is devoted to the overview of some promising projects which have already been commenced in the Russian Arctic, including the megaproject of the Northern Sea Route development, "Project-22220" for the construction of new-generation nuclear icebreakers, railway system "Belkomur", multimodal transport system "Northern latitudinal way", infamous liquefied natural gas production enterprise "Yamal-LNG" and projects of offshore hydrocarbon fields development – "Shtokman", "Prirazlomnaya" and "Universitetskaya-1". This paper gives comparison of the expectations expressed before implementation of each of the projects started to what has been accomplished till now. All the projects examined are headliners directly or indirectly connected to infrastructure development of the Arctic zone of Russian Federation. The conclusion offers possible solutions to overcome the most prominent problems of Russian Arctic projects implementation – high costs and incoordination of the contracting parties.*
Keywords: *Arctic region, Arctic zone of Russian Federation, Northern Sea Route, infrastructure development projects.*

The first half of the 2000s saw the establishment of the new administrative and legal model of Arctic region management. Along with the renewal of the legal framework and restoration of polar researches, Russian Federation also enhanced its activities in the circumpolar North and started ambitious projects in its Arctic zone (AZRF), some of which had been worked out in the Soviet times. These projects included development of hydrocarbon fields on the Arctic Ocean shelf, building of new pipelines for the purposes of oil and gas transportation, construction of railways, facilities for marine shipping, and overall improvement of infrastructure in the Russian Arctic. All in all, the main document determining the development of the region – state program "Socio-economic development of the Arctic zone of Russian Federation till 2020" [11] dated April 21, 2014 – lists 145 projects in total, 17 of which are described as prioritized. The biggest share of the projects is devoted to extraction and refinery of natural resources and improvement of Arctic transport infrastructure.

No one will argue that Russian Arctic is greatly isolated from the industrial and economic centers of the country, that is why efficient exploitation of the treasures the region can offer depends heavily on its infrastructure development. The backbone of AZRF transportation system is the Northern Sea Route (NSR) – a shipping passage stretching from the North Atlantic along the Siberian coast to the Russian Far East and the Pacific Ocean.

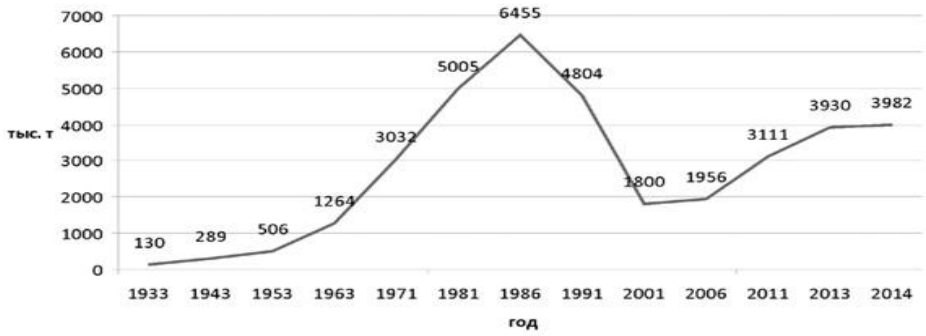
Picture 1. Northern Sea Route (red) and Suez channel route (blue). Source:http://ww1.thepicturesonline.org/northern+sea+route+administration+Russia

It is hard to overestimate the significance of the Northern Sea Route for the rising economic activity in the melting Arctic. First of all, it offers great reduction of time and distance for the maritime shipping from Europe to Asia and vice versa. In comparison to the traditional route through the Suez channel, the NSR is not congested, not subject to piracy and political instability. The only disadvantage is that the Northern Sea Route is not operational all year round and commercial vessels require icebreakers assistance to use it.

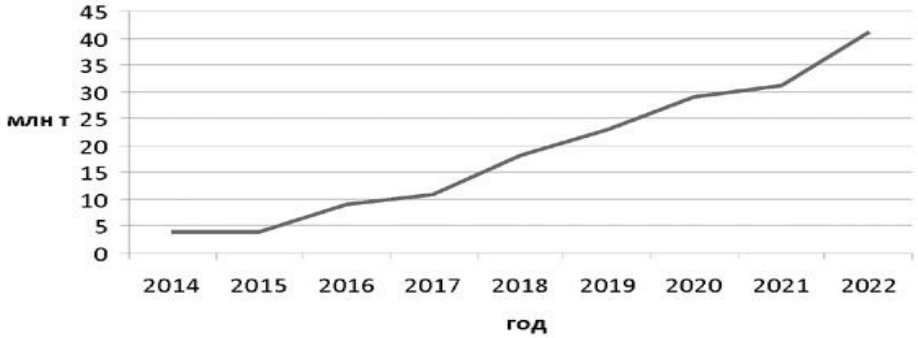
The Northern Sea Route is one of the most prominent and longstanding Arctic aspirations of Russia. Its exploitation started in 1930s, but after the Soviet Union collapsed, the NSR was mostly abandoned until one of the first documents of the new period of state's policy realization in the region, Resolution of the Government of the Russian Federation № 198 [10] issued on March 7, 2000, stated NSR development as a wholly integrated transportation link and central element in maritime connections between Europe and Asia to be one of the fundamental goals for the state.

New Russian strategy of NSR development stated its main goal: to increase the volume of freight traffic to match the figures of the 1980s and then turn the waterway into a fully-fledged transportation route. The rates of 1980s were supposed to be achieved in 2016, however, it did not happen until 2017, as the rates in 2016 were a little lower – 5,28 mln tons, while in

2017 they happened to be 7,17 mln tons [17]. The goal of turning the route into fully-operational one is still a prospect for the future. Now the Northern Sea Route is no competition for the Suez channel route: it cannot be used all-year round, costs for using it with icebreakers' navigation are rather high, and it requires special insurance and vessels of ice class.



Graph 1. NSR freight traffic rates since the beginning of its exploitation.
Source: Medovnikov D. S. et al. Prioritety Rossii v Arktike [Russia's Priorities in the Arctic]. Novosibirsk, 2016, p. 47.



Graph 2. NSR freight traffic rates from 2014 to 2017 and future prognoses.
Source: http://www.rosatomflot.ru/press-centr/novosti-predpriyatiya/2018/01/23/11160-v-2017-godu-kolichestvo-ledokolnyh-provodok-rosatomflota-v-akvatorii-sevmorputi-vyroslo/page,2/

Implementation of the plans for the NSR development is very protracted due to several reasons. Firstly, harsh conditions of the Arctic region pose great challenges for the construction and improvement of maritime facilities. Secondly, problems of implementation of the subprojects, such as construction of new and reconstruction of existing sea ports due to lack of financing or incoordination of the contractors. Obsolescence of the icebreaker fleet and bureaucratic barriers for getting the permission to use the NSR facilities can also be named as the contributors to the problem.

As it has already been mentioned, NSR development is closely connected to implementation of several satellite projects, which include renewal of icebreaker fleet, construction of railways to connect economically important spots of the Arctic and ensure their access to the

seaports, as well as complex development of liquefied natural gas and shelf projects.

There is clear need for the construction of the new icebreakers, as the ones operating in the NSR now are quickly getting obsolete. "Project-22220" on the construction of three universal nuclear icebreakers started under Government Resolution № 715 [11], signed in August 2013, which contained clear dates for the commissioning of the two vessels – years 2019 and 2020 for the first and the second accordingly. However, the schedule for setting them to work was rearranged for 2020 and 2021 accordingly [8] due to delay in construction. As explained by the Federal State Unitary Enterprise "Atomflot" – the agency charged with fulfilling the plans – it happened because of the lack of qualified personnel and incoordination of the contractors. A lot of time was spent on finding new suppliers and producers of equipment because of the technological sanctions against Russia [7].

In 1996, when construction of the railway "Belkomur" was commenced, its strategic significance was clear – giving northern regions of European Russia, such as Komi republic and Arkhangelsk oblast, and Urals direct access to nonfreezing port of Murmansk and port of Arkhangelsk for further access to Northern Europe. It was planned to build 1115 km of the road. Now only three parts of the railway – Arkhangelsk-Karpogory, Vendinga-Syktyvkar and Solikamsk-Perm, which make up about 440 km – are operational, but still need modernization [1]. The project is struggling to find investors. The latest auction planned for March 26, 2018 did not take place as there were no tenders [2]. The main reason for that is constantly increasing cost of the project and lack of financing from the regional budgets.

Picture 2. "Belkomur" project. Source:http://www.ndptl.org/c/document_library/get_file?folderId=16255&name=DLFE-269.pdf&p_l_id=16079

Another ambitious project for the development of transport infrastructure "Northern latitudinal railway" to connect Obskaya railway station to Korotchaevo with potential access to multifunctional seaport of Sabetta was expected to start in 2015. The construction of 700 km of the railways from Obskaya to Salekhard, from Salekhard to Nadym, with combined bridges across the Ob and the Nadym and railway sections under construction Nadym-Pangody, Pangody-Novy Urengoy, Novy Urengoy-Korotchaevo [15, p.173], was entrusted first to the corporation "Urals industrial – Urals polar", later renamed "Corporation of Development". The main reason to postpone the start of construction laid in contracting parties, who could not find common ground upon dividing responsibilities. After the head of the "Corporation of Development" was blamed for stealing money allocated for several projects in the region, the agency turned bankrupt. After elimination of this organization remaining contractors, "Russian Railways", "Gazprom" and Yamal-Nenets Autonomous Okrug government, finally agreed to divide responsibilities for the railway construction. Now construction of 170 km of Bovanenkovo-Sabetta corridor is afoot and motorway part of the bridge across Nadym is functional. Raising cost and incoordination of contracting parties resulted in postponing the project deadline till 2020.

Picture 3. Scheme of "Northern latitudinal railway". Source: http://www.skyscrapercity.com/showthread.php?p=144173155

"Yamal-LNG" project can be considered a successful one. Its development started in 2011 by Russian gas company "NOVATEK", French energy giant "Total" and Chinese oil and gas corporation "CNPC". Plans for the project included construction of Sabetta sea port and liquefied natural gas (LNG) plant with capacity of 16.5 mln tons. Although the project was affected by western sanctions, state support and participation of Chinese investors kept the project from suspension. The first line on LNG plant was launched in December 2017. In the same month the first batch of

liquefied natural gas was dispatched from Sabetta to Great Britain. The second and third lines are to be launched ahead of schedule [13].

In 2002 Russian companies "Gazprom" and "Rosneft" began development of Prirazlomnoe and Shtokman shelf hydrocarbon fields. Both projects were ahead of their time and seemed to be very promising. Later, in 2012, "Universitetskaya-1" in Pobeda field was added to the list of Russian shelf projects. The projects attracted foreign partners, but their participation was suspended due to various reasons. "Gazprom", which became the only stakeholder in Shtokman field development in 2014, suspended the project because of its unprofitability. After withdrawal of "ExxonMobil" from the joint venture on the development of "Universitetskaya-1" in the Kara Sea "Rosneft" declared the project to be frozen. Today "Prirazlomnaya" is the only functional shelf platform, but its production rates are lower from expected [14].

Russia's Arctic projects for the development of complex infrastructure in the region are experiencing some difficulties, and "Yamal-LNG" is, unfortunately, an exception, not a rule. The nature of problems connected to Russia's Arctic projects implementation is different – from environmental conditions, to shortage of qualified personnel and unprofitability. The main two problems are high costs and incoordination of the parties involved. Besides, the projects are not developed systematically and show faults in forward thinking of the participants. The solution for these problems may be the introduction of new program to comprise all the projects into one to ensure their complex development, creation of coordination groups for each field of project activity in the region and attraction of investors on the basis of future concessions for using the facilities they help to build. In fact, it is important to stay focused on the already existing projects instead of launching new ones. Ambitious projects may look good on the paper, but when commenced they bring new problems to the already big "snowball" of Arctic development problems. It would be also reasonable to refuse implementation of projects that are extremely ahead of their time till their implementation will be economically profitable and relevant.

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SEMENOVA Kristina
Peter the Great St. Petersburg Polytechnic University, lecturer,
Russia, St. Petersburg, 195251, Politekhnicheskaya ul., 29;
e-mail: semenova86@bk.ru

RATIO OF NATIONAL AND INTERNATIONAL INTERESTS OF THE STATES IN THE ARCTIC

Abstract. *This article analyzes the experience of the Arctic states in securing their territorial rights to the Arctic. Various legal documents are being explored in which the polar states indicated the boundaries of their Arctic sector, studying the legal experience of the Russian Federation, Canada, Norway, Denmark and the USA on protecting their Arctic possessions, analyzing the main directions of international cooperation in the Arctic region, the role of the concept of the polar sectors in the delimitation of the Arctic spaces by polar states. Also, the article explores the mutual influence of legal actions and legal experience of the polar states on the development of each other's Arctic legislation. For example, the activity of the Canadian government in the Arctic region prompted the Soviet government to take more resolute actions to strengthen its positions in the Arctic in the first quarter of the 20th century.Based on the analysis of various legal documents and legal experience of the Arctic states on securing their territorial rights in the Arctic, recommendations are given on improving the international legal regime of the Arctic and preventing possible geopolitical conflicts in the Arctic region, taking into account the interests of the international community and the polar powers. On the one hand, each Arctic state has its own national territorial interests in the Arctic region. On the other hand, with the adoption and dissemination of the 1982 United Nations Convention on the Law of the Sea, Arctic subjects have significantly increased the number of subjects of international law that have territorial and economic interests in the region. In view of these circumstances, it seems to the Arctic states that it is necessary to unite their efforts to protect their territorial and environmental interests in the Arctic.*
Keywords: *Arctic, polar sectors, Arctic states, territorial rights to the Arctic.*

The Arctic is a region that attracts the close attention of the entire international community.

International cooperation of states in the Arctic is mainly carried out in the following areas:

- ensuring peace and security in the Arctic region;
- legal protection of sovereignty and special rights of coastal states in the relevant Arctic territories;
- protection of the Arctic environment;
- development of economic, social, scientific and technical cooperation in the region and a number of other issues.

Nevertheless, the Arctic is undoubtedly of particular importance for the five Arctic states, the so-called Arctic Five - the Russian Federation, Canada, Norway, Denmark and the United States, whose coasts are directly

adjacent to the Arctic Ocean. The special importance of the Arctic for these countries is due to their traditional active participation in the development of the North.

The first country to formalize its legal rights to the relevant part of the Arctic sector was Canada. Among the northern states that have access to the Arctic Ocean, Canada has the second largest Arctic area after Russia. For this reason, Canada has always shown active interest in the northern region. In 1907, Canada officially declared the boundaries of its territories in the Arctic along the 141st and 60th northern meridians [2].

Canada is the first state to apply the concept of the polar sectors in determining the boundaries of its Arctic possessions. In 1907, at the suggestion of Senator P. Poirier, a resolution was approved that Canada claims to "... all the land to be found in the waters between the line extending northward along its eastern border, and the line continuing northward along its western borders" [4]. From the text of the resolution it follows that it is based on the theory of polar sectors.

It should be noted that the content and wording of the Canadian resolution on securing state rights to spaces within certain boundaries (in the sector) were later partially reflected in the Decree of the CEC of the USSR of April 15, 1926 "On declaring lands and islands located in the Arctic Ocean as the territory of the Soviet Union ". The Soviet decree also enshrines the rights of our state to all lands and islands located within established limits, that is, in the sector [5]. Most likely, the adoption by Canada of a regulatory legal act on the legal regime of lands and islands in the Arctic served as an example and incentive for the Soviet government to adopt a similar document defining the boundaries and legal status of the Soviet Arctic sector.

Territorial disputes between the Canadian and Soviet governments in the Arctic were not rare. For example, in 1916, by a note of the Foreign Ministry, Russia notified the international community of its territorial rights to Wrangel Island. However, in 1922, the Prime Minister of Canada issued a statement extending Canada's sovereignty to Wrangel Island. The mentioned territorial conflict between the states ended with the fact that the Soviet flag was set on Wrangel Island in 1924 [3].

On June 27, 1925, Canada adopted the Law on the North-Western Territories, according to which "... the Arctic lands and islands adjacent to the continental part of Canada, as well as the corresponding mainland territory, were declared to be forbidden for foreign states and their citizens to carry out any activity without special permission from the competent Canadian authorities" [7].

It seems that the provisions of the Canadian law on the prohibition of foreign citizens to conduct any activity in the Arctic without the permission of the Canadian authorities, on the one hand, testify to the aspect of Canada's sovereignty in the Arctic, such as the implementation of the rule

of state power in the territory. At the same time, the wording of this law on the extension of state power to the lands and islands of the Canadian Arctic is controversial, since it remains unclear about Canada's legal claims to the maritime spaces of the Arctic.

Nevertheless, in spite of the uncertainty in the legal regulation of the legal status of the maritime spaces of the Canadian Arctic, in 1972, Canadian legislation established mandatory requirements for navigation in certain areas of the Arctic. The purpose of this regulatory framework was to prevent pollution of the marine environment in the Canadian Arctic [6].

The history of the United States of America as one of the five polar powers begins with the transition to the American sovereignty of Alaska's territory. Alaska became part of the territory of the United States of America on the basis of an agreement on the assignment of the Russian North American colonies concluded between the Russian Empire and the North American United States in Washington on March 18 (30), 1867. According to the provisions of this treaty, the Russian Empire "... represented by His Majesty the Emperor of All-Russia for 7.2 million dollars with a gold coin ..." pledged to cede the territory of Alaska to the North American States. The eastern boundary of the transferred territory was "... the line of demarcation between Russian and British possessions in North America" (Article I of the Treaty). The western border of the transferred territories "... passes through a point in the Bering Strait under 650 and 30 'north latitude at its intersection by the meridian that separates Krusenstern Island, or Ignaluk, from Ratmanov Island, or Nunarbuk, at an equal distance, and goes straight to the north, until it is completely lost in the Arctic Ocean "(Article IV of the Treaty) [7]. The acquisition of Alaska prompted the American government to further territorial claims in the Arctic based on the assumption that the North Pole is a continuation of Alaska.

Norway and Denmark, which are in the top five of the Arctic states, did not follow the legal experience of Canada and the Soviet Union in the Arctic, and did not issue special legal acts that would consolidate the territorial rights of these states to their Arctic sectors.

However, in 1812, the Royal Ordinance on Territorial Jurisdiction was issued in Norway, setting forth the rules for determining the boundaries of Norwegian territorial jurisdiction in maritime spaces, according to which "... the border must be considered within one ordinary nautical mile from the island's farthest from the land or an island not poured by the sea. " In 1997, the Guidelines for Offshore Oil and Gas Operations in the Arctic came into force in Norway, according to which "... the Norwegian Arctic zone should be understood as areas of the Norwegian Sea north of 65 degrees north latitude" [9].

In relations between Norway and Russia, various disputes and conflicts also arose over the division of Arctic spaces. In addition to the

territorial claims of both countries on the Spitsbergen archipelago, in 1975 Norway announced its intention to delimit the continental shelf along the line "... running east of the polar possessions of the Soviet Union", and thereby challenge the traditional definition of its Arctic boundaries for the USSR. For the settlement of the interstate conflict, the Governments of the USSR and the Kingdom of Norway concluded the Agreement "On mutual relations in the field of fisheries". In development of the provisions of this agreement, the states also concluded a protocol establishing temporary fishery rules in the disputed part of the Barents Sea [1].

The dispute between Norway and the Russian Federation over the delimitation of the spaces of the Barents Sea was only resolved by the states in 2010 with the help of the agreement "On the delimitation of maritime spaces and cooperation in the Barents Sea and the Arctic Sea". According to the provisions of the said agreement, the disputed part of the Barents Sea is subject to delimitation between the states into two equal parts.

Denmark defines its Arctic spaces as the territory of Greenland and the Faroe Islands [8].

In the legal systems of Denmark, Norway and the United States there are no special regulatory legal acts defining the legal regime of the respective regions of the Arctic states. In their Arctic policy, these states also do not refer to the concept of polar sectors. Nevertheless, the use of the concept of the polar sectors by Canada and the USSR in determining the boundaries of their Arctic possessions did not cause objections from other Arctic and other states "... until the development of science and technology has allowed states to begin practical exploration and development of the natural resources of the Arctic. In particular, the research activities of a number of states in the Arctic, including within the polar sector of Russia, have become noticeably more active" [7].

Russia for the first time formalized its territorial rights with a note from the Ministry of Foreign Affairs of the Russian Empire in 1916. The said document proclaimed the ownership of the Russian Empire of lands "located to the north of the Asian coast of the Russian Empire".

On November 4, 1924, G.V. Chicherin sent to all states a memorandum on the ownership by Russia of all the lands and islands of the northern continuation of the Siberian continental plateau.

On April 15, 1926, the Presidium of the Central Executive Committee of the USSR issued a Resolution "On declaring lands and islands located in the Arctic Ocean as the territory of the USSR". This decree announced that the state territory of the USSR is all both open and future open lands and islands that do not constitute the territory of any foreign states located in the Arctic Ocean to the north by the time the decree is published. from the coast of the USSR to the North Pole in the range between meridians 32gr 4 min 35 sec. from Greenwich, passing

through the middle of the strait dividing the Ratmanov and Kruzenshtern islands of the Diomede Islands group in the Bering Strait [5].

In addition to the above documents, in 1921, the decree "On the protection of fish and animal lands in the Arctic Ocean and the White Sea" of the RSFSR secured its territorial rights to certain areas of the maritime spaces of the Arctic [7].

The modern regulatory legal acts of the Russian Federation, defining the legal regime of the Russian Arctic spaces, include the Federal Law of the Russian Federation “On the internal sea waters, the territorial sea and the adjacent zone of the Russian Federation”, the Federal Law of the Russian Federation “On the continental shelf of the Russian Federation”, the Decree of the President of the Russian Federation Federation "On Land Territories of the Arctic Zone of the Russian Federation", Marine Doctrine of the Russian Federation, Strategy for the Development of the Arctic Zones The Russian Federation and the national security for the period up to 2020, Order of the Ministry of Transport of Russia "On Approval of Rules of swimming in the waters of the Northern Sea Route" and others.

Russia, Norway, Denmark and Canada are parties to the 1982 UN Convention on the Law of the Sea.

The centuries-old history of Russia’s exploration of both the land and the sea space of the Arctic, the factual establishment of polar possessions for our state, gives rise to certain legal consequences and confirms the validity of Russian claims on the corresponding part of the Arctic sea and land spaces.

Today, the Arctic states, along with the tasks related to international cooperation in the Arctic, also need to pay special attention to ensuring their territorial rights in the Arctic sector. Most likely, the Arctic Five in addition to the 1982 UN Convention on the Law of the Sea needs to develop an international treaty that would clearly define the legal regime of the Arctic and eliminate all existing contradictions on this issue. Perhaps based on the concept of the polar sectors, it would be advisable in the agreement to indicate the exact boundaries of the sector of each Arctic state. The Arctic Treaty should also indicate the range of issues under the joint jurisdiction of the Arctic Five, and the range of issues under the exclusive jurisdiction of each coastal state. In order to resolve issues of joint management and oversight of the implementation of the agreement, coastal states should consider creating a governing body, for example, the Council of Arctic States, which, unlike the Arctic Council, would address not only ensuring environmental safety in the Arctic, but also ensuring Russia's national interests, Canada, Norway, Denmark and the United States in the Arctic region. Perhaps these measures will help to resolve many issues regarding the legal regime of the Arctic, including issues related to possible territorial disputes in the Arctic region.

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BORODULKINA Aleksandra
Saint Petersburg State University, student,
Russia, St. Petersburg, 199034, 7/9, Uniersitetskaya nab.;
e-mail: alexandra.borodulkina@mail.ru

POSSIBLE MODELS OF COLLABORATION FOR SUSTAINABLE DEVELOPMENT IN THE ARCTIC

Abstract. *The article analyzes the perspectives of sustainable development in the Arctic through the cooperation between governments, researchers and local Indigenous minorities. Mainly focusing on social aspects of sustainable development and the importance of Indigenous participation, the author attempts to define the characteristics of possible models of collaboration that would satisfy all parties and would contribute to the well-being of the Arctic. Therefore, the already observed results of the involvement of Indigenous peoples of the Arctic region and other social policies have been revised. The article bases on information provided by the Nordic Council of Ministers, WWF and the International Polar Year. Sustainable development in the Arctic is connected to the definition of sustainable development introduced by the United Nations. Environmental issues have to be resolved by the government in cooperation with researchers as Indigenous peoples are mainly victims of environmental changes initiated by resource extraction and climate change. The social sphere, however, requires deep connections to the Indigenous population of the North as the Sustainable Development Goals consider the well-being of all people. A balance between the interests of both parties has to be maintained and this is only possible through serious scientific research. It is also important to secure the right of Indigenous peoples to preserve their way of life.*
Keywords: *Artic, Indigenous peoples, sustainable development.*

Originally concerning mainly problems of climate change and resources, the research about the Arctic has finally taken notice of social aspects of this region after the International Polar Year 2007-2008 [3]. One of the main goals, alongside with the investigation of ice, land, oceans, space, and the atmosphere, was the engagement of northern people, the protection of their traditional knowledge, the inclusion of Indigenous peoples in the work of IPY, the focus on the northern human health and on their social system [IPY - People]. Since then, the amount of questions connected to the problems of integration, protection, and representation has grown progressively. But it is important to understand how this research can contribute to the well-being of northern people and a more efficient policy.

The Arctic being exposed to the effects of global warming, the growth of interest for issues of human rights and cultural preservation, and the participation of countries that are highly implicated in international cooperation and have the resources and will to develop the Arctic region

results in a wide range of research on these topics. As the Arctic Social Indicators and Arctic Human Development Report state, significant progress has been reached in the use of Indigenous knowledge, local participation, control and ownership, governance arrangements and Northern Identity. For example, the post-secondary education attainment is increasing in many Arctic regions and new technologies allow distance education, which is important in northern conditions. The increased local control and ownership of northern resources due to recent institutional changes, the appearance of new forms of governance that include indigenous peoples, and the emergence of Arctic identities can also be named as examples of successful Arctic policies. Moreover, the Arctic itself has become more "marketable", thus getting more attention of the media, policy-makers and the world population in general [2]. Significant changes were introduced to the legal framework (such as the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic, the Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic, and the Agreement on Enhancing International Arctic Scientific Cooperation) that do not focus on Indigenous peoples in particular, but create a basis for future cooperation (the SAR Agreement is considered to be the first bounding agreement of the Arctic Council [3]).

However, there still exist gaps in policy and in knowledge that need to be filled. For example, it is still relatively hard to study the specifics of the Indigenous peoples of the Arctic due to the differences in classification existing between the members of the Arctic Council. Some members only consider the birthplace (as it is done in Greenland), while others classify its citizens more specifically (Russia) [2]. Furthermore, it is complicated to implement a unique policy for all the Arctic regions because of the diversity of the political systems and the economies of the northern countries. As already mentioned, the traditions and level of development of the peoples inhabiting the North differ strongly. The characteristics of the non-Indigenous population also vary due to the specifics of local economic orientation. For example, a resource-based economy would require skilled workers from other regions what would result in a higher percentage of temporary male population. Another example would be military bases – an aspect that has strongly affected the North during the Cold War. Information about the migration background of the Arctic regions can also be analyzed as a source of new and unique economic perspectives.

Another issue that has to be taken into consideration is the difference between the views of life of Indigenous peoples and other inhabitants of northern countries. For example, introducing these peoples to local institutions and trying to help via including them into the common economic practices, the governments sometimes act against the interests of these minorities that refuse to give up their traditions despite changes in

their areas [9]. Therefore, we first have to identify what definition of 'sustainable development' would be suitable for both the indigenous peoples and the governments of the Arctic countries. According to the definition of the United Nations, sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [8]. The goals defined therefore are: no poverty, zero hunger, good health and well-being, quality education, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth, industry, innovation and infrastructure, reduced inequalities, sustainable cities and communities, responsible consumption and production, climate action, life below water, life on land, peace, justice and strong institutions, partnerships for the goals [8].

In respect of those goals that concern mostly environmental problems, the involvement of Indigenous peoples would not lead to significant changes as these inhabitants of the Arctic are victims of ecological changes and most of the initiatives are introduced either by researchers or by the government. However, Indigenous peoples could be a source of information about endangered species or climate change. Nevertheless, the Sustainable Development Goals that affect society are directly connected to the well-being of the northern peoples. Therefore, it is important to protect their sources of nutrition, help them preserve the way of life they prefer (without forcing adaptation). However, the opportunities that exist for other groups of population should also be provided for Indigenous peoples.

Both the governments of the Arctic and its Indigenous inhabitants are interested in the conservation of local ecosystems and environmental security. Moreover, cultural preservation and the improvement of living conditions play an important role in the policies of the members of the Arctic Council [1]. Consequently, the cooperation should be organized in accordance to these basic principles. Further changes can be implemented with the agreement of both parties. This means that an ideal model of collaboration should include the representation of Indigenous peoples in governmental and scientific institutions without the forcible introduction of extraneous rules. However, Indigenous peoples should have the choice to enter or not to enter the common economic system. All human rights must be respected.

At the same time, "soft securities" require a more active participation of local governments as they cannot be provided without the use of higher technologies. Governments have to guarantee the protection of the resources Indigenous peoples already possess and offer them, if necessary, equivalents that would help them preserve their way of life. This is especially crucial when it comes to oil production. When economic and social interests collide, there have to be followed certain principles: social

orientation, complexity, systematization, regulation and consensus, and continuous monitoring [5]. In short terms, the benefits of one party should not be reached through the losses of the opposite party. This can be maintained through a developed legal system, the evolution of technology, and deep scientific research.

Another aspect is the growth of efficiency of regional and local governments. Not only international organizations, but also regional and local governments should represent their peoples more effectively, transmitting the need and wills of the inhabitants of their regions [6]. At the same time there should not be too many 'small' representative groups as they appear to be weaker than when they are united [2]. They should also participate more actively in international structures, such as the Arctic Circle, within the appropriate international Indigenous organization.

Only those models of collaboration among researchers and regional and local governments and Indigenous organizations will result in sustainable economic development that consider the interests of all parties, which can only be reached through quality representation, deep scientific research both on international and local levels (international experience can be transmitted from international institutions to local organizations), proper legislation and law enforcement. In order to higher the efficiency of possible policies the study of local cultures, migration flows and already existing problems (including environmental problems) is required. International cooperation can enhance the quality of this research but should not lead to a unification of rules in the whole Arctic region.

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OIL AND GAS PROJECTS IN THE ARCTIC

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Nikitina Anzhelika Sergeevna,
Petrozavodsk State University, student
Russia, Republic of Karelia, Petrozavodsk, 185910, Lenin ave., 33;
e-mail: super.asn2012@yandex.ru

INTERNATIONAL COOPERATION IN THE ARCTIC ON THE EXAMPLE OF YAMAL LNG

Abstract. *The article considers an example of a large-scale project for the extraction of natural liquefied gas - Yamal LNG, as a variant of mutually beneficial international cooperation between the Russian Federation, the People's Republic of China and the Republic of France. Analysts note that the development of the Arctic from the economic point of view is a difficult task. Without investment, this process can drag on for several decades. The best way is to use international cooperation. Indeed, it gives a number of preferences to the parties to the agreement. The key is to help export raw materials, create profitable transportation routes, ensure the repurchase of a part of natural resources. Of course for the Arctic it is essential and necessary. Nowadays, thanks to the implementation of the project a transport infrastructure was created successfully and also port and airport "Sabetta" were built, and the living conditions of people in the area were improved. The supply of raw materials to the European and Asian markets is already started. Such effective cooperation can begin to be realized in other Arctic territories of our country, for example, in the Republic of Karelia. There, for the time being, smaller smaller projects, but important projects in the sphere of energy, education, and tourism can find development. It is obvious that the international cooperation is a platform for interaction of states, including non-Arctic ones, that aspire to be in the Arctic region, take part in its development, establish business contacts with the Arctic countries by concluding important raw international agreements. Despite disagreements in economic and political issues, we understand that the Arctic needs to develop and maintain a coordinated world order on it.*
Keywords: *Yamal LNG, the Arctic, liquefied natural gas, international cooperation, agreement.*

The development of the Arctic zone for Russia is important, both economically, socially, and strategically. And a lot of things has already been done in this sphere. But in order to fulfill the state program for its development, attracting additional resources and investments, international cooperation is very important.

So far, there are not so many examples of close and fruitful international cooperation in the development of the Arctic territories. Therefore, specific examples of interaction with other countries are really important, such as the experience with Yamal LNG.

YAMAL LNG (LNG is an abbreviation of liquefied natural gas) is the largest integrated project for the extraction, liquefaction and supply of natural gas. Thanks to its favorable geographic location, LNG provides an uninterrupted supply of raw materials to the international market, including

to Europe and to the countries of the Asia-Pacific region. One of the main tasks of the project development concept is to expand gas supplies to the countries of Asia. Just at the end of March of this year, the beginning of its implementation was laid - the first gas supply to India was made [5].

The project is being implemented in the South Tambey gas condensate field, where the fuel is extracted, including long-term deliveries to the People's Republic of China [8].

It is worthy of special attention that the Yamalo-Nenets Autonomous District has for a long time taken a leading position in terms of investment in projects of the fuel and energy complex. At the same time, along with highly developed raw material regions, a significant part of the territories of the Arctic region is marked by low indicators of the development of the transport infrastructure, the energy system, and the population [9].

Under these conditions, the launch of the Sabetta port became one of Russia's key points of reference in the development of the Arctic's natural resources [3].

"The state creates an aquatorium, bypass channels, it allows navigation, and private companies are building a project. The task of the Russian Federation to use the successful experience of such forms of interaction, to develop them ... " [10].

It is noteworthy that the joint project is international, since the shareholders are the French oil and gas company TOTAL, the largest Chinese national oil and gas corporation and the Silk Road Fund, whose share in the project is 49.1%, and the Russian company PJSC NOVATEK [7].

Today, the Yamal LNG project can be considered successful, as its integration into the international energy infrastructure is evident. Undoubtedly, the primary goal of the project is to meet the requirements for the production and quality of energy resources, the compliance of its activities with environmental standards, national and international regulatory framework [4].

On the 27 of March in 2018 in Shanghai, the meeting of the chairman of PJSC "NOVATEK" and the head of the Chinese Corporation. The sides discussed further more extensive cooperation.

The development of international cooperation boils down to concluding agreements taking into account the development of the interests of states, participation in international negotiations [1].

A striking example of bilateral international cooperation is the Agreement which was made on the 13 of January in 2014. between the Government of the Russian Federation and the Government of the People's Republic of China on cooperation in the implementation of the Yamal LNG project and the Agreement which was made on the 13 of October in 2014 on cooperation in the field of natural gas supplies from the Russian Federation to the People's Republic of China along the "eastern" route.

The agreements are in line with the Strategy for the Development of the Arctic Zone of the Russian Federation, since on the one hand they correspond to the economic development of a separate "Arctic" territory, on the other hand, they are aimed on improving the infrastructure and raising the living standards of the population. In particular, by agreement, 20% of the shares were purchased by the China National Oil and Gas Corporation, which obliges the party to support the project, for example, in the purchase of gas at least 3 million tons per year. The agreement fixes preferential tax and customs conditions for the parties [8].

Preferences for Russia are the fact that for the transportation of raw materials, the Chinese side will assist in the development and development of the route and in its operation, covering also the gas pipelines.

The development in the Arctic zone of the Russian Federation of a large fuel and energy project with foreign investment confirms that Russia supports the economic stability of the region and the status of the Arctic power. Thanks to the extraction of liquefied natural gas, economic cooperation with the countries of the Asia-Pacific region, the readiness for serious international cooperation and the "Russian turn to the East" are being established [2].

Thus, we see that international cooperation in the Arctic region has a great importance, first of all, for our country. Attracting foreign investment and ensuring economic development of the region and the oil and gas industry is now a promising direction of the domestic and foreign policy of our state. China's desire to participate in the development of the Arctic is also evident, although China is not an Arctic state. This country is interested in a long-term and stable cooperation with Russia, therefore, the country's leadership, federal and regional departments need to move to a new and more extensive level of international legal dialogue with potential investors.

The experience of the Yamal LNG project should be addressed for international cooperation, for example, in the Arctic territories of the Republic of Karelia. It has an advantageous geographical position, as it is a transport hub of the Baltic and Europe in general. The first steps on the way to cooperation with the PRC have already been made, and an agreement has been signed on the establishment of twin relations between the Republic of Karelia and the province of Fujian. The Chinese side has a number of proposals on bilateral relations in energy, food imports, tourism, science and education [6].

Using the example of Yamal LNG participation in the international gas field development project, Russia demonstrates the possibility of collaborating with other states, connecting their investments in general economic interests. Despite the economic and diplomatic sanctions, the Arctic remains a region of international cooperation through which

mutually beneficial cooperation between different countries is realized. It means that mutual understanding and security are ensured.

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DEVELOPMENT OF HUMAN CAPITAL IN THE ARCTIC

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GUBINA Olga
N. Laverov Federal Center for Integrated Arctic Research of RAS, PhD,
Russia, Arkhangelsk, 163000, Lomonosova av., 249;
e-mail: welcomeforyou@yandex.ru

POSKOTINOVA Liliya
N. Laverov Federal Center for Integrated Arctic Research of RAS, Doctor of Biological Sciences,
Russia, Arkhangelsk, 163000, Lomonosova av., 249;
e-mail: liliya200572@mail.ru

PROVOROVA Anna
N. Laverov Federal Center for Integrated Arctic Research of RAS,
Russia, Arkhangelsk, 163000, Lomonosova av., 249;
e-mail: aashirikova@mail.ru

TRANSFORMATION OF THE LIFESTYLE AND HEALTH OF THE ARCTIC POPULATION AS THE CONSEQUENCES OF INDUSTRIAL DEVELOPMENT IMPACT

Abstract. *Prospective large-scale projects for the development of the Arctic territories point to the need to identify and quantify the consequences that affect the socio-economic situation and different aspects of population life in this unique macroregion. The purpose of the study is a new understanding of the problem of developing the Arctic territories and searching of effective mechanisms for adapting the Arctic population to changing conditions. Basis of the study is idea of assessing the impact of socio-economic and environmental consequences of industrial development of the Arctic territories through the transformation of the way of life and health of the Arctic man as the main consumer of Arctic natural resources, as the initiator of development of Arctic territories and as the object of influence of these consequences. On the basis of the theoretical research authors propose the classification of approaches to the concept of a way of life and disclose the content of the way of life depending on the role of man in the Arctic. The author's typology of the consequences of industrial development of the Arctic territories is developed. Typology is based on such criteria as the scale and direction of influence, the source of the impact and the time period, the possibility of diagnostics and state regulation. The perspective influence of these consequences on the lifestyle and health of permanent residents and labor migrants is characterized. The obtained theoretical results will form the basis for working out of methodological approaches to assessing the integrated impact of industrial development on the socio-ecological and economic system of the Arctic territories through indicators of the transformation of the way of life and health of the population.*
Keywords: *industrial development, consequences, way of life, Arctic.*

Currently, the Arctic territories are one of the least developed by man and at the same time the most resource-rich spaces. The interest of the world community towards the Arctic increases with the reduction of the world's non-renewable energy sources and other types of natural resources, and with

development of innovative technologies for extraction of hard-to-reach resources. New programs of active natural resources development and development of transport flows are accompanied by a number of specific risks and consequences for the livelihoods and way of life of the people living here, including small indigenous minorities of the North. Therefore, the need for a qualitative and quantitative assessment of the Arctic industrial development impact on the way of life of the people living here is obvious. Such investigations require a qualitative theoretical research of this problem, which resulted in a typology of the consequences of the industrial development impact on the way of life and health of different groups of the Arctic population.

Development of Arctic resource potential as a basis of its industrial growth is cyclical, staged and depends on such factors as exhaustibility, renewability, accessibility, uniqueness, scale of stocks, etc. This directly affects on population way of life, who involved in the process of development as a labor resources. Thus people will have a certain mode of work and rest, habits and behavior, the level and quality of life and so they also create their own standards of living, necessary for them to live in these conditions. Particular attention should also be given to the study of the way of life of people, involved in the process of development on the basis of permanent residence in the Arctic, and shift workers. These categories of people have a different sense of stay and residence in Arctic, which directly affects the formation of their way of life. For the indigenous peoples, the process of development of territories should be viewed from the point of view of the civilization benefits penetration into the traditional way of life. Among them are information technology, means of transport, food, clothing. The problem of the environmental consequences of industrial development, which is most significant in relation to the way of life of indigenous peoples is remained an ambiguous: the area of their traditional nature using is reduced, the volume and quality (due to contamination with harmful substances) of biological resources constituting the basic diet of indigenous people is decreasing. At the same time, from the point of view of the impact on the entire population of the Arctic territories, the environmental consequences of industrialization affect the human health, forming a special way of life, and forcing a man to transform habits and pay more attention to treatment and prevention, nutrition, rest, and limiting his ability to work. Hence, the way of life can be an integral characteristic, allowing to estimate the complex influence of the consequences of industrial development of territories. It is by transforming the way of life as an indicator of influence that one can determine the extent and nature of the impact of industrialization on man.

The category "way of life" in the original understanding was revealed as a certain way of people's activity [1], as a form of human existence, formed on the basis of value orientations [2]. In this case this

interpretation was used rather to understand the essence of man, because the way of life was a consequence of the consciousness manifestation of people, which was formed under the influence of the external world. So began to form an activity approach to understanding the way of life, which is represented as totality of such forms of human activity as work, rest and everyday life [3, 4, 5, 6], taken in unity with the conditions of this vital activity [7, 8, 9, 10]. As V.I. Tolstykh noted, a man forms his way of life on the basis of his belonging to a certain society and the conditions of his habitat [11]. L.N. Kogan, I.T. Levykin [12] singled out in the integral category «way of life» four sphere: labor, daily life, socio-political and cultural-educational activities, the number of which was subsequently increased to 14 and included family relations, national and antisocial phenomena.

Bestuzhev-Lada, whose works are of particular importance [13], proposed to consider the way of life as one of the parties of conditions of life, oriented to assessing the degree of satisfaction of needs that can be directly quantified (the level of monetary incomes and wage, consumption of food and industrial goods and etc.). An important scientific result of this scientist is the definition of the structure of a way of life, which includes level, quality, style, daily life, standard of living.

There are several approaches to understanding the way of life:

- activity approach, in which the person's way of life is considered in terms of the types of his pastime, embracing work, rest, daily life, cultural, political and social activities, family relations. At the same time, special emphasis is placed on the behavioral characteristics of people and their communities;

- structural approach, in which the lifestyle includes level, quality, style, way of life and standard of living;

- qualitatively-quantitative approach, that is different in methodological importance, which makes it possible to evaluate and classify the way of life of people according to the degree of satisfaction of their needs.

Thus, the way of life as a systemic concept, which is explored in the context of the impact of the environmental consequences of the development of territories, reflects how everyday human practices in various spheres of life in the Arctic relate with the state of highly vulnerable, weakly able to quickly restore Arctic ecosystems, which allows to spend comprehensive analysis of the interaction in the «Arctic man-Arctic nature» system, identifying the points of risk and safe interaction.

The study of the essence of the way of life of a person, acting as a consumer of the natural resources of the Arctic, is closed by considering it as a way of acquiring goods, and also as a way of satisfying the needs in the conditions of existing natural and social restrictions. Therefore, the way of life and the quality of life as one of its components can be considered as

a way of interaction between the Arctic environment and its use, which is reflected in the forms and types of human behavior.

Disclosure of the content of a person's way of life through an understanding of his role as the initiator of the development of the Arctic territories allows us to regard it as a source of self-development not only for man but for society as a whole, combining activities for managing territorial development, man's striving for wholeness, possession of meaning and goals, which together can provide effective human activity in everyday life in the Arctic.

In this context the transformation of the Arctic man way of life is a consequence of the social, economic and ecological changes that arise in the process of industrial development. There are groups of consequences of industrial development of the Arctic territories and the nature of their influence on the Arctic population way of life, identified on the basis of certain typological features.

In terms of the manifestation scale, the consequences of the impact of industrial development on the Arctic population way of life can be local, regional and planetary. Local consequences are manifested within the center of development, which can be considered city, municipality, and also territories of resources development (floating oil and gas platforms, shift camps). The object of influence, as a rule, is the permanent population of mono-specialized settlements and the population engaged in shift method. Feature of the population way of life in such settlements is manifested itself in close interconnection between people in various spheres of life (work, leisure, everyday life), uniformity of the way of life of different population groups. At the same time, territorial isolation and peripheral are determine low mobility of the population, which is the reason of the man's weak fitness to maintain ties, interaction, and cohesion. The structural component of the population way of life by types of activity (cultural, leisure, social) is determined by the opportunities and level of development of social infrastructure. The structure of the shift workers way of life is determined by the enterprise work schedule and working conditions. At the same time, such components of the way of life as a level life and lifestyle depend on development rates of enterprise.

The regional scale of social and economic consequences of industrial development of the Arctic territories is manifested in the form of a "scattered" effect, which consists in the development not only of a part of the Arctic subject of Russian Federation, but also territories neighboring to the Arctic through infrastructure, personnel and technological interaction. First of all, this will ensure employment of the population and a decent standard of living. Another aspect of influence is financial (tax) revenues to the regional budget as a result of industrial development, which also extends to the population of Russian Federation subject. The positive effect of the territory development is strengthened in the case of a large number

of natural resources, which reduces the risk of negative consequences.

The planetary scale of the consequences is primarily related to the environmental aspects of industrial development of the Arctic territories. Pollution of the northern sea waters by oil and chemical compounds, accumulation of industrial wastes in the territory of the enterprises, the toxic pollution of the atmosphere by associated gas, the flooding of nuclear waste are the greatest dangers at present time, which are ubiquitous because of the rapid transfer of pollution by water and air masses.

From the point of view of the study of the way of life, its transformation and differentiated influence of the consequences of industrial development, the socio-demographic groups of Arctic population are of particular interest. These groups are divided according to the principle of settlement and the degree of rootedness in the territory: the aboriginal population living in this territory permanently (small indigenous minorities of the North), the indigenous population living in the territory for several generations, for which the Arctic has never been a place of original residence, and alien population (shift workers). At the same time, differentiation of the population way of life in the Arctic will be manifested in relation to different age groups that perceive the consequences of industrial development: the working-age population, children, youth and pensioners.

In this case, we can talk not only about the different degree of influence of the industrial development consequences on the way of life of these categories of people, but also about different nature of influence (periodic and permanent, short-term and long-term) and about different directions of the influence of social, ecological, economic and other consequences on separate spheres of human life.

On the direction of influence, the consequences of industrial development of the Arctic territories can be divided into economic, social, ecological and technological. Economic consequences are related to the efficiency of enterprises activities, the receipt of taxes and investments into the region from the development of natural resources and the implementation of other projects for the development of the Arctic zone of Russian Federation. Social consequences will be related to the level of employment, the standard of living. Indicators of the transformation of the way of life will be a change in the structure of work and leisure, the emergence of new needs. Technological consequences are associated with the introduction of innovations in production and are associated with a change in the nature and content of labor, the determination of social and labor relations, the increased demand for qualified personnel. For example, the development of telecommunication technologies changes the principles of the organization of labor - attachment to the workplace, a rigid work schedule. In this connection, the structure of working time and, accordingly, the way of life are changing. The development of Internet

technologies also changes the culture of communication in general in the direction of the predominance of virtual communication over personal communication, that is a unifying factor in conditions of dispersed development of the Arctic. The environmental consequences of industrial development are manifested as a decrease of water and air quality, soil disturbance. Decreasing the quality of the environment reduces the territories of traditional nature management of small indigenous minorities of the North, that leads to change in their established way of life [14].

It should be noted, such consequences can be both positive and negative. The direction of the vector will depend on the dynamics of enterprises production, their competitiveness, the stage of exhaustible natural resources development. Considering the high share of monospecialized settlements, the depth of social and economic consequences for these territories is increasing.

The nature of the Arctic territories development determines the analysis of the consequences depending on the source of the impact. Mainly these are man-caused sources (effects and consequences are resulting from mineral deposits development) and infrastructural (the consequences of the construction and development of transport, energy infrastructure and logistics facilities, including critical infrastructure).

Depending on the time of manifestation and influence on the person's way of life, the consequences of development can be immediate and remote. The consequences that arise in the process of industrial development of the Arctic include the receipt of revenues in budgets, employment, flow of investments into the region. These consequences are immediately apparent. Remote consequences are manifested, for example, as a changes in demographic trends of this territory, and as form of adaptation of migrants, including labor migrants to the Arctic life and its harsh climate.

All the consequences of the impact of industrial development on the way of life of the population in the Arctic, depending on diagnostics possibility, can be divided into quantitatively evaluated and amenable to a qualitative assessment. The first type of consequences, obviously, includes the volume and rates of tax and investment revenues into the region, the level and rates of employment dynamics, and also costs of resettlement of citizens and the maintenance of infrastructure development. On the other hand, such components of a way of life as migratory moods, a level of social tension, labor motivation - are accessible for research basically by qualitative methods.

All the consequences of the impact of industrial development on the Arctic man way of life are amenable to state regulation within the framework of the current legislation. There are regulated and poorly regulated consequences. The first group includes such consequences as the increase in the level and quality of life of the population in the Arctic, the

level of pollution and waste generation. It should be said that the manageability of the impact of the industrial development consequences is determined not so much by quantity, but by the effectiveness of measures and mechanisms, which applied by the state. It is important to understand the significance of the institutional environment that ensures the implementation of state strategic landmarks in the Arctic [15].

In connection with the increase in the requirements for the skill level of employees, the high mobility of human resources in the Arctic, climate change, the requirements for the functional reserves of the body of persons making up labor resources are increasing. On the degree of preservation of the human health potential in the Arctic, the degree of implementation of scenarios of social and economic development of this region also depends. At present, the direction of neuroeconomics is developing on the basis of the synthesis of economic, psychological sciences and neurobiology. The possibilities of neuroeconomics can be realized in understanding the neurophysiological mechanisms of decision-making by a person in the socioeconomic sphere: the prevalence of rational approach or irrational-emotional, preference for immediate benefit or benefit in the long term. The methodology of physiological studies also allows us to propose the typology of psychoneurophysiological portraits of certain population groups from the point of view of both the nature of the response to the stress load and the position of the risk of reaching a psychoneurological pathology. The predominance of these or other types of neurophysiological portraits of the population in certain areas will allow to assess the potential of the population's readiness to accept a particular scenario of the region's development, and also to assess the «price of adaptation» of the population to industrial development of the Arctic territories from the viewpoint of preserving the health resources of the population.

The authors identified a scientific problem which is consist of search for adequate mechanisms for adapting a person to the changing conditions and consequences of industrial development of the Arctic territories by improving the way of life in order to increase the efficiency of using human resources and ensure the achievement of the Arctic's strategic development goals. In the course of theoretical and methodological research, an author's typology of the consequences of industrial development of the Arctic territories was developed/ This typology will be used as the basis for developing methodological approaches to assessing the impact of industrial development of the Arctic on the qualitative change in the economic, natural and social environments, within their influence on the transformation of the lifestyle and health of Arctic man.

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NIKULINA Anni
Saint Petersburg Mining University, PhD, associate professor,
Russia, St. Petersburg, 199106, 21 linia, 2;
e-mail: Nikulina_AYu@pers.spmi.ru

YAKOVLEVA Julia
Saint Petersburg Mining University, PhD, associate professor,
Russia, St. Petersburg, 199106, 21 linia, 2;
e-mail: yakovleva_YuA@pers.spmi.ru

GAVRILOVA Arina
Saint Petersburg Mining University, student,
Russia, St. Petersburg, 199106, 21 linia, 2;
e-mail: gavrilova.arina@mail.ru

SHULEPOV Vladimir
Saint Petersburg Mining University, student,
Russia, St. Petersburg, 199106, 21 linia, 2;
e-mail: volyashulepov276@gmail.com

FACTORS FOR MOBILIZING HUMAN RESOURCES TO WORK IN THE ARCTIC

Abstract. *The work contains the study which identifies factors for mobilising human resources to work in the Arctic region of the Russian Federation. Currently, the Arctic is a very unpopular place of permanent residence due to its nature, climate, and geography. This is further confirmed by the statistics of the migration of the people in the constituent entities located beyond the Arctic Circle. Therefore, it is necessary to practice a comprehensive approach to the research of the existing and potential drivers to develop recommendations for the companies that are planning to or have operations in the Arctic and for relevant government authorities. The first part of the article focuses on the review of the current state guarantees and benefits to people working in the Extreme North and emphasises their low incentive potential. The second part of the article is a sociological study carried out by the students of the Mining University Economics Department. Its results are used as a basis to articulate key drivers that would make Arctic work appealing for young talents. They include a preferred salary level, social and cultural environment in the workplace and in the community life, a potential period young professionals are willing to move to the North, and their mobility level. The constituent entities of the Russian Federation in the Arctic are found to be currently capable of providing the drivers of choice. The research is the first stage in a proposed multi-disciplinary study carried out by young scientists and professionals from the St. Petersburg Mining University.*
Keywords: *Arctic, Far North, human resources, students, motivation.*

The Arctic Region of the Russian Federation has been the focus area for many government and public organisations and authorities in the recent decades. This interest is related to the start of the development of Arctic

hydrocarbon fields and geopolitical influence, as well as placement and expansion of military facilities and military forces there.

Higher activity in the region creates a demand for highly skilled specialists capable of living and working in the north [1, 2].

This work is an attempt to consider factors that impact the specialists' decisions to work in the Arctic Region in order to develop further recommendations for government authorities and employers that operate in the north.

The first part of the article addresses the environmental and climatic factors that have an adverse impact on human health, as well as existing methods the government can use to encourage people working in the polar region in order to offset such factors and attract potential workforce.

The second part of the article lists the results of polling of the students and graduates of the Mining University that shown what might motivate them to move to work in the Arctic Region.

Part One. A) Impact of the environmental and climatic factors in the Arctic Region on employee health

The Arctic Region has been developed over the last century. The industries that have been actively mobilising workforce are mining companies and related sectors. Severe environmental and climatic conditions in many parts of the Arctic Region have required close attention to the employees' physical and mental health. Experts in medicine, psychology, and labour economics have focused on the study of the influence of northern region environment, including the rotational system of work, on human health [3].

Conducted studies [4] show the impact of adverse working conditions in the north, such as climatic and geographical contrasts, desynchronising factors related to a change in photoperiodism and 24-hour shift work, contribute to a special "social and psychological climate" that determines the nature and changes of physical and autonomic physiological functions, including mental and emotional shifts. Employees experience changes in their identity, self-gratification, attitude to their work and human relations.

Yu. Mizun [5] believes that an important condition for successful employee adaptation to the Arctic conditions is a specific build type. The choice should be with "stayers", people who can withstand stress loads for a long time (for many years). "Stayers" are opposed to "sprinters" who can withstand larger loads but over a relatively short period of time.

B) Legislative incentives to work in the Arctic Region

Since an interest in the Arctic Region has intensified over the last two decades only, the regulations of the Russian Federation pertaining to the rights of employees in the Arctic area contain the term "regions of the Extreme North and equivalent areas".

Existing legally available benefits stipulated by the Labour Code of the Russian Federation (the LC RF) for the people employed in the Extreme North include a number of financial incentives an employer must provide [6, 7].

For instance, Article 115 of the LC RF stipulates the following additional paid leave: a total of 24 calendar days as an additional paid leave for people working in the Extreme North and 16 calendar days for people employed in equivalent areas.

Article 320 stipulates a 36-hour work week for women with their salary equal to that paid for a full work week. Any time worked by a woman extra to these stipulated 36 hours should be paid for at an overtime rate: one and a half of the regular rate for the first two hours and a double rate for any time above these first two hours.

Pursuant to Article 321, people working in the Extreme North are entitled to 24 calendar days as an additional paid leave and people employed in equivalent areas are entitled to 16 calendar days as an additional paid leave. Article 322 also allows complete or partial combination of annual paid leaves for two years.

The employees of companies located in the Extreme North and equivalent areas are entitled to compensation from their employer for their travel and carriage of their luggage to/from their vacation site in the Russian Federation once every two years (Article 325 of the LC RF). However the law guarantees a compensation of relocation expenses only to the employees of government-owned entities. Such employees are also entitled to the payment of their family's travel and carriage of their luggage and a compensation of a two-month base salary (Article 326).

As regards remuneration to the people working in the Arctic Region, Article 148 stipulates regional premium rates and perks. A regional premium rate in the Extreme North is 2, but the minimum monthly wage (MMW) in regions may amount to RUB 9,489 (from January, 2018), which makes the so called "northern wage" or "wage rise for arduous working conditions" an ineffective incentive for employees. A salary of RUB 19,578 in Murmansk is not attractive for the residents of St. Petersburg where MMW is RUB 18,978 in 2018 and an average salary approximates RUB 60, 0000.

In light of the foregoing, it can be deduced that legally stipulated guarantees for employees are inadequate to retain people in the North or mobilise potentially required workforce from other regions.

Part Two. An opinion survey to identify factors that would be attractive for young talents and encourage them to move to the Arctic Region. In order to develop recommendations for workforce mobilisation to the Arctic Region, a decision has been made to conduct an opinion survey to identify factors that would influence the decision to work in the north.

In accordance with the current opinion survey method, the following bullet points have been included.

1. Problem

One of the components of the Arctic economic potential is qualified workforce but the study of population flows has shown the region to be generally unattractive. Most young people leave polar cities since they cannot see growth perspectives [8-10]. One of the main causes of a disastrous situation with young talents is lack of decent working and living conditions.

Therefore, there is a need to study factors that would make employment in the Russian Arctic attractive for young skilled workforce and will in turn facilitate the development of a further social and economic mechanism of attracting them to the Arctic Region.

2. Research Target

Final-year students from engineering and economic departments (the Mining University case)

3. Research Subject

Preferred working and living conditions in the Russian Arctic Region for final-year students with a major in engineering or economics (the Mining University case)

4. Research Goal

Study of preferred working and living conditions in the Russian Arctic Region for students with a major in engineering or economics (the Mining University case)

5. Research Objectives:

- study social and economic preferences of students regarding working and living conditions in the Russian Arctic Region;
- review social and cultural expectations of students regarding working and living conditions in the Russian Arctic Region;
- draft recommendations to government authorities and private companies regarding the mobilisation of young talents to the Arctic Region.

The authors of the article have developed a questionnaire (Figure 1) and polled the students and graduates of the Mining University.

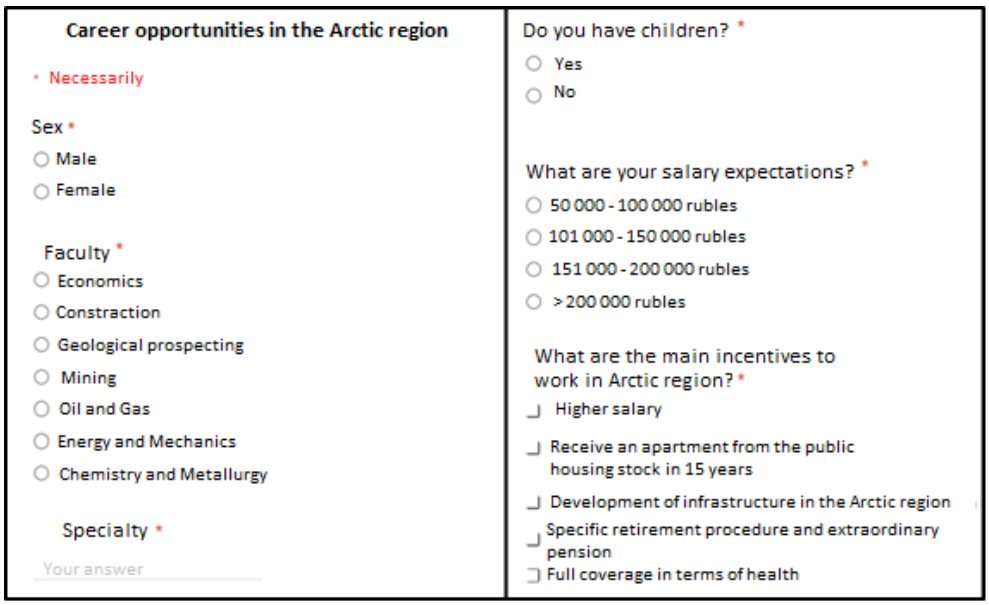

Fig.1: Fragment of the questionnaire for potential employees in the Arctic Region

A total of 102 respondents took the poll, including 42 male and 60 female respondents. A total of 43.1% of the respondents are from the Economic Department, 18.6%, 16.7%, and 9.8% of the respondents represent the Construction Department, Electromechanical Department, Oil and Gas Department, respectively, and 3.9% of student are from the Geological Survey, Mining, and Mineral Processing Departments each. Three respondents are married and one respondent has children.

The survey has shown that 35% of the respondents are willing to work for RUB 101,000 to RUB 150,000, 33% of the respondents would like to be paid RUB 151,000 to RUB 200,000, and 23% of the respondents expect a salary of RUB 200,000 for their work in the Arctic Region. A mere 9% of the respondents will be satisfied with a wage between RUB 50,000 and RUB 100,000 (Fig. 2).

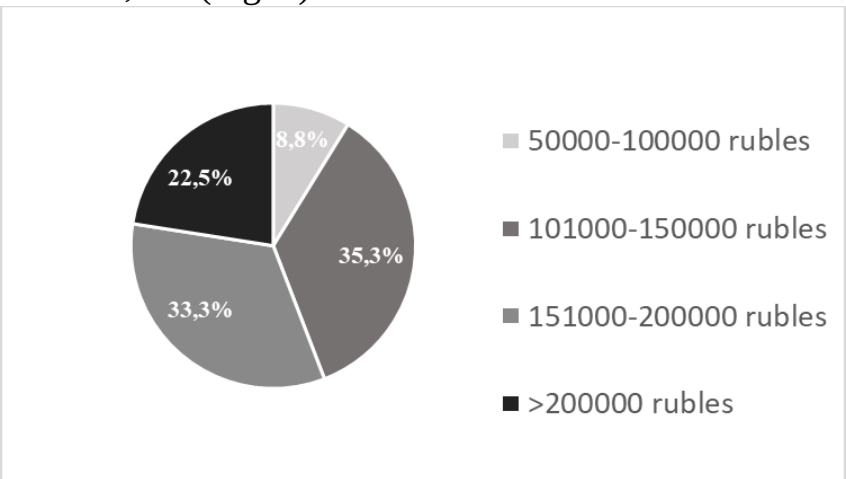

Fig. 2: Salary preferences of potential employees

The main incentives for potential employees in the Arctic Region are financial ones, including a salary higher than their current wage (76%), opportunity to receive a flat from the government they can beneficially own in 15 years (47%), and complete medical services coverage (46%). However the above options will not motivate 10% of the respondents to work in the Arctic Region.

As regards cultural and entertainment options, the most important preferences include availability of restaurants and coffee shops (81%), access to theatres and cinemas (73%), access to recreation parks in the region where the respondents live (55%).

More than half of the respondents are ready to set off to work in the Arctic region for no longer than five years. A total of 22 potential employees agree to work in the Arctic Region for five to ten years, while three respondents agree to work there for more than 15 years (Fig. 3).

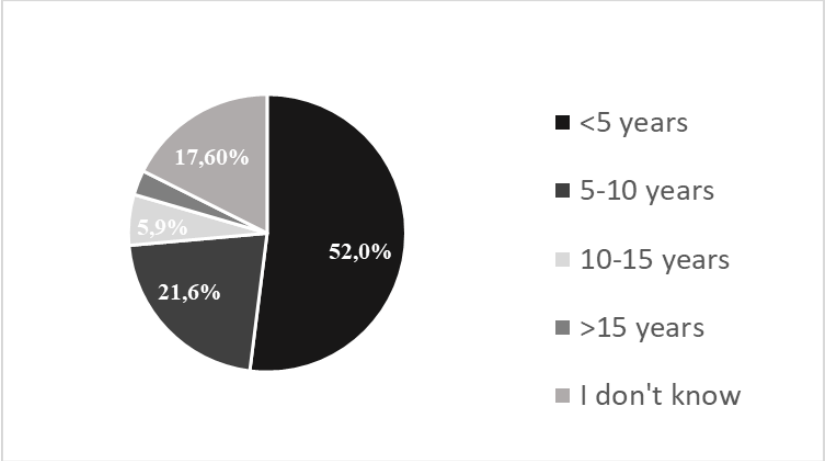

Fig. 3: Willingness to work in the Arctic Region by duration of work

49% of responding students believe that railway and air accessibility is an essential condition for work in the Arctic Region. It means that even with an employer paying for their travel to/from their vacation by law, available and affordable tickets are an important factor for the mobility of potential employees in the Arctic.

Respondents have also been offered an opportunity to add incentives that will encourage them to choose a job in the Arctic Region. The survey has yielded such responses as guaranteed employment in St. Petersburg or Moscow with a good salary after five years spent in the Arctic and comfortable and decent living conditions in the region with the possibility of moving there with their family.

It must be added that the survey has been a trial one and further significant updates of the questionnaire are required and the number of respondents must be increased.

The opinion survey shows that young skilled people are mostly willing to work in the Arctic Region for up to five years for a monthly wage from RUB 100,000 provided there are cultural and entertainment

sites in the region and they can receive significant bonuses after their Arctic employment and can stay mobile and connected with their family.

The review provided in Part One shows that currently none of these factors is guaranteed by the government which inevitably results in a failure of the Arctic development strategy as regards the human capital indicator in the region.

Further research conducted by the Mining University research team implies the study of more factors that influence the choice of the Arctic Region as a work location and the detailed elaboration of recommendations to government authorities.

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ZHDANYUK Angelina
Saint Petersburg Mining University, student,
Russia, St. Petersburg, 199106, 21 linia, 2;
e-mail: s141471@stud.spmi.ru

NIKULINA Anni
Saint-Petersburg Mining University, PhD, associate professor,
Russia, St. Petersburg, 199106, 21 linia, 2;
e-mail: Nikulina_AYU@pers.spmi.ru

KRUK Marina
Saint-Petersburg Mining University, PhD, associate professor,
Russia, St. Petersburg, 199106, 21 linia, 2;
e-mail: Kruk_MN@pers.spmi.ru

RAPID ASSESSMENT OF CORPORATE SOCIAL RESPONSIBILITY PROGRAMS OF THE LARGEST ARCTIC COMPANIES

Abstract. *The paper presents an express assessment of mining companies` corporate social responsibility programs (CRS) who are operating in the Arctic region of the Russian Federation. The research object is mainly chosen due to the following factors: 1) large public companies are interested in the development of CSR programs; 2) in order to create a favorable impression about their activities among stakeholders (investors, local population, media), these large companies place reports about social responsibility and sustainable development in open access; 3) the Arctic region which is characterized by unfavorable climatic conditions, remoteness from the Central region of Russia, requires employers to increase social responsibility to employees and society. Based on the methodology of rapid assessment of CSR programs, the analysis of the activities of seven companies of the mineral complex on 12 parameters for years 2015-2016 was performed. As a result of the evaluation, EuroChem was awarded the highest score in CSR programs (17 points) and PJSC Norilsk Nickel had the lowest points (-5). It should be noted that this method of rapid assessment of companies is based not on absolute indicators but on their relative change in time: 2017 compared to 2016. The disadvantage of this study is also the inability to separate the CSR programs of companies into parts that are distributed in the Arctic region and parts that are used throughout the country. Further research involves the study of other methods of evaluation of companies ' CSR programs, their application for the evaluation of companies of the Arctic mineral complex as well as the development of recommendations for their improvement.*
Keywords*: Arctic, corporate social responsibility, mining companies.*

Attraction of qualified labor resources in the Arctic region is a task of national importance. And it is not only about the relocation of specialists from other regions but also about the retention of personnel already living

in the North. The conditions under which specialists are ready to come to work in the Arctic or stay there should be provided by several participants: companies-employers, federal and regional authorities, local authorities. In relation to employers, there are already statutory obligations: reduced duration of working time, travel expenses to the place of vacation, longer vacation. However, in addition to legal acts the largest enterprises should establish their programs for improving the lives of employees and the local population – corporate social responsibility (CSR) programs [1, 2].

The largest taxpayers in the Northern regions are usually energy and mining companies which were among the first to use social codes, social responsibility, social reporting and social audit. This was due both to the need to enter the world market and gain a certain image there and the fact that they were often forced to replace the state or closely cooperate with it in social terms in those territories where they operated. Therefore, the biggest mining and energy companies of the Arctic were chosen as the object of research.

CSR is determined by minimizing the negative impact on society and accordingly the rules and regulations governing the interaction of companies with society. In the case of the Arctic, this means that companies need to take action within the framework of CSR to ensure the well-being of the local population, wildlife and the environment while maintaining the quality of the natural environment in the region. An example of CRS need is indigenous life in the Arctic, generally based on traditional economies and heavily dependent on the quality of the natural environment [3, 4].

Promotion of the implementation and development of corporate social responsibility is one of the most important attributes of the influence of external factors on the company's activities. CSR currently have a high degree of significance for Arctic issues.

Today, an important role in promoting CSR belongs to the institutions of power. Nevertheless, the level of state motivation and stimulation of CSR In Russia has been and remains extremely low.

For a general description of the companies` responsibility degree the so-called *rapid assessment* is applied. The growth rate is calculated for 12 indicators taken from non-financial reports of the companies. Percent of increase (decrease) of each indicator is evaluated and corresponding number of points is giving (table 1).

Table 1

Scale assigning scores of the indicators of CSR

Percent of increase (decrease)	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-…
Score	1(-1)	2(-2)	3(-3)	4(-4)	5(-5)	6(-6)	7(-7)	8(-8)	9(-9)	10(-10)

In the absence of positive or negative dynamics as well as the value of growth less than 1% the company is assigned a value of 0 points. The calculation of the total amount of points was as follows: R = (X1+X2+X5+X6+X7+X11+X12) - (X3+X4+X8+X9+X10) where R - the total amount of points, Xn - the number of points accrued, n - the index number.

Negative values of the total points illustrate the reduction of the company's socially oriented practice and can be a signal for additional control at the compliance level. Positive values characterize the desire of the company to maintain and strengthen the status of social responsibility. If the result is more than 12 points (R>12) it means that company tends to achieve a leading position in this area.

On the basis of the presented method of CSR *rapid assessment* the final points were calculated for the largest mining companies operating in the Arctic: PJSC Gazprom Neft (GPN), BP, PJSC Norilsk Nickel (NN), Polymetal (PM), EuroChem (ECh), PJSC NOVATEK (NT), PJSC Rosneft (RN).

The indicators of 2016 and the final estimates are presented in table 2:

Table 2

Results of rapid assessment of CSR programs of mining companies

Index	**GPN**	**BP**	**NN**	**PM**	**ECh**	**NT**	**RN**
1. Average monthly ZP (thousand rubles /person)	100,2	87	51,2	56,2	67,2	64,9	93,7
2. Level of collective agreement (in %)	69	75	85	78	91	85	70
3. Staff turnover (%)	16,2	16	15,7	10,1	3,6	7,8	10,9
4. Occupational injury frequency rate	0,52	0,21	0,6	0,59	1,08	1,02	0,54
5. Number of training hours per 1 employee (hours)	67	_	-	63	52	-	-
6. Growth of expenses for local communities support (RUB mln)	4543	3350	3657	2695	4780	4289	4264
7. The ratio of spending	0,04	0,035	0,03	0,05	0,02	0,02	0,03

Index	GPN	BP	NN	PM	ECh	NT	RN
to support local communities to net income			8				
8. Energy consumption per unit products /activities (energy intensity)	115,4	–	110,4	-	118,4	109,3	-
9. Water consumption per unit of production / activity	7,5	–		-	2,58		-
10. Mass of generated waste per unit of production /activity (million tonnes)	689,1	200,2	497	421	100,5	208,5	209
11. Security costs and investments in environment (RUB million)	15750	1752	1775	623	834,4	738,1	12534
12. Ratio of expenses and investments in environmental protection to net profit	0,0	0,02	0,03	0,019	0,02	0,022	0,06
SCORE	**7**	**14**	**-5**	**8**	**17**	**6**	**11**

According to the results of the evaluation, EuroChem is the most socially responsible company out of all the analyzed companies operating in the Arctic (17 points). This may be due to the highest level of spending on support of local communities (4780 mln rub in 2016). The least socially responsible company, according to the results of the analysis, was the company Norilsk Nickel (-5). This low figure may be the result of a large amount of waste generated per unit of production (497.09 million tons) as well as result of a high level of staff turnover (15.7 %). The second place in the degree of social responsibility after EuroChem is taken by BP (14 points) which is due to the lowest level of occupational injuries (0.21). In third place is Rosneft (11 points) whose high social responsibility is determined by the large volume of expenses and investments in environmental protection (12534 million rubles) and high average monthly wages of employees (93.7 thousand rubles). In fourth place is Polymetal (8 points) which is due to low staff turnover (10.1%) and a large number of hours for training (63 hours). The fifth place belongs to Gazprom Neft (7 points). Its level of responsibility is due to the maximum volume of expenditures and investments for environmental protection (15750 million tons). The sixth place is held by NOVATEK (6 points), which is highly responsible for a small amount of waste generated per unit of production (208.5 million tons).

It should be noted that the method of rapid assessment presented in the paper takes into account only the dynamics of CSR indicators of companies but not their absolute values in comparison with each other. Thus, comparing Gazprom Neft and BP, it can be seen that in absolute terms most of the values of Gazprom Neft exceed BP but the dynamics of these indicators are lower in time which led to the low final indicator.

It is also worth emphasizing that the companies selected for comparative analysis are not only operating in the Arctic but their CSR reports are written for the whole company not for the Northern division. Thus, some of the items may not be implemented or not fully implemented directly in the Arctic but they were included in the report. The need for separate accounting of indicators relating to the Arctic territories has been repeatedly voiced during various discussions, including by representatives of the state Commission on the Arctic.

In addition to that, companies do not have a statutory obligation to provide a report on CSR there is also a certain form. Existing CSR documents and regulations are advisory. Therefore, some indicators are not provided by the company and their assessment is not possible [5-7].

According to the results of the study, it can be concluded that EuroChem has the highest indicator of rapid assessment and Norilsk Nickel has the lowest but this assessment reflects only the dynamic performance of the company therefore can not be considered objective.

This study is the first step to compare different methods of assessing CSR programs of companies operating in the Arctic. Further work involves the identification of the best methods of evaluation, the implementation of the evaluation of companies as well as the development of recommendations for additions to CSR programs in the North.

The research is carried out within the framework of the scientific project "Social and Economic Mechanism for Attracting Human Resources to the Arctic Region of the Russian Federation" and implemented through a grant from the Russian Science Foundation (Project No. 17-78-20145) at the St. Petersburg Mining University.

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SIMONCHUK Vladislava
Saint-Petersburg Mining University, economic faculty, student,
Russia, St. Petersburg, 199106, 21 linia, 2;
e-mail: s170778@stud.spmi.ru

SHARANOVSKAYA Polina
Saint-Petersburg Mining University, economic faculty, student,
Russia, St. Petersburg, 199106, 21 linia, 2;
e-mail: s171797@stud.spmi.ru

NIKULINA Anni
Saint-Petersburg Mining University, PhD, associate professor,
Russia, St. Petersburg, 199106, 21 linia, 2;
email: Nikulina_AYU@pers.spmi.ru

EXPERIENCE OF CANADIAN COMPANIES IN ATTRACTING HUMAN CAPITAL TO REGIONS WITH SEVERE CLIMATIC CONDITIONS

Abstract. *The attraction of human resources for work in the Arctic is today an urgent task of the state level. It's not just about attracting people to the move, but also about keeping people already working in the region. The task is complex and should include many parameters: state guarantees, corporate social responsibility of companies, living conditions in the region and others. Many foreign companies already have experience in attracting people to regions different from their usual living environment. At the same time, workers are often forced to work in unfavorable or severe climatic conditions (extremely low or extremely high temperatures) far from the main infrastructure facilities. It is necessary to investigate the existing methods of assessing workers' compensation for moral or physical "damage" in connection with work in difficult conditions, away from home, friends and habitat. The experience of staff motivation to work in unfavorable climatic conditions of the largest companies of Canada ImperialOil, RioTinto, Ledcor was studied in this paper. Companies in cooperation with the state widely used corporate social responsibility programs for their employees: high level of salary, non request for work experience, construction of houses and other infrastructure in the regions of presence, simplified procedure for obtaining citizenship for workers from foreign countries. The identified methods of attracting human resources have been analyzed. The recommendations for Russian companies working in the Arctic are given.*
Keywords: *human capital, corporate social responsibility, Canada, motivation, working conditions.*

The Russian Arctic is a vast territory of new opportunities including mining industry but at present day there is a problem of attracting human capital due to the difficult working conditions. The effectiveness of the functioning of the economy is related to the quality of the use of human capital. To find ways to attract human capital we should use foreign

experience in attracting labor force to hard-to-reach areas. Such Canadian companies as ImperialOil, RioTinto, Ledcor have production capacities in various countries around the world including the northern regions as well as regions with unfavorable working conditions. Canadian companies have some experience in creating motivation systems that help to attract staff to work in difficult conditions.

In order to study foreign experience in attracting human resources to regions with unfavorable climatic conditions authors decided to select countries with a climate similar to the Russian Arctic: Canada, Norway, USA (Alaska). In addition, many countries that do not have Arctic territories nevertheless carry out economic activities on them. For example, the French oil and gas company Total is working on the Yamal-LNG project together with the Russian company NOVATEK. This paper presents the experience of attracting personnel to the northern regions of the largest companies in Canada: ImperialOil, RioTinto, Ledcor [1].

A great experience in attracting human capital to work with unfavorable climat conditions has the largest Canadian oil company ImperialOil. The company is aimed at providing better working conditions for people. Therefore, its main goal is to attract and retain highly qualified personnel as well as to provide opportunities for future growth, training and an enabling working environment. ImperialOil has many deposits which are in regions with difficult working conditions. For example, the company produces oil on the territory of Coldlake, in the northern province Alberta where the air temperature is -50 degrees, in the marine areas of Atlantic Canada [2].

In connection with the above, ImperialOil participates actively in the social and environmental development of regions of presence which is part of the company's corporate social responsibility program. The company considers the main principles of trust, openness and fair treatment. Thus, the company invested about $ 12.1 million in the development of education, technology, and social programs; contributes to employees of the company as well as pensioners in the amount of about 3.2 million US dollars. In relation to stakeholders the company conducts various activities such as meetings with local authorities, involving community groups to expand production at Coldlake, exploring northeastern British Columbia and the Beaufort Sea and maintaining relations with indigenous services and northern communities on Mackenzie etc [3].

Imperial Oil implements the following methods of attracting personnel to work in regions with unfavorable climatic conditions:

1) High level of salary. In Alberta there are very severe climatic conditions, people have to work at a temperature of -50 degrees. However, a skilled worker, a supervisor at an oil refinery or on oil rigs receives about $ 100,000 per year. At the same time, work experience is not required at the beginning of the career [4].

2) Attraction of personnel from other countries. At the moment, the program is launched (including the Internet) which actively invites foreigners to work in Alberta. In this case people get a work visa and in consequence it is easier for them to obtain citizenship in Canada. A number of such programs are the provincial program of Alberta, British Columbia, Manitoba. At the same time, the provinces are ennobled, company builds infrastructure (schools, colleges, houses). Also, there is the possibility of career growth after 2 years of work in the north. There are various agencies that specialize in immigration and help the most profitable way to move people to Canada and get a job [5].

3) Involvement of personnel with little experience. For example, students who have just finished a university can find work in Alberta. They are provided with training, advanced training in the process of work. This is a very good alternative for them: they have the opportunity to get a well-paid job without any special skills and a high level of knowledge.

4) The company ensures high safety of personnel (the rate of injury in the company is 0).

5) Training programs are conducted at local colleges or at the Institute of Northern Alberta, the Technology Institute in Edmonton. The company also conducts career fairs in order to provide feedback and also attract new employees.

Another company that faces the same problem is the Canadian company RioTinto which is the world leader in the production of aluminum for more than 110 years.

Specificity of the company is that its units are located in Australia, Mongolia, Iceland, i.e. in regions with severe climatic conditions. Realizing that people have to face such problem the company's main principle is the care of employees. Rio Tinto pays attention to corporate social responsibility [12].

The company tries to make a positive contribution to partnerships with local communities, stakeholders to maintain and expand its operations, and to improve innovation and technology. Therefore, the company invests huge amounts of money in its employees, offers various types of activities, provides opportunities for career growth and development.

Rio Tinto uses the following methods in order to attract people to work in the company, including working in remote regions and regions with severe climatic conditions.

1) RioTinto takes care of the health of its employees, as it is under attack due to hard work. Therefore, the company is working to create a safe and healthy environment through careful management, strong systems and verification of critical controls. The company's approach is focused on eliminating deaths, disabilities, various occupational diseases, preventing major risks and reducing injuries. In 2015, the company introduced a security management system that helps to eliminate various health

problems among employees. A special team makes checks throughout the year to minimize risks. For example, the company recently implemented the "Listening ear" project which helps people with poor hearing to access the facilities and services in the field of mental health and well-being. The total social investments of the company amounted to 176 million US dollars [13].

2) Rio Tinto attracts indigenous people in its branches. For example, to work in Australia they give people the opportunity of free education, social support, create funds that will help the indigenous people to realize their goals in the future. Company had contracts on 162 million US dollars with natives of Australia in 2017. In fact, 8% of Australia's workforce is working for Rio Tinto.

3) In order to provide comfort to its employees, the company has built about 250 residential properties. Now more than 200 employees live in these houses and rents return to the local economy which guarantees independence to local communities. "This" Housing "helped to turn the local population into a labor force and did not rely on the incoming shift workers. This method is cheaper - the placement of labor at the place of production" - Murray Knivett, general manager of the land management department [14].

4) The company tends to recruit people who just graduated from the institute, giving them at the initial level a high salary, career opportunities.

5) One of the company's divisions is situated in Mongolia where employees have to work in the icy wind, in the desert, in gray dust which is formed from the extraction of bauxite and coal. However, employees say: "Due to high wages only a few of us are ready to say goodbye to this place". The company also invests in the development of the infrastructure of Mongolia. Many residents do not even have water in the house, they live in terrible conditions. Rio Tinto provides people with a comfortable life thereby attracting work in their company. For all these programs: the support of the Mongolian population, the salary for workers in the period from 2010 to 2015, company spent more than 5.4 billion US dollars. One area where Rio Tinto has also had a significant impact is education. In June 2010, the company and the Ministry of Education, Culture and Science of Mongolia signed a Memorandum of Understanding (MoU) for cooperation in the development of the vocational education and training sector. In accordance with the Memorandum of Understanding, Rio Tinto commissioned to invest 126 million dollars (USA) for the implementation of a program aimed at developing the Mongolian labor force and improving the system of technical and vocational training. Through the Memorandum of Understanding, Rio Tinto invested in the construction and improvement of vocational training centers in seven Mongolian cities, supported the training of 1 200 professional teachers and provided scholarships for

hundreds of young Mongolians at national and international universities [15].

Thus, Rio Tinto attracts a large number of staff to work in their company.

The construction company Ledcor which was established in Alberta in 1947 has a great experience in this field. In addition to construction, the company provides services and products for the mining, oil and gas, communications, energy, transport and infrastructure industries.

Ledkor pays great attention to the health and safety of each employee. The company has a special program that provides:

1. Environmental policy, risk assessment and control
2. Work on education and communication
3. Operation of equipment and maintenance methods

Company has about 80 000 projects. Big part of them is in the north of Canada. Due to the project for the deployment of optical fiber in Nunavut, optical fiber and cable infrastructure are supplied to 25 communities. In each of them Ledcor deployed a fiber optic cable to service government agencies, emergency response centers, fisheries, research centers and medical facilities. The construction took place in uncomfortable climatic conditions: most of the territory of Nunavut is the arctic tundra. Having great experience in attracting human capital to work with unfavorable conditions, the company did not encounter any difficulties [19].

One example of the introduction of modern telecommunications services in Canada in the North is the Ledcor project in conjunction with the existing local and long-distance telephone service in North Canada, Northwestel. The project of the Mackenzie Valley fiber link project costs about 84 million US dollars. The implementation of this project faced the challenges faced by major construction projects in the north: limited access to the site, climate issues related to the Mackenzie Valley. The project helped not only to provide more than ten communities in the region with high-speed telecommunications services and modernize the economy in the north but also it created the conditions for companies and individuals could confidently invest in the Northern Opportunities and new jobs despite unfavorable working conditions [21].

The development of the Arctic has a great importance for the Russian Federation. Based on the experience of several major Canadian companies such as Imperial Oil, RioTinto, Ledcor who have economic activities in regions with unfavorable climatic conditions authors identified the following opportunities for companies operating in the Arctic:

- The methods of the Imperial Oil company to attract personnel to work in regions with an unfavorable climate are relevant for the use of leading companies that operate in the Arctic zone of the Russian

Federation. For example JSC Expedition 2 (SC Rosatom); Vorkutalugol JSC; JSC "Arkhangelskgeoldobycha" (OJSC "Lukoil") and others.

Such methods includes:

– high level of salary (according to the company's data, a qualified worker receives an average of about $ 100,000 per year);

– recruitment of personnel from other countries with a social package (work visa which facilitates the acquisition of citizenship in Canada);

– personnel with no experience;

– career fairs in order to provide feedback and also attract new employees [23].

- Corporate social responsibility of the company Imperial Oil aims the social and environmental development of regions of presence. A huge contribution ($ 12 million) is invested in the development of education, technology, contributions for company employees and retirees.
- Rio Tinto pays great attention to the health of its employees as it is under attack due to hard work. So, the company's approach is focused on eliminating deaths, disabilities, various occupational diseases, reducing injuries. For this purpose, a special team has been set up. It performs inspections during the year so that the risks are minimal.
- The company engages indigenous peoples in its branches. According to Rio Tinto, the sum of contracts with indigenous residents in Australia was 162 million US dollars in 2017.
- Ledcor participates in projects of development of the Canadian north (about 80 000 projects). Such projects help not only achieve the goal and provide telecommunications in the northern region of Canada but also create conditions for human capital [23].

Summing up, it can be concluded that companies operating in the Arctic zone of the Russian Federation can adopt the most successful experience of involving personnel in regions with unfavorable climate from their foreign counterparts. The most interesting methods of attracting human resources include the following: the admission of young specialists without work experience for the purpose of their further education, the construction of houses for the permanent residence of workers with the transfer of such houses to the ownership of municipalities, the attraction of foreign labor through an expanded social package and further simplified acquisition of citizenship.

The research is carried out within the framework of the scientific project "Social and Economic Mechanism for Attracting Human Resources to the Arctic Region of the Russian Federation" and implemented through a grant from the Russian Science Foundation (Project No. 17-78-20145) at the St. Petersburg Mining University.

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PROBLEMS OF ECOLOGICAL AND TECHNOGENIC SAFETY IN THE ARCTIC REGION

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CHISTIAKOV A.
"EthnoExpert", Head of R&D department, PhD,
Russia, St. Petersburg, 199034, Tuchkov per., 5-9;
e-mail: Anton.Chistyakov@ethnoexpert.com

RYAZANTSEVA D.
"EthnoExpert", senior specialist,
Russia, St. Petersburg, 199034, Tuchkov per., 5-9;
e-mail: Darya.Ryazantseva@ethnoexpert.com

ECOSYSTEM SERVICES IN THE FAR NORTH REGIONS (FROM THE EXPERIENCE OF "ETHNOEXPERT")

Abstract. *The article is based on ecosystem service material research performed by "EthnoExpert". This analysis determines the benefits for the population and enterprises that the use of ecosystems provides. The research addresses the industrial development project implementation in the Murmansk oblast, the Nenets and the Yamalo-Nenets Autonomous Okrug. Ecosystem services were the focus in connection with preserving traditional nature management of indigenous small-numbered peoples of the North. There were attempts to solve the problem of the industrial project negative impact on ecosystem services by paying subsidies to the local population. Sadly, they only had a short-term effect. It is possible to reach a positive result by coming to terms with regional and municipal administrations and developing plans for sustainable territory development. "EthnoExpert's" experience showed that assessing ecosystem services and considering the obtained data while implementing an industrial project, minimizes the negative impact on the social and environmental spheres. At the same time, there is no significant damage to the economic efficiency of the project.*
Keywords: *ecosystem services, traditional nature management, sustainable development, industrial development, reindeer husbandry.*

The study of ecosystem services (i.e. benefits to the population and enterprises resulting from the use of ecosystems) is gradually becoming an increasingly important component in implementing the sustainable territory development concept. Considering ecosystem services while making project decisions gives plenty of rope for a comprehensive assessment of the proposed activity consequences, eliminating or minimizing the negative environmental impacts. Existing methods of calculating the natural system benefits facilitate integrating the ecosystem approach into the economic area [1].

Ecosystem services include material and nonmaterial benefits nature provides. Researchers use different ecosystem service classifications, the most widespread thereof based on a functional attribute. It subdivides into provisioning, regulating, cultural and supporting services. The first three groups of ecosystem services determine direct influence on human welfare. Provisioning services include, for example, products of marine and

freshwater ecosystems, wood production, hunting and cropping products. Services on climate, atmosphere, soil, water objects regulations, water cleaning, environment cleaning, etc. relate to regulating services. Cultural services include functions of natural systems, which satisfy aesthetic, spiritual, educational and scientific needs of people. Supporting services include soil-forming, circulation of water and nutrients, primary production creation etc. [2, p. VI].

"EthnoExpert" has been engaged in consulting and research activities In Russia for ten years, having implemented a number of projects in various regions of the Far North (Murmansk oblast, Arkhangelsk region, Nenets and Yamalo-Nenets Autonomous Okrug). The results of the company's activities help analyze various economic practices for accounting and ensuring the quantity and quality of ecosystem services.

There are industrial projects, which often go about without the necessary ecosystem service study, thereby ignoring their adequate assessment and significantly complicating the implementation of an integrated ecosystem approach. The concept of the ecosystem approach implies a strategy for integrated management of land, water and living resources, which stimulates their conservation and sustainable use on an equitable basis [3]. The fragile and vulnerable nature of the Arctic makes the ecosystem approach the most important condition for preserving the complex functions of natural and social systems during the implementation of industrial projects. The problem is also the lack of scientific research on the ecosystem services of the Arctic zone, although there are certainly a few examples of such works [4]. The lack of a scientific description of the different types of services of Arctic ecosystems tends decision making difficult and can have negative consequences for the region.

"EthnoExpert" commenced studying the problem of ecosystem services in 2008 as part of the Fedorovsky deposit development project in the Lovozero region of the Murmansk oblast. There are deposits of platinoids in the territory of Fedorova-Pana tundras, which a large mining company "Barrick Gold Corporation" was interested in. It initiated the search, evaluation and exploration work [5, p. 13]. "EthnoExpert" specialists assessed the project's impact on providing, regulating and cultural ecosystem services and proposed measures to reduce the negative impact on them.

The main providing ecosystem service for traditional nature management on this territory are reindeer pastures. The construction of industrial facilities and communication routes could lead to the annihilation of some deer pastures or a decrease in their capacity. An indirect negative consequence of industrial activity leading to the loss of ecosystems services is littering deer pastures. For example, broken glass scattered near roads and winter trails injures deer legs and provokes diseases leading to death.

Poaching significantly decreases the number of deer population: road construction improves access to hunters in the deer grazing territory.

In order to maintain proper quality of ecosystem services, project participants have to build a cut-off fence to prevent reindeer from going to the potentially dangerous territory. Prohibiting hunting throughout the territory did not meet the principle of the ecosystem approach and was not adopted. Since many locals live off hunting, this decision could have a negative impact on them. "Barrick Gold Corporation" also included cleaning of debris adjacent to pasture areas in the list of measures for reclamation.

“EthnoExpert” specialists took into account that background damage from the construction of industrial facilities can have an impact on regulating ecosystem services: natural regulation of water, air, soil water quality, etc. The appearance of new fishing bases and other recreational facilities on lakes and rivers creates an additional burden on the environment, and therefore negatively affects overall biological processes in the ecosystem.

There was no significant impact on regulatory services during the implementation of the EIA procedure due to the compact disposition of industrial facilities. Nevertheless, the Company planned to monitor the ecosystem and during the operation of the facility.

“EthnoExpert” specialists assessed possible changes in the ethno-cultural environment ambiguously. On the one hand, industrial activity entails the social and economic development of the district and the improvement of the population’s quality of life. On the other hand, it radically changes the traditional way of life of the indigenous small peoples originally living in the Far North.

The impact on cultural ecosystem services of the territory is almost impossible to quantify. Therefore, it is usual practice among subsurface users to develop a plan for the sustainable development of certain territory’s indigenous population. These were the following main points of the plan in the Fedorovskoye field case:

- Rational and effective use of land and mineral resources in the interests of industrial company and the indigenous population development;
- Creating conditions for sustainable development of traditional branches of economy, life and culture of indigenous peoples;
- Recognition and preservation of territories (areas) of traditional nature management, providing life support for indigenous people within the framework of the feeding landscape.

In 2009, “EthnoExpert” specialists took part in the development and implementation of a strategy and plan for integrated ecosystem management on Kolguev Island, Nenets Autonomous Okrug (NAO). They carried out a study within the framework of an integrated project supported

by the Global Environment Facility (GEF) and initiated by the Arctic Council's Arctic Flora and Fauna Working Group (CAFF), UNEP / GRID-Arendal and the Russian Federation. In addition to the Kolguev Island, the project worked at two more sites: in the lower reaches of Kolyma River in Sakha Republic/Yakutia and Beringovsky District in the Chukotka Autonomous Okrug (ChAO).

The territory of the island is characterized by a high density of nesting waterfowl in the Barents region and a unique population of reindeer (local reindeer meat is very high quality). At the same time, there was a slight excess of the permissible load on pastures (grazing around 8500 deer). The population of the island is only 450 people. Mostly these are Nenets, engaged in traditional activities - reindeer herding, hunting and fishing. The occupation of the local inhabitants by the hunting of birds - the greater white-fronted goose, the taiga bean goose, the barnacle goose, and the collection of eggs (although the collection of eggs of wild birds is prohibited in the Russian Federation) increased the burden on the ecosystem. The problem was the environmental disruption because of oil production, which could subsequently lead to the loss of wetlands and nesting places for waterfowl, the loss of deer pastures and traditional wildlife management by the local population. The survey showed the need for rational use of ecosystem services. To achieve this goal, the organizers of the project trained local people to smoke and dry-cure reindeer meat and process deerskins. Hereafter, they brought the trainees to the island and gave the community special equipment. [6, p. 5-6, 15-17] These events aimed at changing the marketing strategy. With successful organization of product processing and marketing, reindeer herders would receive more income from the available deer population, which would prevent further increase of the pasture load.

Another project, which took into account the role of ecosystem services, took place in 2012 during the social and environmental research in the zone of the East Tolotinsky licensed area (Nenets Autonomous Okrug). “EthnoExpert” specialists studied the probable damage to the economy and economic potential of the local population territory; social risks associated with changing living conditions of the licensed area people; risks associated with changing the ethno-cultural environment of the local community (Nenets, Komi). The company developed a compensation strategy, including procedures for payment evaluation and implementation to compensate for the damage to ecosystem services. Moreover, in order to interact with the local community most productively, it established a cooperation program (promoting socio-economic development of the indigenous community) consisting of program documents and multilateral agreements.

Studies of the processes that take place in the region proved industrial companies providing the indigenous population with charitable

assistance ineffective. Subsoil user companies are on the way to signing cooperation agreements with regional and municipal administrations, an integral part of which focuses on the issues of traditional nature management of indigenous peoples. These companies introduce coordinator positions or create structures that are obliged to organize interaction with the local population.

For example, "SK Rusvietpetro, Ltd." executed a cooperation agreement with the administration of the Nenets Autonomous Okrug in 2009, under which the total amount of the company's participation in the social and economic development of the region amounted to 185.6 million rubles. These funds were used to build socially important facilities in the villages (a hospital and a bath in the village of Khorey-Ver and a kindergarten in the village of Bugrino on Kolguev Island), to finance meat processing enterprise modernization in order to improve the efficiency of reindeer husbandry [7].

Later, the accumulated experience was used by “EthnoExpert” to create the "Development plan for the Yamal district of the Yamal Nenets Autonomous Okrug (2014-2018)". It was prepared and implemented in connection with the industrial development of the South Tambey gas condensate field on the Yamal peninsula. The Yamal LNG project unites the Russian gas company Novatek, French Total, the Chinese National Oil and Gas Corporation, and the Silk Road Fund. It provides for the extraction, liquefaction and supply of natural gas with a capacity of about 16.5 million tons per year. In connection with its implementation, project members agreed to build a transport infrastructure including the seaport and Sabetta airport.

According to the plan, in order to preserve and develop the ecosystem services provided, project stakeholders organized the process of revegetation for the lands that were temporarily in use during the construction phase, as well as the lands that were destroyed prior to the start of Yamal LNG activities. An important direction of work was the development of infrastructure and removal of obstacles on the reindeer herd migration routes. With the aim of facilitating transport accessibility for reindeer herders and thus minimizing the risks associated with traffic through the project area, every year the company constructs snowmobile and sledge trails through the territory of the South Tambey licensed area.

In accordance with the requirements, the winter road is equipped with special marks with strips of light-reflecting tape. The planning of winter track routs takes into account the opinion of reindeer herders and progresses in direct contact with the administration. In addition, eight new reindeer transition tracks operated by November 2016.

The following steps facilitated maintaining traditional nature management and ecosystem services of the territory: organizing air transportation and helicopter flights for the tundra population; providing of

reindeer herders with fuelwood; constructing facilities for processing traditional farm products; developing trading stations on the Yamal Peninsula.

Cultural ecosystem services were a subject of particular attention. Researchers identified four cemeteries, seven sacred and memorable places associated with the culture of the indigenous peoples of the North on the territory of the licensed area and the ten-kilometer security zone. The survey showed that all recorded places are functioning objects of the Nenets culture. The plan included measures to monitor the status of these facilities.

For industrial companies implementing projects in the regions of the Far North, attempts to solve the problem of the impact of industrial projects by paying subsidies to the local population are typical. However, subsidies do not always improve the situation in traditional nature management. On the contrary, sometimes they create new problems. The Yamal-Nenets Okrug budget directed subsidies to support reindeer husbandry depending on the livestock of the reindeer herd, the weight of sold meat, as well as subsidies for compensating transportation costs [8, p. 65]. The growth of the deer population on the Yamal peninsula has demonstrated inefficiency and even damage subsidies based on counting the number of reindeer bring. The spread of this type of subsidies led to an increase in the burden on pastures, the disturbance of vegetation cover and, consequently, the disruption of ecosystem services. Currently, the county administration is working to develop more effective venison processing and production, food industry development, market expansion. The authorities changed the procedure for turning in stag-deer to paying the money upon delivery, and not upon sale.

Industrial companies do not always take into account the hidden functions inherent to natural systems, as well as the various ecosystem services that the territory produces. As per example of the Arctic region, such functions are especially distinguished for tundra bogs located on permafrost soils: they are rich in carbon, maintain global biodiversity, regulate the climate, etc. Violating thereof may leave a huge impact on the climate of the planet because of carbon loss and natural gas emission. Describing this category of ecosystem services and considering it in project decision-making is important for the fragile ecosystem of the Arctic region and its sustainable development.

Assessing the environmental impact of the project does not always reflect the recreational or cultural functions of the Arctic ecosystems. Ecosystem approach implies obligatory interaction with all project stakeholders who may affect its implementation. With such activities, it is possible to take into account the cultural specificity of local residents and to develop optimal solutions that do not entail negative consequences.

Environmental policies carried out by the authorities and industrial companies often involve creating Special Protected Natural Areas for compensatory measures, in view of the inevitable disruption of the territory's ecosystems and ecosystem services. However, in the Arctic, such Protected Areas have a great impact on the social sphere: they limit the movement of indigenous peoples and disrupt the paths of grazing deer herds. Such situations arise because of the primarily incorrect assessment of the ecosystem services of the territory, and can subsequently lead to serious disruptions in the whole ecosystem.

Russia's legislation system does not regulate ecosystem service assessment, thus it is not a prerequisite for project implementation. However, such research contributes to making strategically correct management decisions. "EthnoExpert's" experience showed that assessing ecosystem services and considering the obtained data in industrial project implementation minimizes the negative impact on the social and environmental spheres without significant damage to the project's economic efficiency.

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PROBLEMS AND PROSPECTS OF ARCTIC ECONOMIC DEVELOPMENT

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SAVELEVA A.
Peter the Great St.-Petersburg Polytechnic University, post-graduate student,
Russia, St. Petersburg, 195251, Politekhnicheskaya ul., 29;
e-mail: 6705454@mail.ru

SNETKOV V.
Peter the Great St.-Petersburg Polytechnic University,
Doctor of Political Science, Professor,
Russia, St. Petersburg, 195251, Politekhnicheskaya ul., 29;
e-mail: snetkov_vn@spbstu.ru

THE LEGAL ASPECT OF INVESTMENT POLICY OF RUSSIA IN THE ARCTIC

Abstract. *Modern geopolitical realities make Russia especially actively develop the economy of the country, thus creating an opportunity for relatively independent functioning. In such circumstances, the Arctic becomes one of the significant interests for investment by the Russian Federation, as it is a region with rich natural resources. Of course, Russia's Arctic zone is not the only region where valuable natural resources exist, but development in the Arctic is still at its early stage. Nevertheless, any activity in this region (scientific, economic, environmental, etc.) has its own characteristics, which is due to climatic and other aspects, requiring much more funding than similar activities in other regions of Russia. But even with adequate funding, we should not forget the environmental dimension, which is of particular importance in the context of the global environmental crisis. That is why it is necessary to create a system of legal norms to invest in the Arctic zone of Russia, in which the legislator could regulate the efficiency and safety of the economic activities carried out in the Arctic. The article deals with the main features of Russia's investment policy in the Arctic, the analysis of existing legal problems in this area.*

Keywords: *Law, legal consciousness, legal education, legal indoctrination, environmental component of legal consciousness, legal positivism, legal regulation of international relations in the Arctic, Russia's interests in the Arctic, investment activity.*

Russia's interests in the Arctic are primarily due to the problem of the rapid depletion of hydrocarbon reserves. The special conditions of the Arctic zone make it possible to draw conclusions about the key features of any activity on its territory. Extreme climate (low temperatures, strong winds, ice cover in the Arctic seas), low population density, high distance from the main industrial centers, low stability of environmental systems can be attributed to factors that affect the features of economic and other activities in the Arctic. First of all, the climate and the scale of the Arctic dictate the increased economic cost of activities carried out on its territory. Often, this may even require the introduction of special innovative mechanisms and technologies, which indirectly causes the need for monetary investments in scientific activities.

Talking about the features of the investment market in the Arctic, the main among them is that most of the investments are directed to the processing of raw materials, subsoil, sea and pipeline transport and the extraction of biological water resources. Thus, the key investment object in the Arctic zone (subsoil) is owned by the state, which inevitably entails special legal regulation. This inevitably implies other features of investment activity, such as the predominance of public investment; the development of the leasing market and the credit system of Russia, which ultimately allows to attract more money to the region; the special legal status of corporations with state participation; high return on investment, which, in turn, increases competition (both nationally and internationally) in the framework of investment activities. The forms of state regulation of investment activity in the Arctic include: improvement of budget and tax policy, legal protection of investors' interests, establishment of preferential regimes for investors in the use of natural resources and land, development of financial mechanisms and instruments, improvement of Antimonopoly legislation, state examination of investment projects, granting concessions to investors, as well as Russia's cooperation at the international level in attracting investors [1].

Within the framework of any investment activity, the issue of investment security of the project is acute. Of course, any economic activity is associated with risk, but the features of the Arctic zone make it necessary to carefully consider those conditions, the creation of which will help to raise the level of investment security. These conditions include: "effective satisfaction of social needs, provided that the socio-political and military stability of the state is preserved; technological independence and invulnerability of the country in the face of external and internal threats and influences; protection of national interests in the domestic and foreign markets, regardless of changes in the tactical goals of the state and the corresponding transformation of internal and external threats and influences, the progressive development of the individual, society and the state"[2]. The creation of such conditions is possible only by introducing into the system of law a whole range of legal rules to ensure them. To date, ensuring such conditions is a priority activity of the state, which is reflected in the "Strategy for the Development of the Arctic Zone of the Russian Federation and National Security up to 2020", approved by the President of Russia [3].

Thus, it can be concluded that today favorable conditions have been created for investors (both for foreign and compatriots) in the Arctic zone, which is the reason for the active development of the region.

Nevertheless, despite the importance of Arctic exploration, one should not forget the main (in the context of modern realities) aspect of economic activity – environmental. The global ecological crisis demands from the whole world community minimization of wastes and their

qualitative change, as the main source of pollution of the environment is waste activity of the person [4]. This minimization is always associated with a decrease in profitability, as it requires cash investments from the entrepreneur, which is particularly relevant in the Arctic zone, as it can lead to ignoring the legal norms in this area, taking into account the climatic features and the scale of the Arctic. Because of the remoteness, extreme climatic conditions, low population density and the state's assistance in the development of the region, the entrepreneur may have the impression that the Supervisory activities of public authorities will be less active than in other regions of the country. Unfortunately, this may turn out to be partly true, since under the above-mentioned conditions it is really much easier to hide the traces of illegal activities both from the population and from Supervisory authorities. In such circumstances, an increase in the number of investors should inevitably lead to tighter control over the environmental safety of the region.

However even establishment of the most severe control of observance of norms on ecological safety can't provide a guarantee against illegal actions from unfair businessmen. The only way out in this situation will be the strengthening of the role of the environmental component of the legal consciousness of investors, which should be expressed in environmental education, consisting of environmental education and environmental education[5]. Therefore, first of all, the legislator needs to pay attention to the creation of a complex of legal norms to improve the situation in this matter, primarily through basic training in educational institutions, as well as the creation of specialized educational institutions, graduates of which will be able to have a deep knowledge of environmental conservation in various fields (economic, engineering, scientific, legal, etc.). Peter the Great St.-Petersburg Polytechnic University responded to this social order one of the first. On the basis of the Higher School of Jurisprudence and Forensic Technical Examination students are educated on the most relevant today profile "Legal regulation in the field of energy and environmental management", which allows graduates to form a high level of environmental component of legal consciousness and to gain the experience of its influence in a specific area.

The creation of favorable conditions for investors is certainly important for attracting investments in the Arctic zone, as the development of the Arctic will improve Russia's economic development. The legislator is actively working on this issue, which is reflected in a number of legal acts. Also, the Russian Federation is actively attracting foreign investors, which allows for a more dynamic development of the region. However, today the primary legal aspect of Russia's investment activity in the Arctic should be ensuring environmental safety, which, first of all, is possible by increasing the level of environmental education of the population, rather than strengthening supervision over compliance with legal norms in the

field of environmental safety, which should also be strengthened in view of the above-mentioned features of the region. The prospect of profit from investments allows to ensure the strengthening of the role of environmental aspects in the legal regulation, therefore, this investment activity needs to be a balance between economic objectives and environmental needs that it is able to provide only the state through the establishment of legal norms aimed at toughening control in sphere of environmental protection, as well as by creating valuable specialists in various fields, aimed particularly at the resolution of environmental issues.

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ALLAHVERDOVA Alla
General Director of LLC "Ecoproject"
Russia, St. Petersburg, 194354, Khudozhnikov av. 12;
e-mail: ecoproekt-nadym@mail.ru

THE GOLD-BEARING QUARTZ SANDS IN THE ARCTIC REGION OF YAMAL-NENETS AUTONOMOUS DISTRICT

Abstract*. Many of the areas in which gold occurs or may occur In Russia, almost not affected by the study completely and this, in a particular case, will be reflected in this article. Unfortunately, in recent years many programs of perspective study of territories, searches and investigation of firm minerals have been curtailed. Perhaps the prospects of development of raw materials base of the polar Urals is associated with rossypnye sites (districts), Yamalo-Nenets Autonomous district , which are located in the lowland continuation of the(up to 200-300km)of the Eastern slope of the Urals. It is dominated by shallow alluvial placers in the valleys of the lower order(Nadymsky, Purovsky, Tazovskaya lowland). According to the selected representative samples in the area of prospecting, as a result of mineralogical analysis by experts TsNIGRI made the following conclusions:*
1. Gold in the samples is typical of the upper Pleistocene alluvial deposits of the platform.
2. Gold is easily extracted with the help of modern enrichment devices.
3. All samples contain signs of fine (0.5-0.25 mm) and fine gold (0.05-0.1 mm) and further prospecting is necessary to determine the possible industrial value.
The obtained, as a result of testing quartz Sands, the gold content is low, and the found gold refers to small and thin, but with a huge mass represented by quartz Sands, sometimes lying for tens of square kilometers, according to approximate calculations, give absolutely significant reserves, reaching many hundreds of tons.
The author proposes, for the purpose of determining the gold mineralization of quartz sand and underlying permafrost soils, carrying out of search works with a short drilling, with the obligatory selection of core river valleys area of study.
With the obvious gold mineralization of the bedrock, located on the Eastern slope of the Urals, the actual study of placer gold within the specified areas to which, there is reason to assume dedicated Stalinist railway (construction №501-503).
Keywords*: Gold, placers, quartz Sands, permafrost, the Arctic area of the Yamal-Nenets Autonomous district, building No. 501-503, Nadym.*

In the lithosphere, the fraction of 0.9-0.01 mm of gold accounts for about 75% and the main reserves of prospecting, exploration and production of the near future are undoubtedly associated with small and thin gold [5, 11]. In the world, its associated extraction from sand deposits and sand-gravel mixtures became an additional source of extraction of precious metals. The study area is located in the tundra zone, which is a wetland plain with many rivers and lakes, and belongs to the Nadym - Purov geocryological region, a zone of intermittent distribution of permafrost rocks. The role of permafrost rocks of Nadym and Purovsky

districts in the formation of placer deposits is very significant and this issue is currently poorly studied.

Gold deposits of the Northern Urals at the present stage is represented mainly gold-quartz type deposits, and this, presumably, linked to such a powerful extent quartz sand, sometimes ferruginous, in Nadymsky, Purovsky, Tazovsky and other districts of the YNAO. And at the same time, quartz placers of the specified areas have no visible connection with an indigenous source and are formed, probably, at the expense of intermediate collectors. Ferruginous quartz Sands of the specified areas was a sign of the search for the presence of gold. Together with gold in these quartz Sands can be platinum, kannamoochi, currently in small volumes from the quarries of quartz sand (used for construction purposes), these areas are mined carnelian.

In 1996, with the support of the municipality of Nadym, the author selected two representative samples of quartz sand a few kilometers from the town of Nadym (Nadym district of YANAO), which were sent to TsNIGRI for mineralogical analysis in order to determine the gold content in samples. The results of the analysis showed the presence of thin gold with a gold content of -0.176 g/t in the sample№1 and in the sample№2-0,247 g / t Conditions provided that the gold content in the cubic meter of rock mass should be at least 0.11 grams. Below this line, field development is considered unprofitable. TsNIGRI found that free gold particles are characterized by the size of hundreds to tenths of a mm, as well as the fact that their extraction is possible in gravity enrichment devices, with the highest extraction rates (up to 55%) obtained in the centrifugal apparatus – concentrator type "Nelson". Experts TsNIGRI, conducted mineralogical analysis recommended that, at a time, hold in the Nadym area of further exploration research. However, there was a financial crisis in 1998 and, due to lack of funds, further research was not possible.[1]. In 2000 - 01godah, at the request of the Yamal mining company, the author was given the opportunity to test 96 samples in waste and operating sand pits, which also showed the presence of gold [1]. According to the results of the analysis the following conclusions were made:

1. Gold in the samples is typical of the upper Pleistocene alluvial deposits of the platform.

2. Gold is easily extracted with the help of modern enrichment devices.

3. All samples contain signs of fine (0.5-0.25 mm) and fine gold (0.05-0.1 mm) and further prospecting is necessary to determine the possible industrial value.

In 2002, also at the request of the author, together with employees of the Yamal mining company, was conducted heavy mineral concentrate sampling on the river Pangody, in the concentrates was discovered Goldberry, covered with a thin film of iron oxides. It is known that if the

gold has a dark-brown or black "shirt" (a film of hydroxides) -this is a direct sign in search of large gold in the vicinity of New Urengoy on large areas and long quartz Sands are located, which are one geological structure with Nadym. The necessary search and assessment work on promising areas in Nadym, Purovsky districts were not carried out further all for the same reason-lack of funding.

Obtained, as a result of testing quartz Sands, the gold content is low, and gold particles are extremely fine, but with a huge mass represented by quartz Sands, sometimes lying on dozens of square kilometers, according to approximate calculations give absolute significant reserves, reaching many hundreds of tons.

On the territory of Nadym district, starting with the period of development of deposits of hydrocarbonic raw materials, and our days were many works in engineering, surveying nature, and geological with the purpose of the evaluation and exploration of oil and gas, and building materials. However, in these areas a search operation with the purpose of evaluating the gold mineralization, the PT potential, etc during the specified period was not carried out. During the period of development of oil and gas fields in the territory of YANAO hundreds of PGS and peat deposits were developed and partially recultivated. Short-range wells (up to 20 m) from the bottom of quarries with core testing could provide valuable information on the content of precious metals in quartz Sands and permafrost.

In the territory of YANAO the most favorable places of accumulation of gold-containing placers of quartz Sands are-Nadym, Purovsky, Taz lowlands. Sartan glaciation has left places in these areas boulders and gravel and they are of great interest in the search for gold deposits. The specific areas proposed for search and assessment are as indicated above. in the territory of Nadym, Purovsky districts, in places of considerable distribution of quartz Sands in vicinities of Nadym, settlement Pangody, Novy Urengoy, etc.

Presumably, the gold-bearing quartz Sands Nadymsky, Purovsky district, Yamal-Nenets Autonomous district, formed by water and are horizontal, sometimes very slightly oblique, elongated, ribbon-like deposits, which are located everywhere. The sizes of deposits of quartz sand of Nadym, Purovsky districts make from tens meters to tens kilometers. The origin of such a powerful distribution of quartz Sands due to the destruction in Cenozoic-Mesozoic periods of the Ancient Urals. The indigenous sources of the polar Urals placers have not yet been studied sufficiently. Deep-lying placers are characterized by a complex, multi-layer structure, with a gold content, which is formed from particles that have passed the eluvial and deluvial stages of formation and have experienced repeated re-application in the course of the onset and retreat of the sea, the destruction of the Ancient Urals. To date, most researchers dealing with

scattering in other areas, proceed from the premise of the possibility of transfer of gold particles by water flow and consider these particles as one of the components of the heavy fraction in alluvium [5, 9, 12]. In the case of longitudinal displacement of the sediment, the tendency for gold particles to penetrate rapidly into the lower part of the transported layer and lag behind the alluvial particles represented by light minerals is characteristic.[6,7,8]. Despite this, there are common patterns of transport, accumulation and differentiation of sediments, including heavy fraction, which is confirmed by numerous studies of the relationship of the structure of placers with the dynamics of the flow. One of the little studied questions of scattering is the question of the range of movement and features of the formation of thin (≤0.1 mm) and small (0.1-0.5 mm) gold [2]. The possibility of formation of placers from fine and thin gold and their accumulation contributes to a number of conditions-the morphology of particles, small slopes of the longitudinal profile [2]. The morphology of the valleys with a long history of formation is a " function not only of the interaction of various factors of the natural environment, but also of its historical development and is the result of changes that the river experienced in various stages of evolution" [9]. To trace the evolution of the paleo-channels and associated placers during the long geological periods of the valleys formation is quite a difficult task.

Behavior in placers of very fine gold is such that, in connection with hydrophobic properties of its surface, small scales become «floating» and in huge quantities is transferred by water streams, practically on unlimited distances.

The maximum dimensions of flat floating gold particles reach 0.1 mm) the minimum close to colloidal. A certain amount of gold may linger on the bottom of the watercourses in the clay substance. Placers of the studied areas were formed in different climatic and geological-geomorphological conditions and are represented not only by quartz Sands, but also by permafrost soils, which in the considered areas are unevenly located from a depth of 6m or more.

According to the author's observations, the smallest Golden scales are collected along the banks near the surface of river quartz sand according to some separate samples of concentrate testing. Gold pieces in the form of small scales settle at the weakest current, very far from the main placers and despite the possible General source of education, between indigenous and placer formations lies a long distance, and it is not possible to trace the migration of gold from the indigenous occurrence. However, a characteristic feature of alluvial placers is that the concentration of heavy minerals increases to the bed of the valley. Alluvial sedimentation and the subsequent formation of placer deposits in the recent geological past were often complicated by glaciers, overlapping valley powerful boulder-boulder-sandy-clay deposits – moraines that occur in the upper river

Pangody and on the hills near the town of Nadym (YANAO). Fluvioglacial deposits, which may contain high concentrations of gold, are associated with moraine erosion after glaciers melting.

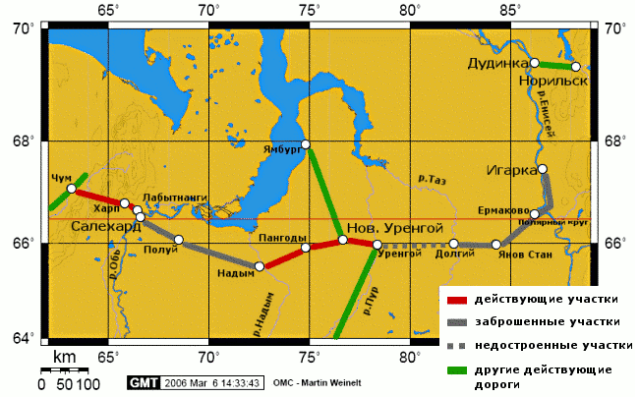
For carrying out prospecting works, for the purpose of determination of gold content of perennial soils, detailed drilling with selection of a core in valleys of the rivers of areas of research is required. A search operation is preferable to conduct a small-diameter wells, because of the geological conditions of the study area little studied (power and loose permafrost sediments, their alonistioti, relief, raft, etc.). First of all, it is necessary to select and cut the possible placer gold deposits in the medium-flow quartz Sands by search and survey works. Search works must necessarily completely cross all elements of the relief of the valleys of the studied rivers-Nadym, Pangody, PUR, Taz). The Deposit of placer gold in the study areas can be detected at the border of permafrost soils and developed by open-pit industrial enterprises with natural and artificial layer-by-layer defrost to a depth of 25-30 m and underground method to a depth of 50 m. Presently developed equipment allows you to remove virtually any gold, but you must first determine the scattering parameters, and then use the right equipment, the Development of permafrost soils, with the original autopsy of overburden (peat), produced with their advanced defrost in the summer (natural layering, the needle gidriatika) or loosening bulldozers-rippers. Development of placers earthmoving machinery is made at a depth of up to 50 m.

Quartz sand areas of the YANAO are also valuable minerals. Quartz sand is an important component in the production of glass, earthenware and porcelain. It is also necessary for the manufacture of paints and filter elements and is used in many other industries.

The construction of the railway along the Northern Arctic circle Salekhard - Igarka, also known as the "dead road", which can be considered one of the most ambitious projects of the Gulag, is connected with the gold content of these territories [3, 4]. The need for the construction of this railway, perhaps, was caused by two reasons: economic - development of the Northern territory, rich in minerals (on the assumption of the author-it is the gold content of the territory) and military-strategic - with the protection of the Arctic coast. This construction may have been timed to coincide with the gold and placer belt stretching from the Eastern slope of the modern Urals to Igarka and more. Construction site No. 501 began with the centre in Salekhard, and No. 503 from Igarka (management had rooms, because the building was classified). The construction of the railway was carried out to meet each other (for the purposes of secrecy of this facility Northern railway (construction site No. 501 and No. 503), the Soviet leadership organized in 1947. By assumption of the author, the railway crossed possibly studied and prepared for further geological exploration earlier, placer gold deposits. Search works the area was studied

even before the great Patriotic War, since even during the war on the territory of the future construction carried out survey research

Despite all the well-known extremes resorted to by the head of the USSR Stalin, he became the first politician to address the issue of the search for minerals in the Arctic region. Important is the fact that he was serving a link in the years 1914-17 in the village of Kureyka (170 km South of Igarka) Turukhansk region, rich in gold ore and placer deposits of gold, discovered recently. The construction of the road to Igarka would make it possible to build a highway to the Bering Strait, and would ensure transport accessibility of the entire Arctic North.



Picture 3. Scheme of "Northern latitudinal railway". Source: http://www.skyscrapercity.com/showthread.php?p=144173155

However, immediately after the leader's death in 1953, the road was urgent manner dismantled and virtually destroyed, although the meeting of two of the buildings were hundreds of miles and the destruction of the railway there has also been no small means, almost equivalent to the construction. It remains only to assume that:

1. Construction of 501, 503 construction was due to the intention of the country's leadership at the time to develop gold deposits and further export of ore for further enrichment in the direction of the Ural gold mines.

2. After Stalin's death, came to power, the Soviet Government did not appreciate the seriousness of the project and very quickly destroyed the railroad, although it could serve to this day

The author conducted a review of major stations buildings № 501-503 to the gold-bearing territories associated to the stations. Of the 29 construction stations № № 501-503, 11 of the following stations are timed to coincide with gold deposits and occurrences:

1) Station number 1. Eletskaya station, KOMI Republic, 2) Station number 2. St. Sobj, 3) Station №3. art. Harp, 4) Station number 4.article. Obskaya, 5) Station number 5, article Nadym. G. Nadym. As described above, in 1996 the author were selected two representative samples in the vicinity of Nadym and the obtained results give grounds to conclude that further studies are needed to search for and study of gold mineralization of quartz sand in the Nadym district,6) Station No. 6.article Pangody. The results of the dressing test gave encouraging results, 7) Station №7, 8 St Turukhan-Yanov Stan, Turukhan river. Yanov Stan-

village on the river Turukhan, 8) Station № 9-11, the Yenisei river, Yenisei St., city of Igarka. Yenisei gold ore district is located on the right, the Bank of the river Of the Yenisei river and is a huge area.

At the end of October 2017, at the Federal level, a decision was made to build the Nadym – Salekhard railway. The project of the Great Northern railway, which was dreamed of before the revolution, may still be implemented and will at the same time be one of the best tourist routes of world importance in the Arctic zone. The historical tourist route may be the "Museum" in the open air with the exhibits of the construction № 501-503, where the remains of former camps, locomotives, destroyed road, bridges are still preserved.

In recent years, demand for gold has increased significantly in the global market, due to a significant reduction in the world's gold reserves, even in remote areas of the Arctic, which is a region of special geostrategic interests of many States. Russia has long engaged in the search for alluvial gold and, using a system of subsoil licensing, in fact, "cleans" loose depleted resource base, residual production capabilities of which are not associated with Tselikov deposits and technogenic placers [13]. GRR production in Nadym, Purovsky districts at the expense of Federal funds will make it possible to prepare a vast territory for further mining operations.

As a result promouterskih works and evaluate historical information (buildings 501, 503 buildings) can make a specific conclusion that the Nadym, PUR and other regions of Yamal are promising in the search for placer deposits of gold, besides the vast expanse of quartz sand is interesting as a material in many industries, opportunities for creating new enterprises solving the problems of the Northern single-industry towns

The Russian Arctic has significant prospects for the development of the mineral resource base of gold placers not only in Taimyr, the Arctic Islands and the shelf of Chukotka, Yakutia, but also in some areas of the YANAO, which is part of the Arctic zone [10]. Mineral resource base of small and fine gold In Russia may become the Arctic regions of Yamal-Nenets Autonomous district. The further development of SMEs of gold will depend on the investment and efficiency of GRR at the expense of the Federal budget in the early search stages associated with the risk of a negative result and at the expense of subsoil users-at the stage of obtaining an increase in reserves

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MILITARY SECURITY AND STRATEGIC STABILITY IN THE ARCTIC

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ZHURAVEL Valery
Institute of Europe RAS, Head of the Center for Arctic studies, leading fellow, candidate of sciences, docent,
Russia, Moscow, 125009, Mokhovaya St, 11-3;
e-mail: zhvalery@mail.ru

THE RUSSIAN ARMY AND THE BORDER GUARD SERVICE OF THE RUSSIAN FEDERAL SECURITY SERVICE IN THE ARCTIC: COUNTERING TERRORISM

Abstract. *The article assesses the military-political and terrorist situation in the Arctic. It is noted that in the Arctic region Russia will have to deal not only with individual countries (US, Canada, Norway and Denmark), but also with a united front of NATO states, as well as with modern challenges and security threats (illegal migration, piracy, drug trafficking, terrorism, etc.). The author analyses the activities undertaken in the Arctic by the Ministry of defence of the Russian Federation and the Border Service of the Federal Security Service of the Russian Federation to strengthen the country's defensive capabilities, to protect the borders and to counter terrorism. In accordance with the Decree of the President of the Russian Federation from 26 of December 2015, No. 664 "On Measures for Improving Government Management in the Sphere of Counteracting Terrorism", a number of operational headquarters have been set up in the country, including in Murmansk. In May 2015, at a meeting of the Federal Operational Headquarters of the National Anti-terrorism Committee, decisions were taken, aimed at developing additional measures to ensure security and protection from terrorism of facilities engaged in economic activity in the maritime space of the Russian Federation, including the Arctic.*
Keywords: *the Arctic, Russia, NATO, the Ministry of Defence of Russia, the FSB of Russia, terrorism.*

Military threats to the Russian Federation in the Arctic arise from the deterioration of the international situation, the emergence of attributes of a new Cold War (with the election of Donald Trump in the United States and the increasing aggressiveness of NATO), unresolved problems in the delimitation of borders, and the growing interest of a significant number of states around the world in Arctic resources. NATO considers Russia as a potential enemy in the Arctic. All of this, in the aggregate, contradicts the aim to preserve the Arctic as a zone of peace, cooperation and constructive interaction. Obviously, in the Arctic Russia will have to deal not only with individual states (US, Canada, Norway and Denmark), but also with a united front of NATO countries [1, p. 20]. In addition, at the moment the Norwegian leadership seeks to change the status of the Spitsbergen archipelago as a demilitarized zone, in order to reduce the role and in the long term completely displace the Russian Federation from the archipelago [2].

It would be unwise to underestimate the possibility of sabotage in the Russian Arctic facilities (primarily for oil and gas extraction) executed by terrorist organizations or competing countries, which could use the consequences of the attacks as an excuse to violate Russia's sovereignty [3]. A well-known incident of incursion into the Prirazlomnaya platform by the Greenpeace activists demonstrated how relevant the measures for sabotage and terrorist attack prevention are in the Arctic. It is impossible to be completely sure that other interested parties, for example members of terrorist organizations, will not try to penetrate the platform in order to commit sabotage under the guise of activism. As a result, the scale of the following disaster could have devastating consequences for the environment, which will be irreparable for many years.

At the beginning of 2018 no clear signs of a significant change in the policy and strategy of NATO can be observed. Russia is seen as the main threat for NATO member states in the Arctic, and the leaders of the alliance call for negotiations with Russia from the position of strength. The deployment of new NATO forces continues and provocative military activities of the alliance near the Russian border are constantly noted.

Under these conditions, Russia's efforts to strengthen national security in the Arctic are understandable. In the past 3–4 years Russia has stepped up its presence in the Arctic in different directions. The Ministry of Defence, the Ministry of Emergency Situations, the Federal Security Service (FSB) and the Ministry of Internal Affairs of the Russian Federation have increased their presence in the Arctic. The new military-law-enforcement structure of Russia – National Guard of the Russian Federation seem to be destined to participate in the solution of Arctic issues. It should be noted that the military infrastructure of the Russian Arctic is being created and strengthened by the restoration of a number of polar airfields and military bases, which are planned to be used as dual-purpose facilities. On 22 of October 2015 the Russian Minister of Defence S. K. Shoigu stated that the creation of an Arctic grouping of Russian troops will be completed by 2018 [4]. During the "parliamentary hour" in the State Duma on February 22, 2017, S. K. Shoigu elaborated on the complexity of development of the military structures in the Arctic territories [5].

At the moment in the Arctic the arming of troops with the most modern weaponry is being undertaken. The rocket and artillery units of the Northern Fleet have begun to rearm themselves with the new coastal missile systems "Bastion" and "Bal" to protect the Arctic coast. In order to ensure efficient anti-aircraft and anti-missile defence in the Arctic region and under the conditions of the Far North, a fully autonomous short-range anti-aircraft missile system Tor-M2DT [6] is also being developed.

On the website of the Russian Ministry of Defence it is reported that "in the Arctic, on the islands of Kotelny, Alexandra Land, Wrangel and

Cape Schmidt in five years 425 objects with a total area of more than 700000 sq. meters have been built. They host more than one thousand troops, as well as special weapons and equipment. During their construction innovative and energy-efficient technologies were used. Moreover, in the Arctic, three unique complex military facilities "Arctic Trefoil" were built. The construction of a full-fledged airfield on the Franz Josef Land archipelago, which will be capable of taking aircraft all year round, is continuing. No other country in the world has implemented such large-scale projects in the Far North. On the Novaya Zemlya Archipelago, Alykel airfield, Kotelny Island and Wrangel Island, 100740 sq. km of territory has been cleaned. A total of 16000 tons of scrap metal was collected and 10000 tons were transported. In total, 432 buildings that were subject to demolition were demolished. 13155 square kilometres of the Arctic still remain to be cleaned. The Armed Forces are completing the clean up of environmental damage to the Arctic [7].

"Arctic Trefoil" [8], built for servicemen on the island of Alexandra of the Franz Josef Land archipelago is the only object in the world of capital construction erected on the 80th degree of the northern latitude. The base consists of numerous special purpose buildings, as well as control posts, garages, warehouses and an autonomous power unit. It is completely autonomous and can provide comfortable accommodation for up to 150 servicemen for one and a half years. It should be noted that during its construction, the experience gained in 2006 from creating a new complex of border blocks "Nagurskoe" was widely used. At that time a unique operation, unlike anything else in the world, was carried out, when 200 tons of building materials and 24 units of different equipment were delivered and uploaded on ice in Alexandra Land. In 2012, foreign visitors visited it for the first time [9].

In total, 13 airfields, one ground-based aviation test site, as well as 10 radar stations and points of aviation guidance will be built in the Arctic. The establishment of an Arctic grouping of Russian troops will be completed by 2018 [10]. Furthermore, the construction of infrastructure for military units and garrisons in the regions of the Far North, Siberia and the Far East will continue up to 2020 and provide more than 20,000 servicemen, their families and civilians working at the Ministry of Defence with housing, places of service and work [11].

The Russian army is the main deterrent for the aspirations of the NATO countries in the Arctic.

Protection of the state border of the Russian Federation in the Arctic is carried out by the Border Service of the FSB, through seven border agencies established on an administrative-territorial basis. A total of 20 checkpoints across the Russian border have been established in the Russian Arctic. Of these, 3 are roadblocks (1 on the border with Norway, 2 on the border with Finland), 12 are maritime and 5 are air checkpoints. According

to open sources, the majority of the checkpoints, 12 are situated in the North-West Federal District, in the Far Eastern Federal District there are 6 (all in the Chukotka Autonomous Okrug) and one is located in the Urals and Siberian Federal Districts each [12]. In addition, a naval unit of the Border Service of the FSB has also been formed. As of the end of 2016, it consisted of 34 ships including: 10 border patrol ships, 14 border patrol motor boats, 1 border support ship, 1 border patrol ship, 2 border patrol vessels and 6 border support motor boats [13]. In January 2017, the Border Service of the FSB received a rank 1, Project 22100, border security patrol ship – "Polar Star" [14].

The tasks of the marine units in the Arctic region are: protection of the state border of the Russian Federation; protection of its economic interests; monitoring of the above-water situation in the Arctic waters. In areas with industrial activity, radar and radio technical observation is carried out. Patrolling of the Arctic seas and the fishing zone of the Spitsbergen archipelago is also carried out by the border patrol vessels and the aviation of the FSB [15, p. 434-440]. Border troops project sovereignty and a Russian presence in the most remote territories of the Arctic (in the islands of the archipelagos of Franz Josef Land and the Severnaya Zemlya) [16, p. 93]. From October 17 to October 21, 2016, a delegation of the Russian Federal Security Service took part in the 17th North Pacific Coast Guard Agencies Forum, held in Victoria, Canada, under the chairmanship of the Canadian Coast Guard [17]. The Border Service of the FSB of the Russian Federation has a positive experience of working with colleagues from the Arctic states [18, p. 102-105], especially with units from the Norwegian Coast Guard, as well as with the 17th district of the US Coast Guard.

Different projects are carried out with the Norwegian coastal guards in a number of fields: in the field of protection of marine biological resources in the Barents Sea, including the prevention of poaching; on improving the cooperation in the search and rescue operations in the Barents Sea; in information exchange during the control of the above-water situation in the adjacent areas of control; on the exchange of experience in the protection of maritime boundaries, in training of ship crews.

In recent years, modern challenges and security threats have begun to appear in the Arctic region, notably terrorism [19, 20].

The Russian Federation is actively studying and taking measures in case of exacerbation of new threats in marine waters. When considering the infrastructure of the Arctic, several vulnerable points can be pointed out: bridges, tunnels, pipelines, cargo terminals, platforms, LNG terminals, military industrial facilities, energy infrastructure facilities. Nuclear power plants, nuclear-powered icebreakers and navy vessels, chemically dangerous and explosive-fire hazardous facilities, important elements of

communications that can become targets of terrorists and their accomplices are also located in the region.

In regard to this, in accordance with the Decree of the President of the Russian Federation from the 26 of December 2015, No. 664 "On Measures for Improving Government Management in the Sphere of Counteracting Terrorism", operational headquarters have been set up in the cities of Kaspiysk, Murmansk, Petropavlovsk-Kamchatsky, Simferopol and Yuzhno-Sakhalinsk. They were established in order to plan how the forces and facilities of federal executive bodies and their territorial bodies would be used for combating terrorism, for managing counterterrorist operations in the territorial sea, the exclusive economic zone, on the continental shelf of the Russian Federation and in other maritime areas within which the Russian Federation exercises sovereignty, sovereign rights and jurisdiction, as well as on ships flying the state flag of the Russian Federation.

For the implementation of the decree on the 12 of May 2015, a meeting of the Federal Operational Headquarters of the National Anti-terrorism Committee was held. During this meeting decisions were taken, aimed at developing additional measures to ensure the security and anti-terrorist protection of facilities taking part in economic activity in the maritime space of the Russian Federation, including the Arctic. It was also decided to improve the effectiveness of inter-agency cooperation and prompt response to threats of a terrorist nature in relation to these facilities [21].

Improving the system of prevention and counteraction of unlawful acts seems quite sensible. It is important to determine the stability and security of the facilities. It is necessary to introduce more up to date computer technologies to control and protect information about such objects and their functioning. It is necessary to establish the legality of the mandatory monitoring of these facilities by the state. The implementation of these proposals will significantly reduce the danger of sabotage and terrorist attacks.

The Arctic is a region in which all aspects of security are intertwined. All the problems that arise here can and should be solved on the basis of cooperation, and the region itself can and should develop as a space for cooperation and security.

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SHARONOV Alexander
Institute of Military Academy of logistics, senior researcher,
doctor of military Sciences, Professor,
Russia, St. Petersburg, 199034, Makarova, 8:
e-mail: sharonov-55@yandex.ru

SHARONOV Evgeny
the Headquarters of MTO, head of VNK Department,
candidate of economic Sciences,
Russia, Moscow, 119160, Bolshoy Kozlovskiy per.;
e-mail: sharonov-55@yandex.ru

TECHNICAL MEANS OF MATERIAL SUPPORT OF NATO AND THE POSSIBILITY OF THEIR USE IN THE ARCTIC

Abstract. *In the development of advanced technical means, NATO military specialists prefer the modular principle of their creation. The main technical means of feeding NATO troops in the field are mobile kitchens placed on trailers, containers or other vehicles.In the us army, the main technical means of cooking for the period up to 2030 will remain mobile kitchen SK (Containerized Kitchen). It is designed to provide food for soldiers in the battalion (division). In the future, container kitchen SK will replace all existing outdated samples of field kitchens. For the organization of food of the military forces of special operations and teams "Stryker" mobile kitchen is used AK (Assault Kitchen). It is designed for cooking from collective rations UGR-H&s for company units (batteries). In the German army used mobile kitchen TFK 250. In France, a mobile kitchen SOFRAME ELC500R is used to provide food to units up to and including the battalion. Its equipment is placed in two containers. The main purpose of field mobile bakeries of NATO countries is the production of bakery products in the field. Mobile bakery company "Pavalie" (France) is designed to provide bread and confectionery population of small towns, large buildings and army units. Bakeries Mobile Bakery (USA) are made in containers of 20 and 40 feet and installed on cars. All of the processes associated with the bakery is fully automated. Mobile field bakery produced by Marshall Military Engineering Mobile Field Bakery system MFBS (UK) is designed for the preparation of 5,000 units of bakery products per day. For transportation and refueling of armored vehicles there is a tracked all - terrain vehicle Hagglund BV206-a vehicle designed specifically in Sweden for NATO countries. This all-terrain vehicle is fully adapted to the movement of the water. There is a tanker truck on the basis of a trailer using tanks made of composite materials, developed by THOMPSON (USA). All the above-mentioned technical means are capable of performing functional tasks on the continental part of the European theater. However, specially developed for use in Arctic conditions, technical means of material support is currently in the NATO no.*

Keywords: *kitchen, bakery, toplivoresurs, NATO, mobility, performance.*

The Arctic region is becoming an arena of rivalry and clash of economic interests of Russia with a number of major and influential powers

of the world, primarily the Arctic countries of NATO – the United States of America, Canada, Norway and Denmark. The dispute over Arctic exploration for the North Atlantic bloc is a real prospect, which is confirmed by their intentions and specific activities, the main purpose of which is the desire to weaken and prevent the growing influence of Russia in the Arctic.

The NATO bloc in the Arctic sees Russia as a potential enemy. The main strategic goal of the Alliance is to counteract the growth of Russian influence in the Far North. Russia sees NATO as the most active, dominant player in the region.

We will analyze the technical means of material support of NATO countries with an assessment of the possibility of their use in the Arctic. The main technical means of the food service to feed the personnel of NATO troops in the field on TVD are mobile kitchens placed on trailers, containers or other vehicles [1-2].

In the ground forces (SV) of the United States, one of the largest technical means of food service for the period up to 2030 will be a mobile kitchen SK (Containerized Kitchen), designed to provide food to soldiers at the battalion level (division). It is planned that the SK container kitchen will replace all existing outdated samples of field kitchens in the future[3].

Kitchen-trailer MT (Mobile Kitchen Trailer) is designed to heat the collective rations UGRA and GR-H&S.

Currently, the supply comes mobile kitchen AK (Assault Kitchen), designed primarily for brigades "striker" and special operations forces. AK is used for cooking of collective rations UGR-H & S for divisions of level of a company / battery (Fig.1).

Fig.1. Mobile kitchen AK

In the period from 2020 to 2030 it is possible to enter into service mobile kitchen trailer VK (Battlefield Kitchen), destined to replace the MKT. The purpose of its development and creation is to reduce the damping characteristics due to the release of heat and the appearance of noise during operation [5, 6].

In Germany when you create a mobile kitchen FKH 900 paid attention to universalization, with the aim of ensuring the possibility of its

transportation by various means of transport. It also has a modular design. Thanks to this, the composition of the elements of the kitchen can be changed in accordance with the specifics of cooking in the consumer country. To provide power to the units of the link "company-battalion" in the army of Germany used mobile kitchen TFK 250 [5, 6].

In France to provide power units up to and including battalion used mobile kitchen SOFRAME ELC500R. Its equipment is housed in two containers.

Thus, in the armed forces of NATO power personnel outside the places of permanent deployment will be organized with the help of mobile kitchens that are placed on trailers or other mobile vehicles. The main purpose of the kitchens-heating collective rations, rarely-cooking from raw products. Western military experts in the field of material support of the main directions of improvement of mobile kitchens consider: reduction of their weight at the expense of reduction of component parts and application of lighter materials; use of the modular principle of construction; decrease of the demasking signs caused by release of heat and noise at work, power consumption, and also expansion of the menu of the offered diet. The above-mentioned technical means cannot be used in Arctic conditions due to their open placement on trailers and other non-heated and means of mobility.

The main purpose of mobile field bakeries NATO countries is the production of bakery products in the field.

Mobile bakery company "Pavalie" (France) is designed to provide bread and confectionery to the population of small towns, large buildings and army units. The bakery can be used in countries with any climate, while providing all the necessary conditions of service personnel due to the significant thermal insulation of the body and air conditioning. However, the basic chassis does not meet the conditions of the Arctic [4, 7].

Mobile Bakery bakeries are manufactured in 20 'and 40' containers and installed on vehicles. All cooking processes are fully automated. Electric energy is produced by the generator. There is a reservoir for water storage, as well as a container for storage of spare parts [4, 7].

Bakery Bongard in the container, with built-in diesel generator, capacity 1200 kg/day is made in a secure container with a hook. It can be transported by vehicles equipped with a platform for the transportation of 20 feet containers. It has retractable supports, allows you to organize baking bread in the field. Equipped with rotary kiln with diesel burner. The deployment time is 4 hours. Working staff - 2 skilled bakers, 2 auxiliary workers. Used by the army of France, Tunisia, China, has passed the successful operation of "desert Storm". However, the use in cold climates requires refinement of both the base chassis and the container to create a temperature not lower than 24C0 to ensure the production process of bread baking [4].

Mobile mini-bakery Bassanina Mobile bakery 2500, mounted on the basis of a semi-trailer Euro truck. Equipped with a full set of bakery equipment, bakery allows you to bake 865 kg of products for 8 hours and 2595 kg and with a three-shift operation [4, 7].

Bakery Container OZTI (USA) bakery is designed for baking bread from different varieties of flour in the field. Part bakery part of a mixer trailer, with the monorail frame, a dough dividing unit; two ovens on trailers; two power plants; the prover; two rack to cool and store the finished bread; two collapsible conveyor for feeding the bread to the racks and return the forms to the ovens; tools [4, 7].

Mobile field bakery production Marshall Military Engineering Mobile Field Bakery system MFBS (great Britain) is designed for the preparation of 5000 pieces of bakery products per day. It includes: two transformable container ISO 20 feet with the necessary equipment and diesel generator with power of 200 kW. Container version of the bakery allows transportation by all modes of transport. For the automated production of bakery products bakery is equipped with all necessary equipment [4, 7].

Autonomous mobile mini-bakery Bassanina Mobile bakery 2500 (Italy) is mounted on the basis of a semi-trailer. Capacity of mini-bakery-2600 kg per day [4].

Thus, the experience of operating the above-described mobile bakeries have shown that they are often used in the construction of large hydropower plants, in the areas of development of new deposits of oil, minerals and in the field of deployment of troops. The equipment of mobile bakeries works on many types of the energy carrier, however without essential design improvements of containers, processing equipment and the basic chassis practical use in the Arctic is impossible [4, 7].

In the NATO armies providing troops with fuels and lubricants paid special attention. For transportation and refueling of the car electronics there is a tracked all-terrain vehicle Hagglund BV206-a vehicle designed specifically in Sweden for NATO countries (Fig. 2, 3).

Fig. 2. Crawler all-terrain vehicle Hagglunds BV206

Tracked all-terrain vehicle BV-206 consists of two sections. The tractor body is made of fiberglass reinforced plastic, the rear cargo area is made of stainless steel. Low ground pressure enables the BV 206 to cope with a wide range of complex conditions. It is fully adapted to the movement in the water all- terrain vehicle, the speed on the water reaches 4.7 km / h [5].

Fig. 3. Modernized tanker of aviation technology

All-terrain vehicle BV-206 can operate in water terrain without preparation due to the rotation of the crawler tracks with a speed of 3 km/h For removal of penetrated into the housing through the damage and leakage of sea water with the bilge pumps with the capacity of approximately 60 l/min [6].

There is an autoloader on the basis of the trailer with use of tanks from composite materials developed by THOMPSON firm (USA) (Fig.4).

Fig 4. Automatic fuel tanker on Thompson trailer chassis

Comparative characteristics of domestic and foreign means of transportation and fuel filling show the main advantages of the tracked tanker GTMZ-14-DT. They consist in the fact that the capacity of the tank and the oil tank is several times higher than the existing analogues, the design of the two-link tracked tanker refuels equipment at all times of the year in remote areas in off-road conditions and underdeveloped road network at an ambient temperature of minus 500C to plus 500C, with the possibility of short-term work at maximum temperatures of minus 60°C

and plus 60°C, at a relative humidity of 98% at temperatures up to plus 25 ° C [5-10].

Thus, the analysis of technical means of material support of the NATO bloc countries allowed to draw the following conclusions:

1. Technical means of cooking and baking bread include: basic chassis, insulated container or body-van for the installation of process equipment. The technical means specially developed for the Arctic are not accepted for supply at present and are not planned for the near future.

2. Technological equipment of mobile bakeries and kitchens works on many types of energy, but without significant design improvements of containers, the basic chassis and technological and special equipment practical use in the Arctic is impossible.

3. Technical means for the supply of drinking water and fuel filling equipment adapted to perform functional tasks in various conditions, including difficult road and climatic conditions. Their technological and special equipment allows to perform tasks for its functional purpose in normal conditions, but it is necessary to fulfill the requirements for trouble-free operation of process equipment in a particularly cold climate.

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KVASHNIN Boris
research Institute of the Military Academy logistics, senior researcher,
doctor of technical Sciences, Professor, senior researcher,
Russia, Sertolovo, 188650, Molodtsova ul., 14-91;
e-mail: sharonov-55@yandex.ru

KVASHNIN Elena
the scientific research Institute of the Military Academy of logistics,
candidate of economic Sciences, Junior researcher,
Russia, Sertolovo, 188650, Molodtsova ul., 14-91;
e-mail: sharonov-55@yandex.ru

PREDICTION OF RELIABILITY OF TECHNOLOGICAL EQUIPMENT OF AUTOMOBILE REFUELLING MEANS USED IN ARCTIC CONDITIONS

Abstract*. Reliability is a property that refers to the specified operating conditions of the equipment. Failure is most likely to appear in cases where the technique is used at the limit mode of its technical characteristics. The probability of achieving such a sign of the limit state for a given period of operation of the machine can be determined at the design stage of a new machine by calculating all cases of machine operation at the limit mode, allowed by the technical characteristics and implemented under the action of its nominal parameters. Currently, there are no technical means of material support that can guarantee the troops to provide fuel, lubricants and water in cold (below minus 45 0C) and extreme cold (below minus 50 0C to minus 60 0C) climate. For the fuel service, the mobile refueling facilities will have to provide the technological process of the fuel Bay in their tanks, transportation and refueling of weapons and military equipment. For their reliable application in the Arctic conditions, special requirements are required for their technical parameters, ensuring the trouble-free and durable operation of technological equipment in the form of pumps, tanks, filters and fuel distribution systems. Justification of parameters of technical means of fuel service for the Arctic conditions will allow on the basis of a certain base area of the quality level to determine the optimal values of the parameters of the materials of parts used for the manufacture of Assembly units of the technological. Arctic climatic conditions can accelerate some processes of destruction of materials or structures of parts. This leads to the use of special methods for calculating the strength properties of materials and structures. The models presented in the article can be used to study the use of technical means of fuel service in the Arctic, separately justify the array of initial data, which should take into account the special conditions of the use of materials, parts and Assembly units of technological equipment.*
Keywords*: military equipment, technological equipment means filling, reliability, refueling, vehicle refueling tool.*

In modern conditions, the Arctic is becoming more important in global politics and Economics, and the Arctic region itself is becoming an important arena for Russia's relations with foreign partners.To implement the plans outlined by the strategy, Russia needs to "improve the structure,

composition, military, economic and logistical support of the armed forces and the development of infrastructure for their deployment in the Arctic" [1].

Readiness of the armed forces to perform the tasks is closely related to its material and technical support, which directly includes the provision of weapons, military and special equipment (vvst) fuel, oils, lubricants and special liquids [2,3].

Analysis of tactical and technical characteristics of the technical means of the fuel service (TS SG) and food service (FS) shows that currently, there are no samples able to provide troops (forces) of combustive-lubricating materials and water in cold (below minus 45 0C) and extreme cold (below minus 50 0C 60^0 C Dominus) climate [4,5].

For SG, mobile refueling equipment (PPE) will have to provide the technological process of fuel injection into their tanks, transportation and refueling with vvst fuel. Their reliable use in the Arctic requires special requirements for their technical parameters, ensuring trouble-free and durable operation of process equipment in the form of pumps, tanks, filters and fuel transfer systems.

To solve the problem of predicting the reliability and durability indicators, it is necessary to consider the properties of the structural material used for manufacturing process equipment parts, and the order of forming a reference quality level for the process equipment of ASZT.

To assess the reliability, depending on the stresses caused by pressure, temperature, vibrations, etc., it is possible to use the "load — bearing capacity" model, the basic idea of which is that under the influence of the load the load-bearing capacity of the system is gradually reduced until the system fails [6]. Its main disadvantage is that with a large number of factors acting on the system, finding the probability of failure turns into a complex mathematical problem, the solution of which even by numerical methods using computers is very laborious.

There are many approaches and different methods of reliability assessment, for example, in the works [6, 10] methods of reliability calculation by limiting States are presented using a mathematical model, as well as methods of calculation based on data on plastic deformations of structures and their stability.

Nevertheless, the presented methods are difficult to implement directly during operation, as in some cases it is necessary to constantly monitor the state of the metal for timely response and prevention of accidents.

Despite the vast number of existing methods for calculating reliability, currently there is no one that would allow you to quickly and objectively based on the state of the material to assess the durability of the structure and give recommendations for its use on the basis of internal defects of the material, covered all possible changes in weather conditions,

the influence of the environment and would allow to monitor the state of the elements of the structure at any time.

At the moment, the most applicable method for assessing the probability of failure of the element, reliability and durability, based on the structural and energy failure theory [5,7]. Structural-energy failure theory makes it easy to assess the impact of structural factors (the number and size of sensitive structures of materials) on the shape of the curve of the function of the distribution of energy of destruction (Fig. 1), and therefore, the reliability of the elements and on this basis to develop specific recommendations for the technological support of a given level of reliability and quality of the elements.

The dependence of the probability of failure on the magnitude of the energy impact will be a simple exponential [6]:

$$q(e) = 1 - \exp(-be), \quad (1)$$

where b - is the variation of the sizes of sensitive structures;

e — is the magnitude of the energy impact.

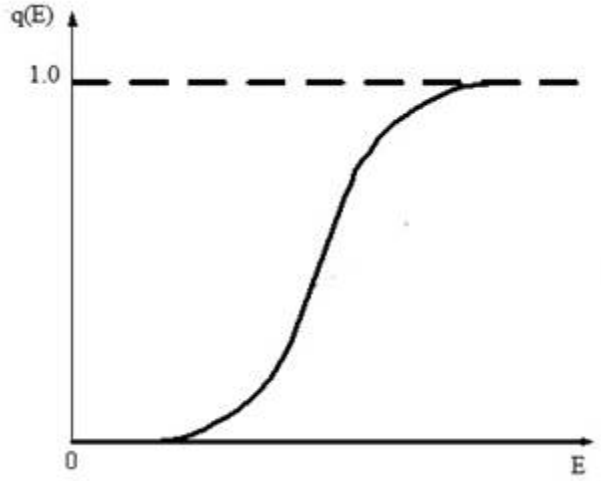

Fig. 1 - distribution Function of energy of destruction

The probability of failure P(t) is the inverse of the failure probability and is defined as follows:

$$P(t) = 1-q(e) \quad (2)$$

Using the following equation, it is possible to determine the uptime of the most critical parts of the process equipment TS SG:

$$P(t) = \exp(-\alpha It)\sum_{i=0}^{n-1}\frac{(\alpha It)^i}{i!} \quad (3)$$

where I — is the value of the temperature effect;
α— coefficient of transition from one state to another;
t — is the time of operation of the element.

The transition coefficient α is determined as follows:

$$\alpha = \frac{t_{cp} - t_0}{I \cdot \sigma_t^2} \quad (4)$$

where t_{cp} — is the average time before failure of elements;
t_0 — guaranteed working time of the element;
σ —the variance of the energy failure.

The presented evaluation method was tested on thin–walled samples, 0.1-0.5 mm thick, and on larger parts and elements experiencing heavy loads.

For TS SG the tightness of capacity for fuel which can be broken as a result of excess of mechanical loadings over strength is of special importance. As a result, the main function is lost - short-term storage and transportation of fuel to the place of refueling of military equipment. At the same time, repair in some cases is difficult due to the complexity of the technology of repair work and the need for specific repair equipment.

An important indicator on which the technical characteristics of AST depend is the geometric dimensions of the tank, for which it is necessary to know the cross-sectional area and the length of the tank, which largely depend on the chosen shape of the shell and the bottoms.

Currently, the industry produces tanks, boilers and tanks with shells of cylindrical, elliptical, trapezoidal and rectangular shapes. Each of these forms has its advantages and disadvantages, which must be taken into account when choosing them (Fig. 2).

Bottoms as well as shells can be flat, elliptical and hemispherical (Fig. 3). The most widely tank with flat beaded bottoms, reinforced vystupovanie ridges. On GTMZ trapezoidal form of the tank is applied (Fig.4).

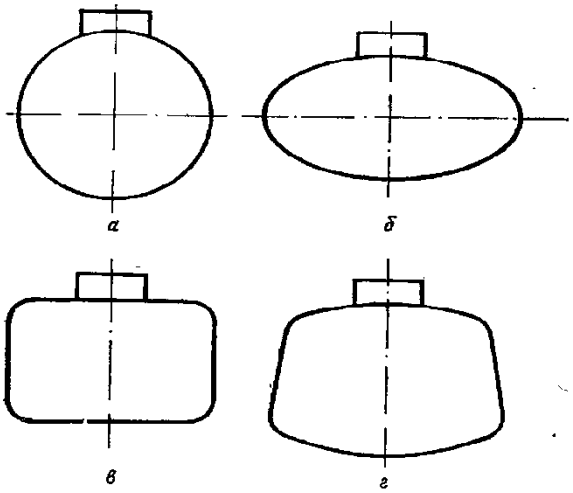

Fig. 2 - Shape of the cross sections of the tanks:
a – cylindrical; b, elliptical; rectangular; d– keystone

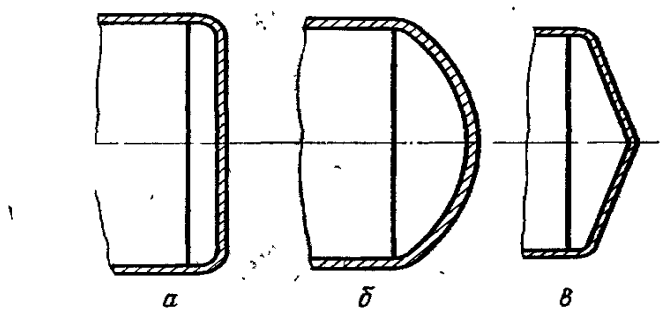

Fig. 3 - Shape the bottoms of tanks:
a – flat with the frame; b, elliptical; C – hemispherical

As presented in the source [5], there is a list of defects in the elements of the tank, which leads to loss of tightness.

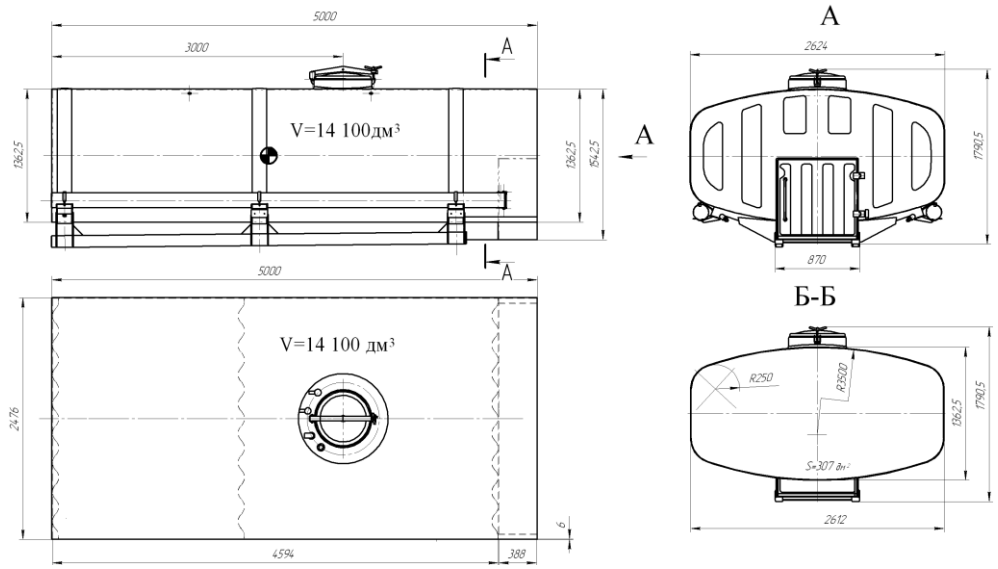

Fig. 4 - Tank for fuel GTS

Given that the approach of approximate calculation of the reliability of the tank is used, it can be assumed that sudden failures occur due to partial or complete destruction of the shell of the boiler through microcracks and welds, taking into account cold resistance.

The reason for the gradual failures, leading to loss of tightness, as experience shows, are mainly fatigue stresses in the walls of the boiler and welds. But, in the Arctic conditions, the plasticity and fluidity of materials deteriorate significantly, which dramatically reduces the level of reliability of technological equipment as a whole.

When determining the reliability of parts with respect to fatigue failures, it is necessary to take into account the nature of the load. Figure 5 shows the loading plot of the tank mounted on the vehicle base chassis.

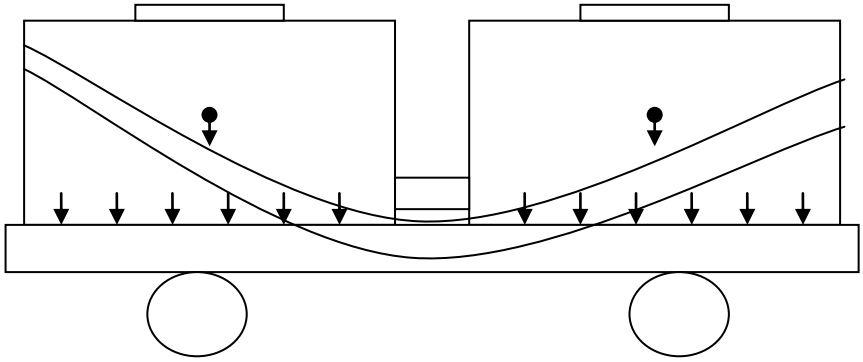

Fig. 5-Plot of loads acting on the tank from the liquid side

On the other hand, it is necessary to take into account the variability of the strength parameters of the part or structure, the randomness of the characteristics of materials or the need to ensure certain strength reserves. At the same time, the gradual accumulation of damage leading to the emergence and development of cracks and subsequent destruction of the structure, should be described in the following manner.

Fatigue failure in the details occur as a result of the appearance of microcracks in the material at alternating loads of cyclic nature [7]. The probability of failure-free operation with respect to fatigue failures is described by logarithmic-normal law [8]

$$P_{ycm}(t)=\frac{1}{2}\left[1+\Phi\left(\frac{\ln n_{\text{пр}}\theta-\ln t}{\sigma_R(\ln t)}\right)\right], \quad (7)$$

where n_{np} - is the limit of the number of alternating cycles;

θ- the period of one cycle;

σ_R - mean square deviation

Since the properties of low-carbon and low-alloy steels, as well as welded joints, change most noticeably when the temperature drops [9], the mathematical expectation of the bearing capacity of the part will be taken as a function of the ambient temperature.

The probability of failure-free operation with respect to gradual failures mainly depends on wear, fatigue failure, and corrosion processes, and is on the following formula

$$\mathrm{P_{\Pi}(t)}=\sum_{i=1}^{K}P_u(t)P_K(t)P_{ycm}(t) \quad (8)$$

where $P_u(t)$ is the probability of failure-free operation with respect to wear and tear;

$P_K(t)$ - probability of failure-free operation with respect to corrosive processes;

$P_{ycm}(t)$ - probability of failure-free operation with respect to fatigue failure.

Due to the variety of equivalent factors operating during operation, on the basis of the Central limit theorem, it can be argued that the probability of failure-free operation of parts under wear and corrosion failures is subject to the normal distribution law with a mathematical expectation equal to zero, and dispersion, σ^2 ie .

$$P_{u,k}(t) = \frac{1}{2}\left[1 + \Phi\left(\frac{\mu_{пi} - \overline{\alpha}_i t}{\sigma_i t}\right)\right], (9)$$

where $\overline{\alpha}_i$ *- is the average speed of wear or corrosion processes;*

$\mu_{пi}$ *- limit value, ensuring the" strength " of the part;*

t *- total operating time of the sample.*

When determining the reliability of parts with respect to fatigue failures, it is necessary to take into account the nature of loads that can be described by a random loading process. On the other hand, it is necessary to take into account the variability of the parameters of the strength of the part or structure, the randomness of the characteristics of materials or the need to ensure certain strength reserves.

When determining the reliability of parts with respect to fatigue failures, it is necessary to take into account the nature of loads that can be described by a random loading process. On the other hand, it is necessary to take into account the variability of the parameters of the strength of the part or structure, the randomness of the characteristics of materials or the need to ensure certain strength reserves.

Fatigue failure in the details occur as a result of the appearance of microcracks in the material at alternating loads cyclic nature. The probability of failure-free operation with respect to fatigue failures is described by logarithmic-normal law [5]

$$P_{уст}(t) = \frac{1}{2}\left[1 + \Phi\left(\frac{\ln n_{пр}\theta - \ln t}{\sigma_{\ln t}}\right)\right], (10)$$

where $n_{пр}$ *- limit number of alternating cycles or revolutions;*

θ *- the period of one cycle;*

$\sigma_{\ln t}$ *- mean square deviation.*

The value can be determined by a fatigue curve, or by using the safety factor in the case when the spectrum of load is below the fatigue limit. In this case

$$T_{уст}^{пр} = n_{пр}\theta = \overline{n}_s T_{тр}, (11)$$

where $T_{тр}$ *-required resource;*

$\overline{n}_s$ *- safety factor.*

Thus, the models described above can be used to study the use of HS in the Arctic and to justify separately an array of input data, which should take into account the special conditions of use of materials, parts and Assembly units of process equipment.

In this issue, an important role is played by climatic conditions, which can accelerate some processes of destruction of materials or structures of parts. This leads to the use of special methods for calculating the strength properties of materials and structures, but the General methodological approach of assessing the gradual accumulation of damage leading to the origin and development of macro cracks and subsequent destruction of the tank structure remains the same.

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SHARONOV Alexander
research Institute of Military Academy of logistics, senior researcher,
Doctor of Military Sciences, professor,
Russia, St. Petersburg, 199034, Makarova, 8;
e-mail: sharonov-55@yandex.ru

SHARONOV Evgeny
the Headquarters of MTO, head of VNK Department,
candidate of economic Sciences.
Russia, Moscow, 119160, Bolshoy Kozlovskiy per., 6;
e-mail: sharonov-55@yandex.ru

DEVELOPING ARCTIC TECHNICAL MEANS OF MATERIAL SUPPORT

Abstract. *The Arctic region has traditionally been and remains in the sphere of special interests of the Russian Federation. Almost all aspects of national security are concentrated here: military-political, economic, technological, environmental and resource. In modern geopolitical conditions, as well as the active development of polar resources, the expansion of navigation along the Northern sea route and territorial disputes, the Arctic acquires a special status. The main goal of the state policy of the Russian Federation in the Arctic in the field of military security, protection and protection of the state border of the Russian Federation is to provide favorable conditions for the tasks of the personnel of the military units of the Russian armed forces. Based on the previous research, tactical and technical requirements and pilot tests, the article presents new Arctic technical means for material support of military personnel performing tasks in the Arctic: kitchen, bakery, tank, fuel tanker. As the base chassis used upgraded two-link crawler conveyor floating DT-30PM with an Autonomous power supply system (diesel power up to 100 kW) means of communication and navigation, as well as heating system thermally insulated compartments, as well as technological and other equipment. When designing these technical means were used advanced technologies and modern equipment, allowing to organize food, baking, transport and storage of drinking water, combustive-lubricating materials in the extremely low temperatures – to minus 60^0C. Body power and process blocks are executed separately from the basic chassis (to enable transportation of products by all modes of transport) and have a removable roof (to allow Assembly and disassembly of the interior equipment). When designing products, the principle of modularity and unification was used, components and materials were used. The products are maximally unified among themselves in the part of: the base chassis; the bodies of the power and process units; an Autonomous power supply system, heating and lighting; automatic fire extinguishing systems. Technical means allow to carry out all tasks on material support of the military personnel in the Arctic conditions.*
Keyword: *Arctic, kitchen, bakery, tank, fuel.*

The task of the military security of the Russian Federation in the Arctic is to create a grouping of troops (forces) capable of performing the tasks required in difficult conditions: extreme natural and climatic factors;

focal character of economic and industrial development and the low population density; remoteness from major industrial centres, high resource intensity and material security of supplies from other regions of Russia; low stability of ecological systems, defining the biological balance and climate of the Earth [1].

For a comprehensive and complete financial security forces must be created in the Arctic perspective technical material support services tools to meet tactical and technical requirements and operating conditions.

In the far north of the region the most rational option of the vehicle used as a means of mobility, is steering tracked vehicle with best supporting patency and manoeuvrability (Fig. 1).

Fig. 1. Articulated tracked vehicles

Machines of this type can be used effectively as platforms for objects means mobility units. Technical means of material support services designed for organizations providing clothing and food, provision of fuel, oil and lubricants in the Arctic and other areas with harsh natural-climatic conditions. As the base of the chassis it is advisable to use the streamlined two-tier crawler transporter floating DT-30 pm with autonomous power supply (diesel power plant with a capacity of up to 100 kW), communications and navigation, as well as heated insulated compartments, as well as technological and other equipment [2].

When designing these technical means apply advanced technologies and up-to-date equipment to organize food, pastries, bread, transportation and storage of drinking water and petrol, oil and lubricants under conditions of extreme low temperatures up to minus 60 Celsius degree.

Each technical tools (products) includes a power and technology blocks. The power unit is mounted in the first link of the chassis fig. 2 [1], are on the first floor.

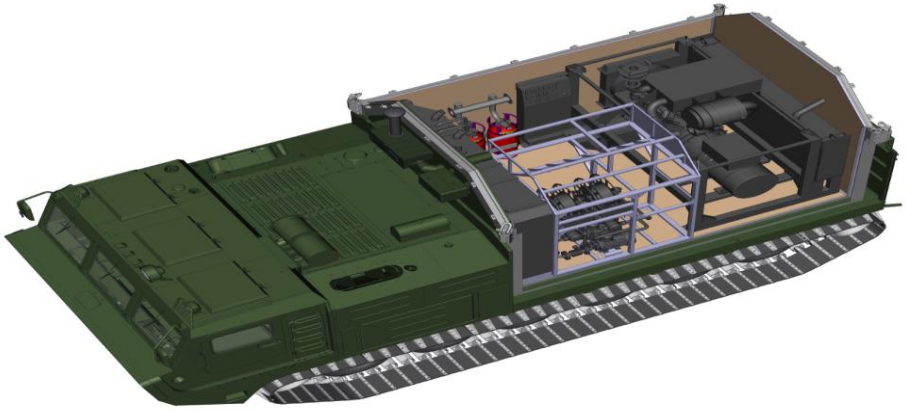

Fig. 2. Power unit Arctic technical means of material support services

Body power and technological blocks constructively implemented separately from the base chassis (to enable transportation of products by any means of transport) and have a removable roof (to allow for the Assembly and disassembly of the internal equipment). When designing products made of the principle of modularity and standardization. In the design of the products components and materials of domestic production. Maximum standardized products among themselves in part: base chassis; bodies of power and technological blocks; autonomous power systems, heating and lighting; automatic fire extinguishing system.

Power products Arctic technical means intended to provide technological unit and other equipment. The composition of the power bloc includes the first link base chassis with installed on it teploizolirovannym body power block hosts: main diesel power station (des) with a voltage of 380 v and a capacity of 100 kW; reserve DES voltage in 280 and power 5 kW; tank with diesel fuel (12:00 am working) for primary and backup DES; automatics systems major reserve DES; automatic fire-extinguishing system; heating and ventilation installation; elements of the lighting system.

Power block heater when driving and the parking lot is done using heating and ventilation installations. To ensure the required temperature modes of DES power block saloon is equipped with automatic shutters, providing a fence outside air and exhaust output to an external Wednesday.

The technological kitchen block Arctic Ka-250/r is designed for cooking, transportation and extradition of hot food from the first, second, third, dishes and boiled water in field conditions for 250 Pax. feeding (fig. 3).

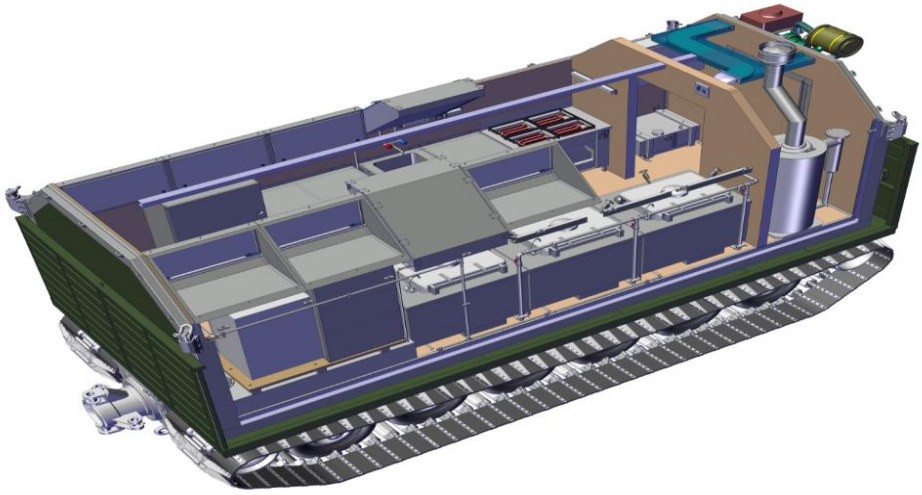

Fig. 3. The technological kitchen block Arctic Ka-250/r

The composition of the technological kitchen unit enters the second link DT-30 pm chassis with installed on it teploizolirovannym body of the technological block cuisine, hosts machines and technical equipment [3]: three boilers pishhevarochnyh on electrical and steam heating capacity 160 l each; electric cooker with grill Cabinet; water tanks; cabinets and tables for production; heating and ventilation installation; filtering and ventilating unit; fire extinguishing equipment; Maintenance Kit and other equipment.

In the vestibule of the technological block steam generator is designed to provide backup power boilers steam in case of failure of the main source of electricity.

Steam generator powered by diesel fuel without using electricity. Its performance allows you to ensure that all boilers.

Kitchen Arctic provides hot food 250 Pax. eating at ambient temperatures, typical of the Arctic zone.

The technological block bakeries Arctic/r 500-HPA is designed for the production of Tin rye-wheat and wheat bread under field conditions, the Arctic and other regions with particularly severe climatic conditions (fig. 4) [3].

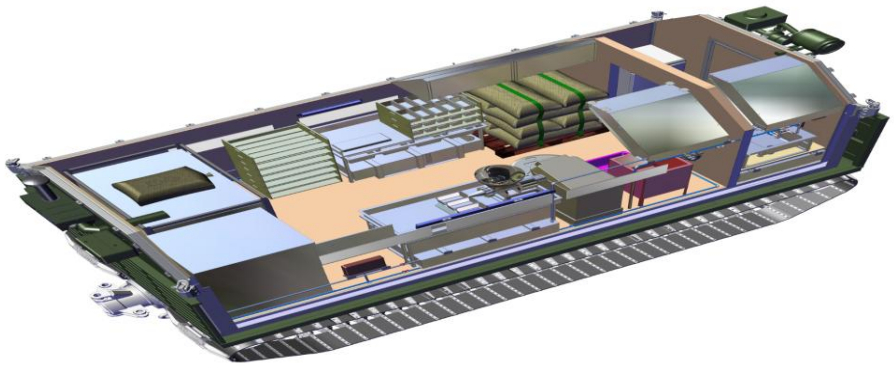

Fig. 4. Technology Unit bakeries Arctic HPA-500/r

The composition of the technological block bakeries 2nd includes Arctic chassis DT-30 pm on it teploizolirovannym and heated body

technological block hosts the main and auxiliary technological equipment: baking oven; Proofing Cabinet; proseivatelnyj unit with dosing capacity; machine dough; dough divider; tables for production; water tanks; heating and ventilation installation; filtering and ventilating unit; fire extinguishing equipment; Maintenance Kit and other equipment.

Bakeshop Arctic/r 500-HPA will ensure production of 700 kg/day, bakery raw materials storage at ambient temperatures, typical of the Arctic zone.

Technological tank block Arctic SURF-10/r is designed for transportation, storage and delivery of drinking water in the face of the Arctic and other regions with particularly severe climatic conditions (fig. 5) [4].

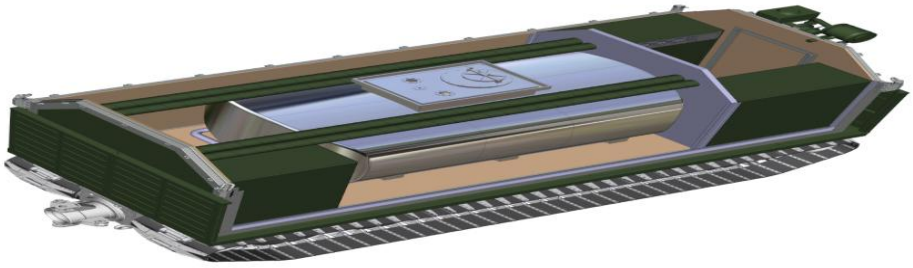

Fig. 5. Process unit tank Arctic CVA-10/30ПМ

The technological unit of the tank Arctic includes a second link base chassis DT-30ПМ mounted with a heat-insulated body of a process unit, which houses the main and auxiliary equipment: water tank capacity 10000 l; UV disinfection system water; technological equipment for distribution of water; pressure-suction hoses with quick release connecting devices; control modes of working operations; heating and ventilation installation; the filtering and ventilating unit; elements of the lighting system; primary fire extinguishing means; set of spare parts and other equipment.

A special feature of the Arctic tank is the use in its design of the system of ultraviolet disinfection of water, which significantly improves the sanitary and epidemiological characteristics of the quality of the issued water.

Tank Arctic OWL-10/30 p M provides the required level of technical characteristics, guaranteed transportation, storage, UV disinfection and delivery of 10,000 liters of water at ambient temperatures characteristic of the Arctic zone.

The technological block of the oil tanker GTMZ-14-30PM tracked fuel is intended for transportation, short-term storage, refueling with filtered fuel and oil of weapons and military equipment in the conditions of the Arctic zone and in other regions with particularly severe climatic conditions [5].

In the technological unit are: fuel tank; on-Board pump station with pipelines and valves; suction and transfer hoses; means of purification and

filtration of fuel; control and measuring devices; devices for control and accounting of fuel; means of control modes of operation; compressor unit with receiver; heating and ventilation installation; lighting system elements; primary fire extinguishing means; set of spare parts and other equipment.

Technological and special equipment is functionally and structurally placed in power and technological units. The technological unit of the tanker is placed in an unheated modified body of the second link of the base chassis, closed with a lightweight metal roof.

Power unit fuel lube uniform in composition with the power blocks, kitchens, bakeries, water cisterns, except that backup DES DC power of 5 kW, while the power unit is additionally introduced in equipment for storage and distribution of engine and transmission oils and a rack for containers of coolant.

The electric power supply of the heating system of the power unit during the movement and lighting systems is made from the onboard system of the basic chassis.

Thus, the implementation of technical solutions in the design of Arctic technical means of material support will ensure the guaranteed performance of functional tasks on material support services, and the used technological equipment - operation in conditions typical of particularly severe climatic regions of the North, Siberia, the Far East and the Arctic [7, 8].

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GLYAKOV Maxim
VAMTO them. A.V. Khruleva 10 Scientific Company
Ph.D. company commander - senior researcher companies,
Russia, St. Petersburg, 199034, Makarova, 8;
e-mail: 10nrvamto@mail.ru

SMEYAN Maksim
VAMTO them. A.V. Khruleva 10 Scientific Company company sergeant,
Russia, St. Petersburg, 199034, Makarova, 8;
e-mail: 10nrvamto@mail.ru

TIKHONOV Alexey
VAMTO them. A.V. Khruleva 10 Scientific Company operator,
Russia, St. Petersburg, 199034, Makarova, 8;
e-mail: 10nrvamto@mail.ru

GOLTSIN Roman
VAMTO them. A.V. Khruleva 10 Scientific Company operator,
Russia, St. Petersburg, 199034, Makarova, 8;
e-mail: 10nrvamto@mail.ru

SYSTEM FOR RECYCLING AND PROCESSING OF SOLID DOMESTIC WASTE OF MILITARY UNITS

Abstract. *Within the framework of this article, the problem of utilization and processing of solid domestic wastes in military units and subunits deployed in the Arctic zone is being raised. Since the process of developing the Arctic by the Armed Forces of the Russian Federation is not new in the history of the state, a brief historical reference is given to the development of the Arctic by military units and subunits during the Soviet period. Due to the lack of a single concept, which caused the unsustainable management of solid domestic waste at that period, the consequences that led to a negative impact on the environment and, as a consequence, the deterioration of the environmental situation in the places of permanent disposition of units are described. To prevent repetition of mistakes at a new stage, the ways of solving this problem are considered and analyzed taking into account minimization of negative impact on the environment of the region. Based on the results of the analysis, a method for integrated waste management is proposed as the basis for the principles of utilization, which meets all the requirements. Also, the search for opportunities to reduce the costs for sorting and transporting solid domestic waste of military units and subunits is being carried out, since in most cases the locations of military installations are considerably remote from large settlements. This circumstance is one of the main factors that require mandatory consideration when choosing the method of utilization of solid domestic waste. The proposed system for recycling and processing of solid domestic waste from military units is described in detail. The main characteristics of the system that distinguish it from all available domestic and foreign analogues are given.*

Keywords: *utilization of solid domestic waste, integrated waste management, environmental safety, secondary raw materials, Arctic.*

Recently, the Russian Federation has begun to actively increase its presence in the Arctic region. This is due not only to the presence here of large deposits of minerals, but also to the need to strengthen the country's defense capability in conditions of a complex geopolitical situation.

The history of the presence of the Russian Armed Forces in the Arctic dates back to the Soviet period and is inextricably linked with the Cold War era.

From 1940-1950-ies in the Arctic began to appear military bases, primarily air defense bases, built airfields, radar stations. The Armed Forces created a "shield" on the islands of the Arctic Ocean, designed to save the country in the event of air aggression. It was assumed that the US would strike a nuclear strike precisely through the polar region. In the early 1990s, in connection with the disintegration of the USSR, the military left the Arctic, abandoning unnecessary equipment and leaving behind mountains of debris. For example, the land of Franz Josef is one of the northernmost territories of Russia and the world. It consists of 192 islands with a total area of 16,134 square kilometers. A few years ago, the Alexandra Land and Graham Bell, where Soviet military installations were once based, represented a rather dull picture - the ruins of stone and wooden buildings, wreckage of aircraft, rusted ships, construction and military equipment, containers, endless deposits of barrels and huge cisterns from oil products. All this was like an anthropogenic anthropogenic zone. According to some estimates, only in the coastal zone of the Arctic Ocean is up to four million tons of industrial and construction debris. And this is not counting everyday solid household waste, accumulated in this area for decades and poisoning the products of the decay environment.

Today in the Arctic zone a number of works are carried out to repair the existing infrastructure and create fundamentally new military complexes and bases.

However, the restoration of the presence of the Armed Forces of the Russian Federation in the Arctic should be carried out at a principally new level, which ensures that standards and requirements for environmental safety are taken into account both in the field and in the Arctic region as a whole.

Such an approach should take into account the principles of waste management in the Arctic, which differ significantly from those adopted in regions with a less severe climate. Features of handling waste in the permafrost zone are due to the lack of fertile soils and low temperatures, which prevents natural rotting. The burial of garbage in permafrost soils, according to environmentalists, is unsafe and causes serious damage to the environment.

Examination of existing methods of SDW disposal (incineration, recycling, briquetting, composting, etc.) makes it clear that each of these

methods has a number of shortcomings that can be solved using these technologies in a complex. Recycling of waste must be carried out guided by the principles of different approaches to the disposal of a separate type of solid waste, the most environmentally and economically feasible methods. It is an integrated approach to solving problems in the field of minimizing solid waste, involving in resource consumption and safe disposal, should underlie the modern principles of SDW disposal of military units and subunits in the Arctic zone. The normative act regulating the utilization and processing of solid domestic waste is Federal Law No. 89-FZ of June 24, 1998 "On Production and Consumption Waste" [2].

From the places of permanent deployment, as a rule, the removal of solid household waste is handled by the municipal organizations of a particular region with which the relevant contracts have been concluded, and the waste disposal process is carried out according to the methods used in a particular region, often consisting of landfills. Solid domestic waste generated during the quartering of military units in the field is not disposed of at all, however, modern autonomous field camps like the APL-500 [4] are equipped with a module with an incineration plant (Figure 1), capable of utilizing not only solid waste but also a solid component sewage effluent [5]. The operation of such an installation causes serious damage to the environment, its use is advisable only in the absence of other methods of disposal.

Figure 1 - Module with incinerator

It should be noted that the difficult climatic conditions, undeveloped transport network, significant remoteness of military units from settlements and many other factors make it difficult to timely remove waste and lead to their accumulation on the ground and, as a result, to negative impact on the ecosystems of the Arctic.

It is possible to solve the task of exporting solid waste from remote parts of the processing enterprises due to a decrease in the volume of exported solid waste. For these purposes, it is proposed to use the system of

recycling and processing of solid domestic waste (see Figure 2) developed specifically for military units, which allows sorting, compaction of solid waste and processing of polymer wastes directly in the places of permanent disposition of units, incl. in the field.

Figure 2 - General view of the system

The proposed system for solid domestic waste disposal is compact in size and functionality, it consists of a system for sorting and compacting various types of waste, operating both from the power grid and from a mechanical drive, as well as from a polymer waste recycling system that allows to produce a piece of construction material, such as paving slabs, roofing tiles, wall blocks, etc. The compactness and mobility of the system eliminates the need for large areas and allows it to be placed directly o in military units, it is also proposed to install a sorting and sealing system from four chambers and a system for processing polymeric waste into a special 20-foot container (Figure 3).

Figure 3 - View of the system in a special container

Distinctive features from all available analogues is compactness, universality, mobility of the installation. Packaging systems allow the packing of the briquette with polypropylene tape or polyethylene film, special reinforced rollers allow the unit to move freely, and together with liquid collection vessels, liquid waste can remove liquid from the waste, which minimizes the labor costs of the operator. The proposed system is highly efficient, since it can consist of an unlimited number of small modules 940x890x2400mm (LxWxH), transported on any transport platform. This is a key indicator when locating units outside populated

areas, where the problem of solid domestic waste disposal is particularly acute, due to increased transportation costs, which can be significantly reduced, due to a decrease in its volume. Sorted by quality composition of waste, with the possibility of secondary use, can be recycled to enterprises with profit, and manufactured piece building material (paving slabs, roofing tiles, wall blocks, etc.) used for the needs of units.

Thus, the use of the developed system for the utilization and processing of solid domestic waste by military units will allow the Armed Forces of the Russian Federation to increase their presence in the Arctic region, taking into account the preservation of local ecosystems not affected by anthropogenic activities, as well as preventing further degradation of natural complexes affected by anthropogenic activities.

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SINCHUK Yuriy
Doctor of political Sciences, Professor
Head of the Department of theory and history of international relations
Moscow State Linguistic University,
Russia, Moscow, 119034, Ostozhenka ul., 38, korp. 1, str. 1
e-mail: sinchukjv@mail.ru

STRATEGIC POSITIONS OF THE ARCTIC

Abstract. *The article dwells on the efforts of the Russian Federation to implement the global project to preserve the Arctic as a zone of peace. The Arctic is a region where all security aspects without exception are closely bound. The Arctic region is the region of great strategic importance for national defense. The implementation of Arctic zone development strategy of Russian Federation and the ensuring of national security for the period up to 2020 and the main contents of the documents of national strategy planning system provides complex escalating of competitive advantages of the Arctic zone in order to strengthen the position of Russian Federation in the Arctic, strengthening international security; the maintenance of peace and stability, as well as the intensification of international cooperation. This region should not become a new arena of international competition, a source of new threats to regional and international security. Having huge potential, Russia has objective opportunities to take a worthy place in the world civilization. Russia is open to mutually beneficial cooperation and is ready for equal cooperation with all countries of the world.*
Keywords: *Russia, Arctic, Polar, Arctic zone development strategy, USA, NATO, cooperation.*

The Arctic is certainly an integral part of the Russian Federation, which has been under our sovereignty for several centuries. So it will remain in later times, said the President of the Russian Federation V.V. Putin [1], emphasizing the importance of the Arctic from strategic positions.

The goals of Russia's foreign policy have a strategic, non-conjunctural character and reflect Russia's unique place on the world political map, its role in history, in the development of civilization.

At the present stage, it is obvious that the resource base, gas and oil, is developing in the Arctic. However, under the current conditions of international sanctions, expansion of intelligence and industrial development will have to be done practically without the involvement of foreign companies that have modern equipment and technologies.

In the opinion of most experts, the state program for the development of the Arctic zone of the Russian Federation (the Russian Arctic) until 2020, approved by the government, although it is certainly an indispensable document, is not financed. Its financing should begin only in 2018, and

now there are only some financial decisions on the Northern Sea Route, but there is no comprehensive plan for the development of the region.

In the absence of a federal initiative to create a center responsible for the implementation of state policy in the Arctic, some regions take leadership and create similar institutions at the regional level. Thus, the main task of the State Committee for Arctic Affairs established in Yakutia is to coordinate actions to implement the republican comprehensive program of socio-economic development of the Arctic and northern regions for the period up to 2020. The committee is responsible for inter-sectoral coordination on the implementation of all planned activities, including other state programs. The second task is the development of traditional industries of the North – reindeer herding, fishing, and hunting. Thirdly, the State Committee will be engaged in improving the legislative framework. In addition, it will supervise the participation of the republic in international organizations – the Northern Forum, the Arctic Council. The Committee will coordinate the development of the Northern Sea Route and measures to clean up the Arctic territories.

Section 1. Economic development of the Russian Arctic zone. The economic development of the Russian Arctic zone took place against the backdrop of the elaborated international economic agenda in the Arctic [2, p. 414-418]. In 2016, the delegates of the Arctic Economic Council at the annual meeting in Norway's Tromsø approved the constituent documents of the organization. The NPP noted that the achievement of such an important stage in the existence of the council was made possible by the participation of Finland, Russia, Canada, Iceland, Denmark, the United States of America, Norway, Sweden, the Inuit Circumpolar Council, the Gwichi'in Council International), the Aleut International Association, the Saami Council. The Arctic Economic Council has become a business forum based on promoting intercorporate activities in the Arctic region, promoting responsible economic development and providing circumpolar business prospects for the work of the Arctic Council. The nuclear power plant includes 42 members who represent eight Arctic countries, as well as six organizations that have the status of permanent members [17].

The implementation of the Strategy for the development of the Arctic zone of the Russian Federation and ensuring national security for the period until 2020 and the main provisions of the documents of the system of state strategic planning of the Russian Federation provides for a comprehensive increase in the competitive advantages of the Arctic zone in order to strengthen the position of the Russian Federation in the Arctic strengthen international security, maintain peace and stability as well as intensification of international cooperation. It is impossible to allow this region to become a new arena of international rivalry, a source of new threats to regional and international security [3, p. 113-120].

In order to develop international cooperation and preserve the Arctic as a zone of peace, it is envisaged:

- ensure mutually beneficial bilateral and multilateral cooperation of the Russian Federation with the Arctic states on the basis of international treaties and agreements to which the Russian Federation is a party, improving the efficiency of foreign economic activity;
- the interaction of the Russian Federation with the Arctic states in order to protect Russia's national interests and the implementation of the rights of the coastal state in the Arctic region provided for by international acts, including those relating to the exploration and exploitation of the resources of the continental shelf and the establishment of its external borders;
- the joint efforts of the Arctic states in the creation of a unified regional search and rescue system, as well as the prevention of man-made disasters and the elimination of their consequences, including coordination of the activities of the rescue forces;
- to strengthen bilateral relations with the Arctic states on a bilateral basis and within the framework of regional organizations, intensifying economic, scientific, technical and cultural cooperation, as well as cross-border cooperation, including in the field of effective development of natural resources and preservation of the natural environment in the Arctic;
- to ensure mutually beneficial Russian presence, economic and scientific activities in the Norwegian archipelago Spitsbergen;
- the assistance in the organization and effective use of transit and cross-polar air routes in the Arctic, the use of the Northern Sea Route for international navigation within the jurisdiction of the Russian Federation and in accordance with international treaties of the Russian Federation;
- the activation of participation of Russian state organizations and public associations in the work of international forums dedicated to the Arctic issues;
- the regular exchange of information on the state of the environment, as well as data on the climate of the Arctic and its dynamics, the development of international cooperation in improving hydrometeorological observing systems for the Arctic climate, including from outer space;
- the organization of complex international scientific research expeditions to study the environment (ice situation, pollution level of marine waters, marine ecosystems) and the impact of observed and predicted climate changes on it;

- the development of a dialogue between the regions and municipalities of the northern states for the exchange of experience in the development of climate and energy policies;
- development of international tourism, including recreational, scientific, cultural, cognitive, environmental.

The Arctic is a region in which all security aspects are closely intertwined. It is impossible to allow this region to become a new arena of international rivalry, a source of new threats to regional and international security. Russia is open to mutually beneficial cooperation in the Arctic and with extra-regional cooperation. All the problems that arise here can and should be solved on the basis of cooperation, and the region itself can and should develop as a space for cooperation and security [4, p. 37-41].

The Russian Federation is a self-sufficient socio-political and economic part of the modern world that enjoys an exceptionally favorable geopolitical position allowing it to act as a liaison between the most important financial and economic regions of the modern world - the regions of the Atlantic, Pacific and Indian Oceans. The shelf of the Arctic Ocean and the Arctic territories of all circumpolar countries are rich in hydrocarbons, a significant part of which will be absorbed by Russia [5].

Section 2. Russia in the Antarctic Treaty System. The President of the Russian Federation by his Decree No. 640 of November 30, 2016 approved the Foreign Policy Concept of the Russian Federation. Paragraph 77 of this Concept stipulates, "The Russian Federation will continue to work to preserve and expand its presence in the Antarctic, including through the effective use of the mechanisms and procedures provided for by the Antarctic Treaty system of December 1, 1959." The Antarctic Treaty, which provides for the demilitarization of the Antarctic region, its use for exclusively peaceful purposes and transformation into a zone free of nuclear weapons.

The participation of Russian specialists in the work of various bodies of the Antarctic Treaty System clearly demonstrates the active position of our state in considering the most pressing issues of the Antarctic community. In most cases, it is the adherence to principles and deep knowledge of Russian specialists that make it possible to create a correct and effective vector of development in matters of international cooperation and, thereby, to maintain the high level of the Russian Federation in strengthening its international prestige.

The Arctic is a territory of pristine untouched nature of the Arctic, rich in huge reserves of gas, oil, gold, platinum, diamonds, etc. [6]. There are scientific studies conducted by Russian scientists. At present, work is underway to extract liquefied natural gas. The main wealth of this harsh region, the Yamal-Nenets Autonomous District, is hidden deep underground 3/4 of all Russian gas.

One gas well a day produces about 700 thousand cubic meters of gas, for example, it is enough to heat a small city. 220 km from Novy Urengoy, the deposit is polar, one of the largest In Russia. In a year, one Zapolyarnoye field can produce up to 130 billion cubic meters of gas; this is more than where it was not in the country.

In the Yamalo-Nenets Autonomous District, the development of a network of research hospitals will continue. In the field season, an international educational and scientific hospital under Nadym will be established, organized by the Tyumen State University with the support of the district.

Possessing huge potential, Russia has objective opportunities to take a worthy place in the world civilization. Russia independently, based on long-term national and state interests, relying primarily on its own forces, is able to secure its place in the world geopolitical system, the place of the world center consolidating the civilization of the Euro-Asian bloc [7, p. 245-271].

There is a concretization of geopolitical values and interests of the Russian Federation. Judging by the measures taken by the state leadership, priorities are determined in the process of promoting national, including geopolitical, interests of the state, mechanisms and institutions for their defense are being formed. To fulfill its geopolitical mission, Russia is in a position to become a center of power, attracting allies from near and far abroad, forming around itself a powerful and dynamically developing region of the world economy and culture.

The IV International Arctic Forum "The Arctic - Territory of Dialogue" in Arkhangelsk developed a draft - new version of the state program "Social-economic development of the Arctic zone of the Russian Federation for the period 2020 and beyond", as well as the development of the nuclear icebreaking fleet In Russia and the deployment of human resources in the Arctic, which was sent to the regions.

The Arctic region has an exceptionally important strategic significance for resolving the tasks of defense capability and state security:

- the border for about 20 thousand km passes through the Arctic Ocean with the territories of four states (the USA, Canada, Norway and Denmark, which owns Greenland) [8, p. 128-132];
- is the operating area of the Northern Fleet;
- a number of the most important enterprises of the defense industry are concentrated;
- the island part of the Arctic zone of Russia has a special significance for the state due to the location on the islands of defense facilities of certain types of Armed Forces, border patrols, polar hydrometeorological stations and posts.

Russia is consistently increasing its presence in the Arctic, which causes discontent among the states of the world community, claiming to

strengthen their influence in the Arctic. Russia, Norway, Denmark, Canada and the United States are applying for the Arctic shelf, stretching to the North Pole [9, p. 33-37].

The Ministry of Defense of the Russian Federation set ambitious plans and targets for 2017, 2018, 2020. [10] on the need to ensure the state's combat capability in this region, as well as the security of the North Sea routes:

- deploy a targeting radar, a point of guidance for fighter aircraft. The main tasks: radar reconnaissance, control of the airspace of the Russian Federation in the Arctic zone;
- to provide a single shield for anti-air defense from the Kola Peninsula in the west to Chukotka in the east of the country;
- to build new year-round airfields, one of which is on the island of Alexandra Land [11, p. 50-53];
- to deploy a link of fighters;
- to ensure the safety of the coastal missile systems "Bastion", modern ships and submarines, armed with complexes "Caliber" and "Onyx";
- the development of defense infrastructure in the Arctic.
- At the present stage, service members are on round-the-clock duty and large-scale exercises of the Northern Fleet are taking place in the waters of the Barents Sea, the White Sea and the Laptev Sea [12 p. 483-489; 13, p. 401 - 407]. 13 launches of sea-based and land-based cruise missiles were made. In total, more than 20 warships, more than 5,000 service members and more than 300 units of military equipment and weapons took part in the exercise.
- The Russian authorities intend to reconstruct 18 Arctic airports; an automated information system will be distributed in the Arctic region; The Ministry of Defense of the Russian Federation received two Arctic helicopters Mi-8; the satellite meteorological complex VBO earned in the Arctic; Russia and Finland will increase cooperation in the Arctic; Karelia was included in the Arctic zone of Russia; The Ministry of Natural Resources appointed the director of the national park "Russian Arctic"; employees of the "Russian Arctic" will study the winter retreat of the American expedition of the early 20th century.

The strategy for the development of the Arctic zone of the Russian Federation and ensuring national security for the period until 2020 was developed in pursuance of the Russian Federation State Policy Framework for the Arctic until 2020 and beyond, approved by the President of the Russian Federation on September 18, 2008 No. Pr-1969, the main provisions of the documents of the system of state strategic planning of the Russian Federation.

Taking into account the state and analysis of problems of legislative support in the Arctic and Antarctic, we note a number of normative and legal acts of the federal level. Among them are the following legal documents:

- Federal Law "On Internal Maritime Waters, Territorial Sea and the Contiguous Zone of the Russian Federation" dated July 31, 1998 No. 155-FZ insofar as it relates to Article 34 of Part 3 and Article 37 of Part 2 on waste disposal issues;
- Federal Law "On State Guarantees and Compensations for Persons Working and Living in the Far North and Equivalent Territories" of February 19, 1993 No. 4520-1;
- The plan for ensuring border security in the Arctic region (2010-2020);
- The Federal Law "On Ratification of the Protocol on Environmental Protection to the Antarctic Treaty" of May 24, 1997 No. 279-FZ;
- The federal law "On the regulation of the activities of Russian citizens and Russian legal entities in the Antarctic" dated June 5, 2012 No. 250-FZ;

The Federal Law "On Amendments to Certain Legislative Acts of the Russian Federation in Connection with the Adoption of the Federal Law" On Regulating the Activities of Russian Citizens and Russian Legal Entities in the Antarctic "of June 5, 2012 No. 251-FZ.

Improvement of legislative support makes it possible to implement the priority directions of the Strategy development: the complex social and economic development of the Arctic zone of the Russian Federation; the development of science and technology; creation of a modern information and telecommunications infrastructure; ensuring environmental safety; international cooperation in the Arctic; ensuring military security, protection and protection of the state border of the Russian Federation in the Arctic.

The strategy defines the main mechanisms, ways and means for achieving strategic goals and priorities for sustainable development of the Arctic zone of the Russian Federation and ensuring national security. The strategy is aimed at realizing the sovereignty and national interests of the Russian Federation in the Arctic and contributing to the solution of the main tasks of the state policy of the Russian Federation in the Arctic, as defined in the Fundamentals. The Expert Council on the Arctic and Antarctic implements the Development Strategy by consolidating the efforts of all interested subjects of the state policy of the Russian Federation in the Arctic (federal bodies of state power, state authorities of the constituent entities of the Russian Federation, the territories of which are wholly or partly part of the Arctic zone of the Russian Federation, and

organizations) to solve key problems of the development of the Arctic zone of the Russian Federation and ensuring the national security in the Arctic.

Russian politicians and the military have repeatedly stated that political and military pressure from the United States and NATO in the Far North is increasing [14, p. 8-13]. Canada joined the UN Convention on the Law of the Sea in 2003. About the claims for the expansion of its continental shelf declared in 2013. Canada's intention is to prove that the Canadian Arctic zone belongs to the North Pole. Also in 2013, Canada expressed concern about the increasing presence of the Russian Federation in the Arctic [16, p. 109].

They argue that the US and some other NATO countries (especially Norway) are trying to undermine Russia's position and reduce its presence in the region by actively penetrating the Arctic. They strongly emphasize the fact that on the other side of the border the forces of the alliance continue to oppose the conventional and strategic forces of Russia. Russia is very suspicious of military exercises, even small in scale that NATO is conducting in close proximity to its borders. Programs to modernize the armed forces of the Arctic coastal states also raise serious concerns for Russia. President of Russia V.V. Putin at the plenary session of the forum "Russian Energy Week" said that the country is honest with its partners and does not play a double game with anyone. However, not all states in the world are striving for good-neighborly peaceful coexistence. Russia is ready for equal cooperation with all countries of the world.

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