

Time Equals Money

Developing a profitable shipping system using the Northern Sea Route.

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The Northern Sea Route (NSR) can significantly shorten the transit time between the North Atlantic and the North Pacific, and has the potential to accelerate Arctic resource development. To achieve this, information regarding the route as well as its availability and significance, must become more widespread among cargo owners, ship owners, and industries that could benefit.

Although the Northern Sea Route is still being developed as a viable commercial option, use has already started and is picking up momentum. This accelerating development is partly due to climatic changes leading to ice reduction, technological advances, and renewed interest from Arctic nations. The main driver is high commodity prices—making higher costs and investments profitable—despite the higher operating costs in the harsh Arctic environment.

International Commercial Shipping via the Northern Sea Route

In 2006, Tschudi Shipping Group focused on port development and purchased the Sydvaranger iron ore mine that was closed in 1996, and the related port areas in Kirkenes, Norway. The mine went public in 2007, and in 2009, the first vessel departed for China with 75,000 metric tons of iron ore concentrate.¹

During 2010, all shipments were planned to go to China via the traditional routes through the Suez Canal or via Cape of Good Hope. Against this background of an increasing number of shipments to China, it became natural to think of the Northern Sea

Route as an alternative with potentially significant savings. This sounds like an attractive option, but it is not that simple to realize.

For example, to establish the commercial feasibility, a large number of stakeholders would have to be involved: cargo owners, ship owners, ship brokers, commodity traders, Rosatomflot (the Russian icebreaker operator), insurance and legal experts, classification societies, public authorities, and scientific institutions. But could these parties collaborate without individual interests or commercial considerations complicating the issue?

In April 2010, the nonprofit foundation Centre for High North Logistics took the initiative to organize a workshop with a number of different stakeholders. Representatives, mostly from Russia and Norway, gathered in Kirkenes to discuss opening the Northern



Centre for High North Logistics workshop. Photo courtesy of Tschudi Shipping Co.

The Northern Sea Route



Above left: USCG Rear Admiral Christopher Colvin (right) and CAPT Craig Lloyd (center), greet Russian Lt. Gen. Raphael Alexseevich Daerbaev (left), upon his arrival to Kodiak, Alaska, in April 2011.

Above right: The Russian tanker *Renda* transits toward the Port of Nome, Jan. 13, 2012. U.S. Coast Guard photos by Petty Officer Charly Hengen.

- The Northern Sea Route shortens the distance between the Atlantic and the Pacific by 40 to 60 percent, depending on the location of loading and discharging ports.
- The navigational season is from July to November.
- The NSR stretches from Novaya Zemlya to the Bering Strait and is under Russian jurisdiction. Permission to pass is granted by the Northern Sea Route Administration in Moscow.
- Rosatomflot icebreaker escort is mandatory, at a cost that is roughly equivalent to Suez Canal passage.



The Russian icebreaker *Yamal*, Canadian icebreaker *Louis S. St. Laurent*, and the Coast Guard Cutter *Polar Sea* rendezvous near the North Pole. U.S. Coast Guard photo by LCDR Steve Wheeler.

Sea Route for regular oil, gas, and dry bulk transportation between Europe and Asia.

During the workshop, it became clear that the Russian authorities welcomed the idea of increased shipping in the NSR, which gave a clear signal that such increased traffic would be facilitated. Based on this outcome, Tschudi took the initiative, with the Danish operator Nordic Bulk Carriers and a number of other parties, to try to realize a commercial passage of the NSR.

NSR Project 2010

The stakeholders called this effort the NSR Project 2010; and in September 2010, the bulk carrier M/V *Nordic Barents* completed the voyage from Kirkenes to the port of Lianyungang, China, saving approximately 17 days, compared to transiting the Suez Canal. Transiting the Northern Sea Route shortened the voyage by nearly 5,700 nautical miles, saving about 500 metric tons of fuel, with corresponding reductions in environmental emissions. An additional bonus: No pirates.



As Russia has regularly used the route since the 1930s, the significance of the transit was not the passage itself, but that it was carried out by a non-Russian vessel carrying a non-Russian cargo between two non-Russian ports. In this way, the NSR proved itself a viable international commercial trade route.

Operational Lessons Learned

July to November is the navigational season and the NSR has been practically ice-free during the months of August and September for the past few years. The varying depths and incomplete hydrographic surveying for certain areas limit the route options, but Russian authorities are conducting ongoing surveys, which will increase navigational options.

The main challenges during these months are fog, flat coastal landscapes, remoteness, and varying ice presence. In winter, the region experiences harsh ice conditions, extremely low temperatures, and constant darkness.

Changing weather conditions with pushing-off and pushing-to winds that may cause ice ridges are possible during all seasons. Ice forecasting services, which are becoming quite accurate and reliable, work to reduce this uncertainty.

Increased Use

In 2010, four vessels transited the Northern Sea Route. In 2011, 34 vessels passed, including a 162,000 deadweight ton tanker (the largest vessel ever to pass) and a 75,000 deadweight ton bulk carrier loaded with iron ore. In 2012, a total of 46 vessels passed through the NSR.²

During the 2011 and 2012 seasons, several 75,000 deadweight ton tankers transited the NSR with cargo both ways—gas condensate from Russia to China, and jet fuel from Korea to the European continent. A seismic vessel saved eight days mobilizing to New Zealand from Hammerfest, Norway, via the NSR, compared to the alternative voyage through the Panama Canal.³

Commercial Implications

In 2012, Lloyd's of London and Chatham House reported about \$100 billion of investment will take place during the next decade in the Arctic, mostly in offshore energy.⁴

With the increasing importance of Arctic mining, the opportunity for faster access via the NSR to resource-hungry markets in Asia opens up. In the future, the Arctic, a region where gas meets ore, can serve as a platform for industrial processing *in situ* before shipment directly to international markets.

As we see it, opening the Northern Sea Route may have implications for several industries.

- The shipbuilding and construction industries will benefit by using the NSR for cost-efficient vessel positioning as well as from the increased demand for specialized ice-class vessels and structures serving offshore mining.
- For cargo owners and industrial companies, the NSR offers a shorter trade route between the North Atlantic and the North Pacific regions. Additionally, new sources of industrial raw materials and energy offer closer supply sources



Tschudi Arctic Transit performs ship-to-ship gas condensate transshipment to the tanker *Vladimir Tikhonov*, near the North Cape, Norway, before it departs for Thailand via the NSR. Photo courtesy of the Tschudi Shipping Co.

and the opportunity to develop a new industrial frontier.

- Shipping companies utilizing the Northern Sea Route from a northern European loading port in the Baltic Sea to the Far East save about 15 days (at 13 knots), depending on the port of discharge, compared to the Suez Canal. The distance between Vancouver and Rotterdam is eight days shorter than through the Panama Canal. In addition, repositioning and demand for destination shipping services into and out of the Arctic will offer further trading possibilities.

Destinational Shipping

In the near term, it is likely that destination shipping will increase via specialized shuttle tankers, bulkers, multipurpose vessels, and liquefied natural gas carriers, as well as vessels transporting oil, gas, minerals, and equipment in and out of the Arctic.

For example, in 2012 the Russian Sakhalin Shipping Company launched a new seasonal service between the port of Everett, Washington, and Pevek, Chukotka, and other ports in the northeastern region of Russia.⁵

Short Term Outlook

The main factor influencing the short-term outlook for the NSR is the inherently unpredictable freight market; this is even more difficult to assess because

of varying fluctuations within the different shipping segments.

The main driver is the economic savings achieved by transiting the NSR relative to the traditional routes. Other important factors are commodity price differences in Asian and Western markets, delivery time sensitivity for various cargoes, and vessel repositioning cost. In this context, the time required to plan and execute the passage is important. It is a function of ice conditions, waiting time, availability of suitable vessels, and the time needed to get the approval to pass the NSR.

The main limitation is the supply of ice-class tonnage. Vessel availability varies greatly among different segments and sizes, but is very limited within the larger tonnages, in particular for dry bulk and liquefied natural gas carriers. Other factors include fuel prices, the NSR transit fees (laden and in ballast), and the cost of insurance and escorts.

In my opinion, the NSR is unlikely to take a major share of the transit cargoes between the Pacific and the Atlantic as the major trade routes of the world remain too far south for the NSR to become relevant for the largest cargo flows. Additionally threatening to future NSR development are the potentially prohibitive IMO

Polar Code requirements and the longer-term uncertainty of climate change effects on future ice conditions. However, this should not be taken for granted as long as Russia wants it differently.

Russian President Vladimir Putin predicted that his country's Northern Sea Route would rival the Suez Canal as a global trade route.⁶ In response, a new Russian bill regulating merchant shipping on the Northern Sea Route entered into force in March 2013.⁷

Presently, Rosatomflot's fleet of icebreakers consists of six vessels, which will be gradually phased out in 20 years. The Russian government is facing up to this challenge by ordering the world's largest and most powerful icebreakers for delivery at the end of 2017.⁸

Balancing Economic and Environmental Needs

The increased activity in the Arctic, with its collateral of new shipping opportunities, also represents new environmental challenges. There is a window of opportunity now, before the development accelerates, for designing the playing field in a way that balances the desire for economic development and the needs of the environment. Considerations must be taken to integrate economic and environmental needs and take into account issues such as routing measures, speed reductions, designation of particularly sensitive



Børge Ousland's blog, www.ousland.no/blog, documents the Arctic explorer's three-month journey around the North Pole. Photos courtesy of Tschudi Shipping Co.

areas, places of refuge, and emergency response preparedness.

It is also a challenge that transportation via the NSR is in its infancy and is very cost-sensitive at this stage. If costly regulations, such as a full-scale ban on heavy fuel oil are imposed, while alternative routes can continue to use it, the NSR will be uncompetitive from the beginning and never get up to a sustainable level. Developing a balanced regulatory framework is aided by the fact that the Arctic Council (the main driver of this process) consists of nations that all have direct interests in establishing sustainable economic and environmental solutions.

Presently, the best safety measures against accidents are Russia's regulatory requirements and mandatory Rosatomflot icebreaker escort. The addition of new powerful arctic icebreakers to the national fleets of a number of stakeholders are important steps in the right direction and will add to the collective global capacity in case of Arctic emergencies.

About the author:

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Mr. Tschudi attended the Royal Norwegian Naval Academy and served as sub-lieutenant in the Royal Norwegian Navy. He earned a second mate's certificate from merchant navy colleges in the UK, a BSc (Econ) from the London School of Economics, and an MBA from INSEAD, France.

He is also the chairman of the Centre for High North Logistics, a member of the World Economic Forum's Global Agenda Council on the Arctic, a member of the board of Maritim Forum Oslofjord, and former president of the Oslo Shipowners Association.

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