

The Polar Express Submarine Cable: The First Transarctic Cable and Security Concerns in the Arctic

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Introduction

The interest of various stakeholders in the development of telecommunications in the Arctic is growing every year. From local communities' representatives to Arctic states officials and foreign investors, one of the key elements of telecommunications growth is an extension of submarine cables network. In contrast to densely populated areas where thousands of kilometers of cables are laid, the installation of cables in the Arctic is a pioneer industry. Due to severe climate conditions such as extreme temperatures, ice covered areas, non-accessibility of cable ships to the region and inexpediency of laying cables for small rural communities, for a long time laying a cable in the Arctic was not considered feasible. However, this is changing with more and more projects coming to the region. There are

already several examples of successfully completed short line projects in the Arctic. Also, various big scale projects were planned to cross the Arctic but finally were not implemented. The summer 2021, the first transarctic cable entered construction phase – the *Polar Express* fibre optic line. This project is planned to change the Arctic future and extend communications in the Arctic. However, apart from benefits to be brought by this cable to the north¹, it may also raise several security concerns to the unique Arctic region. This article aims at bringing a light on such security aspects and provides the updated picture on submarine cables' in the Arctic.

Submarine cable projects in the Arctic

Government officials from Arctic states have expressed the hope that the Arctic shall benefit from new fibre optic infrastructure, including submarine cables². With the establishment of the Task Force on Improved Connectivity

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¹ M. Salmnen, G. Zojer, K. Hossain, "Comprehensive Cybersecurity and Human Rights in the Digitalising European High North", in M. Salminen, G. Zojer, K. Hossain (eds.), *Digitalization and Human Security, A Multi-Disciplinary Approach to Cybersecurity in the European High North*, Switzerland: Palgrave Macmillan, p. 29.

² Final report: Rovaniemi Ministerial meeting - 7 May 2019, 'Improving Connectivity in the Arctic Arctic Council Secretariat', 2019, p. 22.

in the Arctic in 2017³ the improved connectivity became one of the priorities for the Arctic development agenda. In May 2021, Foreign Ministers of the Arctic States, at the 12th Ministerial meeting of the Arctic Council, adopted a Reykjavik Declaration where they highlighted among the priorities the development of resilient infrastructure such as connectivity in the Arctic⁴. Since the Russian Federation has recently taken the chairmanship in the Arctic Council for several upcoming years in its strategy until 2023 titled “Responsible governance for a sustainable Arctic” it has announced the development of telecommunications systems for the wellbeing and prosperity in the Arctic⁵. That said, there is a continuously supported interest in submarine cables development followed by the practical implementation from several

telecommunications companies in accordance with submarine cables regulation under international law⁶.

One of the first lines completed in the Arctic was *Svalbard Undersea Cable System* laid in 2004 with the purpose to connect Svalbard with Norway mainland. An important remark is that laying a cable in the Arctic requires the presence of a special cable ship suitable to navigate and lay a cable in the cold Arctic waters that makes the project implementation more complicated than cable installation in another area. Also, a concern was expressed by the Arctic Council that “providers need to select their submarine fiber routes carefully, given the risk of ice scour in some areas, and to ensure reliable service backup plans to carry end-users”⁷. Another project performed in 2009 was the *Greenland Connect cable*

³ See more at [https://www.uarctic.org/news/2019/5/task-force-on-improved-connectivity-in-the-arctic-tfica-report-improving-connectivity-in-the-](https://www.uarctic.org/news/2019/5/task-force-on-improved-connectivity-in-the-arctic-tfica-report-improving-connectivity-in-the-arctic#:~:text=At%20the%20Arctic%20Council%202017,and%20to%20work%20with%20the)

[arctic#:~:text=At%20the%20Arctic%20Council%202017,and%20to%20work%20with%20the](https://www.uarctic.org/news/2019/5/task-force-on-improved-connectivity-in-the-arctic#:~:text=At%20the%20Arctic%20Council%202017,and%20to%20work%20with%20the)

⁴ REYKJAVÍK DECLARATION, 20 May 202 Arctic Council Secretariat, 2021, Paragraph 15, available at the the Arctic Council’s open access repository: oarchive.arctic-council.org.

⁵ “Responsible Governance for Sustainable Arctic”, RUSSIAN CHAIRMANSHIP 2021-2023, paragraph 5 ‘Socio-economic development’, available at <https://arctic-council.org/about/russian-chairmanship-2/>.

⁶ Read more about the legal regulation of submarine cables under international law in D. Shvets, “The Legal Regime Governing Submarine Telecommunications Cables in the Arctic: Present State and Challenges”, in M. Salminen, G. Zojer, K. Hossain (eds.), *Digitalization and Human Security, A Multi-Disciplinary Approach to Cybersecurity in the European High North*, Switzerland: Palgrave Macmillan pp. 175-203.

⁷ TELECOMMUNICATIONS INFRASTRUCTURE IN THE ARCTIC a circumpolar assessment, Arctic Council Secretariat, 2017, available at http://library.arcticportal.org/1947/1/2017-04-28-ACS_Telecoms_REPORT_WEB-2.pdf.

system connecting Canada, Greenland and Iceland. In 2017 *Greenland Connect North* cable followed. The line is located on the west coast of Greenland, connecting small towns there⁸.

Apart from local lines, several initiatives to lay the transarctic cable have been developed. The first is *ROTACS (Russian Optical Transarctic Cable System)* to connect Tokyo and London emerged in early 2000s. The planned length was 16.000 (sixteen thousand) kilometers but this project has not entered into the construction phase. Another project was *Polarnet Cable Project*. In the framework of this project an extensive marine survey operation was conducted and from that time it became clear that such a long cable line may be installed in the Arctic. The project was under discussion for about 10 years however, received no further development. The *Arctic Connect Project* cable system was initiated by Finnish company Cinia and Russian telecom company Megafon to connect Norway with Tokyo. Even though the development phase of the

project has progressed as planned and the funding for this phase has been secured, it was decided by stakeholders to put the development project on hold as it was announced in May 2021. The *Quintillion Submarine Cable System* was initially planned to connect Tokyo with London and be performed as a long line crossing the Arctic. However, it was not fully implemented as initially planned and only the first stage was accomplished resulting in a cable line connecting small towns on the west coast of Alaska⁹.

The Polar Express fibre optic line

Among all the projects to lay a cable across the Arctic, only the cable *Polar Express*¹⁰ entered an actual construction phase. This is the unique project of a transarctic submarine fiber-optic communication line with total length of 12,650 (twelve thousand six hundred fifty) kilometers. The project will connect Murmansk to Vladivostok along the shortest route from Europe to Asia. In contrast to previous cable projects, the interesting feature of this

⁸ For the visual reflection of submarine cables in the Arctic as well as in other regions see Submarine cables map by Telegeography, available at <https://www.submarinecablemap.com>.

⁹ D. Shvets, "The Legal Regime Governing Submarine Telecommunications Cables in the Arctic: Present State and Challenges", in M. Salminen, G. Zojer, K. Hossain (eds.), *Digitalization and Human Security, A Multi-Disciplinary Approach to Cybersecurity in the European High North*, Switzerland: Palgrave Macmillan, p. 187, pp. 175-203.

¹⁰ See updated information on the Polar Express submarine cable official website, available at <https://xn--e1ahdckegffejda6k5a1a.xn--p1ai/>.

cable is that it appears to be fully state-driven: owned, installed, and further maintained by the Russian Federation. Ministry of Transport of the Russian Federation and the Federal agency for maritime and river transport are customers of this project. Federal State Unitary Enterprise Rosmorport acts as the Contractor/developer. Operator Marsat (Morsviazsoutnik) is also Federal State Unitary Enterprise. Finally, Perspective Technologies Agency joint-stock company engaged as a contractor to install the cable is the only stakeholder that does not appear to be fully state owned. However, this fact does not change the legal title on Polar Express submarine cable system. After the completion of works, the ownership and maintenance rights of the cable will fully belong to the state. The Polar Express cable is already under construction and planned to be completed in 2026. First 4 kilometers of the cable line were laid this summer. Also, this cable is being laid in the framework of the Russian Arctic strategy until 2035 signed by the President of the Russian Federation.¹¹

The Polar Express cable aims to provide the geographically shortest route for telecommunications traffic between Europe, Asia and America and thereby minimize the delay in the transmission of information, to develop the port infrastructure of the Northern Sea Route and form the digital ecosystem of the region as well as expand the international infrastructure of backbone fiber-optic communication lines.

Security concerns

After understanding the relevant picture of cable projects in the Arctic, the next point to address is security concerns that may rise in connection to the activity of submarine cables laying in the Arctic, especially in the light of the Polar Express cable under construction. The following paragraphs list several security concerns this author formulates, although is non-exhaustive and, perhaps, several other positions may be added.

¹¹ Decree of the President of the Russian Federation dated 26 of October 2020 №645 'On the strategy of development of the Russian Arctic zone and ensuring the national security until 2035' contains directions of development, steps and programs to be implemented by the Russian Federation in the Arctic. Paragraph 13 (ii) of the strategy mentions the development of transarctic fibre optic line connecting biggest ports and settlements in the Russian Arctic that highlights the priority and significance of this project for the Russian Federation.

The first would be *scientific concern*. After the construction of the Polar Express cable, the Russian Federation will exercise total control over the cable itself and its infrastructure under domestic law. Since the Polar Express cable is planned to be laid very close to the Russian coast, it would fully fall into the Russian jurisdiction according to the international law of the sea¹². Not only the cable itself but also all the infrastructure, including, for instance, landing stations. It might raise concern from the scientific point of view. Cables are known for their contribution to scientific research by accommodating various sensors measuring temperature, salinity, and other ocean characteristics. There might be a risk of noncooperation from the Russian government possessing the ownership on the Polar Express cable in sharing scientific results since the exclusivity of results might have an extraordinary value. The Arctic still keeps many secrets and some areas of scientific research remain under discovered. The unique data and knowledge obtained

with the help of submarine cables might be limited in access and even marked as 'secret' should the Russian Federation require so. Even in the case of willingness to such scientific cooperation, the exclusive jurisdiction and state ownership of the cable might result in delays and bureaucratic procedures to obtain permissions and licenses for sensors installation initiated by foreign scientists.

The next concern would be a *geopolitical concern*. No doubt, the Polar Express cable will strengthen the connectivity infrastructure not only of the north but the whole Russian telecommunications by bringing the possibility to reroute data flows. However, there is the other side of the coin. It may contribute to Russian's isolation in cyberspace. During last years the idea of creating "Runet", the closed Internet space for Russian citizens only, to be separated from the world web has been actively promoted by the Russian government. There were several steps¹³ and announcements by government

¹² According to the United Nations Convention on the Law of the Sea 1982 the ocean is divided into several maritime zones where coastal states may exercise certain rights and freedoms but simultaneously are subject to various obligations. The logic employed by the convention is that closer the maritime zone is located to the coastal state's shore, more rights it is entitled to exercise (territorial sea by way of example). In contrast, the far maritime zone is located from a coastal state, less rights and freedoms it has (for instance, the high seas as maritime zone not belonging to any state and reserved for peaceful purposes).

¹³ One of the legislative steps for the "isolation" of the Russian Internet was the adoption of Federal Law dated 1st of May 2019 №90. It foresees the creation of the internal infrastructure allowing networks

officials towards it. The very aim of it is to ensure Russian independence from the outside world should threats in cybersecurity appear. The Russian telecommunications agency Roskomnadzor already has extensive powers to block or decrease the speed of certain websites (for instance, twitter, facebook, linkedin) that may appear a threat in the opinion of this authority to Russian cybersecurity. Installation of the Polar Express cable may contribute to the closeness of the Runet as there will be more capacity to run the Internet independently without any foreign dependence, using Russian analogues and internal resources. The Deputy Chairman of the Security Council of the Russian Federation, Dmitry Medvedev, announced that even if the likelihood of disconnecting Russia from the global network exists, the country is ready for it¹⁴.

Another concern to follow is *cybersecurity concern*. For now, until the cable project is not completed and non-operative, it is difficult to predict how it will operate. However, in the future, there is a probability that it will be

connected to other fibre optic lines to actually connect Europe and Asia. This is the very idea of laying a transarctic cable, to reduce distance and increase speed of connections by rerouting flows. It was confirmed by the General Director of Morsvyazspudnik, that it is possible to attract foreign partners to the project and create lines that will connect the Murmansk Region with Europe and the Primorsky Territory with Asia¹⁵. Nevertheless, the attraction of foreign partners won't change the governance over the Polar Express cable in the Russian waters and there is a possibility of controlling and copying data coming through the cable since no external control might be exercised. Although practices of spying and listening through special devices are practices dated back to the previous century and war times, it is not possible to fully exclude this concern even in our time. The data in possession is great leverage that might be employed by a state to promote its interests in the international arena.

Then comes *human security concern* of Arctic communities in cyberspace and

operators to be independent from foreign sources and be ready to cover any connection fault internally. It demonstrates that the Russian Federation is ready for the total cut from Internet should the geopolitical situation come complicated and requiring to do so.

¹⁴ Russian Gazette, 01.02.2021, available at <https://rg.ru/2021/02/01/medvedev-rf-gotova-sdelat-runet-avtonomnym-no-ne-hochetsia-do-etogo-dovodit.html>.

¹⁵ See the website Morskie vesti, available at <http://www.morvesti.ru/analitika/1692/92097/>.

in connection to submarine cable installation. The first transarctic cable will definitely bring changes to the lives of remote Russian communities living in the north. Those services that are now considered in certain areas as luxury will be available at a low cost and on a permanent basis. For instance, telemedicine, online education, ordering goods through Internet or the possibility of conducting high quality videoconference are among such services. On the other hand, it may loosen the indigenous way of living, local traditions, practices and customs¹⁶. Being more accustomed to the use of telecommunications and thus being more dependent on it, they will at the same time become more vulnerable to its failures and disruptions.

Environmental security might also be included in the list of security concerns in the Arctic. Even though the impact from submarine cables in the Arctic cannot be compared with other more harmful activities such as oil and gas exploitation, adjacent areas are nevertheless affected during cable

installation. Noise, vibration, damage of the seabed during the cable burial affects local flora and fauna. The same applies to cable maintenance operations, as cable faults and damages cannot be avoided. It is visible from the experience of cables in other parts of the world. The risk of cable damage is even bigger in the Arctic due to cold waters and moving ice. Should the cable fault happen, a cable ship shall arrive at the place of damage to fix the problem. It is not always possible for cable ships since certain areas may be covered by ice and for this, services of ice breakers are required. That increases the presence of ships in the Arctic, time for repair operations and impact on living organisms.

Finally, according to the Russian Arctic Development Strategy until 2035, I.3 (ж)¹⁷, there is an increase in conflict potential in the Arctic. This might be titled as *military security*. The Strategy further explains that in the Arctic certain strategical objects intended to restrain the aggression against the Russian Federation are located¹⁸. In addition, there is a need to increase

¹⁶ See more on human security concerns as a result of digitalization in the High North in M. Salminen, G. Zojer, K. Hossain (eds.), *Digitalization and Human Security, A Multi-Disciplinary Approach to Cybersecurity in the European High North*, Switzerland: Palgrave Macmillan.

¹⁷ Russian Arctic Development Strategy until 2035 in Russian is available at <http://publication.pravo.gov.ru/Document/View/0001202010260033>.

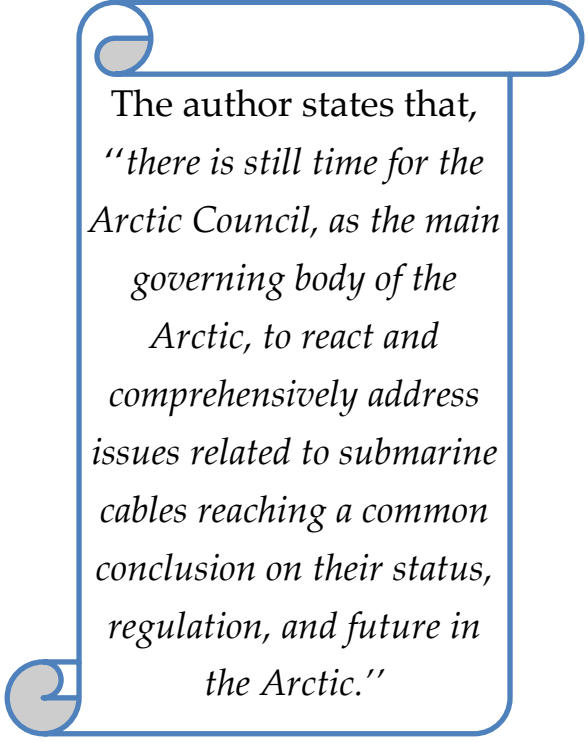
¹⁸ Ibid, paragraph II, 5 (ж).

military capabilities of the Armed Forces of the Russian Federation in the Arctic¹⁹. Moreover, the whole section III (19) is dedicated to description of main objectives to ensure military security, defense and protection of the state border of the Russian Federation in the Arctic. Should the military conflict rise in the region (and the possibility of military conflict exists since nonregulated disputes exist between Arctic states), the Polar Express cable would be among the targets. The history knows cases of cutting cables of enemies during the war to limit its communications capability²⁰.

Conclusion

Submarine cables are getting more and more attention as the infrastructure of the future for the Arctic plays a significant role in such infrastructure development. The Polar Express cable would likely be not the only one and more cables will come to the north in the future. Arctic and non-Arctic states are equally interested in connecting to the first transarctic cable and prolongation of lines to extend it to other regions of the world. At the same time, the Polar Express cable may

complicate relations in the region between the Russian Federation and the other Arctic and non-Arctic states. Several security concerns might appear in relation to cable laying activity in the Arctic, namely scientific, geopolitical, cyber security, human security, environmental and military concerns. This is without prejudice to any other concern that may appear in the region. As a final point, the author believes that there is still time for the Arctic Council, as the main governing body of the Arctic, to react and comprehensively address issues related to submarine cables reaching a common conclusion on their status, regulation, and future in the Arctic.



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“there is still time for the Arctic Council, as the main governing body of the Arctic, to react and comprehensively address issues related to submarine cables reaching a common conclusion on their status, regulation, and future in the Arctic.”

¹⁹ Ibid, paragraph II, 7 (τ).

²⁰ D. Colombos, *The International Law of the Sea* (Russian translation), edited by A. Zhudro, M. Lazarev, translated by V. Zaitseva, N. Kuzminskiy: Moscow, Progress, 1975, p. 474.