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Future of traffic on the **Northern Sea Route**

An exploration of traffic and cargo volumes through the Northern Sea Route and the challenges of safe navigation. By Han-Chang Yu and James Bond, ABS

With the record low Arctic ice coverage in 2007, navigation via the formerly impenetrable Northern Sea Route (NSR) became a viable option and an apparent maritime fast lane. Ice coverage data indicates that 2007 – as the then new minimum – is not a statistical outlier, with six of the last 10 years more than two standard deviations below the long-term average and 2012 significantly lower still.

The NSR opened to foreign flagged cargo ships in 2009 with two German vessels transporting heavy equipment from the Far East to Novy Port, located at the mouth of the Ob River on the Yamal Peninsula in Russia's Yamalo-Nenets Autonomous Region. In the following years, there was a flurry of activity that encompassed a range of cargo types, including coal, ore, hydrocarbons and frozen fish. During this time, two modes of transit – single cargo/ballast voyage and roundtrip voyage – were trialled to maximise efficiency.

Tracking transit volume

The transit cargo volume grew from 111,000 tons in 2010 to 1.356 million tons in 2013, with a total of 71 transits. Activity during this period allowed industry to evaluate future possibilities for NSR transit shipping, carried out through a number of exploratory or demonstration voyages with large crude oil tankers and LNG carriers. Records show 158 transit voyages during this period by different types of cargo vessels.

Since 2013, the number of vessel transits and tonnage on the NSR have declined sharply, falling to a low of 18 transits and 40,000 tons in 2015. Industry experts suggest the decline in traffic reflects the steep reduction in bunker prices. One reason is that as the cost of fuel decreased sharply, the advantage of saving fuel cost on the shorter NSR route was less significant to vessel operators. A second reason is the decline of commodity prices, carriage of which requires large-volume shipping to achieve the desired economics. The number and size of ice capable ships needed for the route is relatively small.

The 2016 NSR traffic volume figure, recently published by the Northern Sea Route Administration (NSRA), shows an increase to 214,000 tons with 19 transits. The increase of cargo volume is mainly due to large shipments of coal from Canada to Finland.

Photos: ABS NSR

COSCO activity

China Ocean Shipping Company (COSCO Shipping) continues to be a consistent player on the NSR route in recent years. It had its first NSR voyage in 2013, followed by a roundtrip transit in 2015. The year 2016 saw two transits by COSCO ships, and plans are in place for more. ABS and COSCO Shipping signed an agreement in early 2016 to cooperate on trans-Arctic voyages through the NSR. The agreement includes development of specialised ice class vessel types able to navigate the Arctic sea route under the new regulatory regime of the IMO Polar Code. ABS and COSCO Shipping held a workshop to review the IMO Polar Code requirements and assess the impact on new vessel designs. Workshop participants also reviewed the operation of existing vessels under the Polar Code, which required an operational assessment to define the operational limitations, such as the ice conditions and the temperatures in which the vessel is allowed to operate.

Cargo volumes

The cargo volume reported by the NSRA is for ships passing through the entire NSR, between the Bering Strait that separates Russia and the United States in the Pacific Ocean and the Kara Gates, a strait between the southern end of Russia's Novaya Zemlya and the northern tip of the Vaygach Island in the Kara Sea.

In fact, the through traffic volume on the NSR is a small fraction in comparison to domestic destination shipping. For example, cargos bound to the Yamal LNG plant and the Sabetta Port facility were reported to be 5.4 million tons in 2015 on the NSR, up from approximately 4.0 million tons in 2014 and 3.9 million tons in 2013. The Yamal LNG plant is expected to deliver the first LNG cargo in late 2017 using an ARC 7 icebreaking LNG carrier. With the plant construction completed, 17.6 million tons of LNG shipment is expected in 2021.

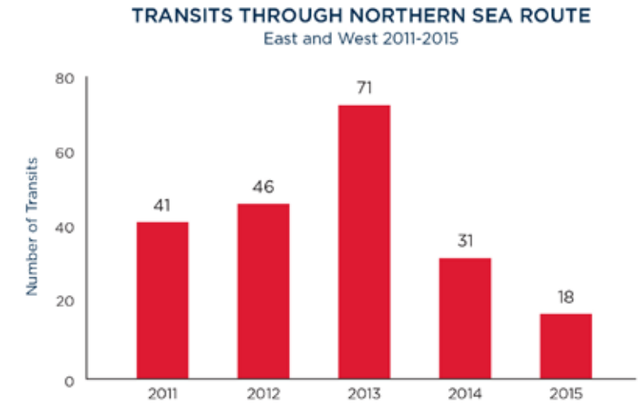
Crude oil is another growing outbound NSR cargo. Novy Port is one of the largest oil and gas condensate fields being developed in the Yamal-Nenets Autonomous Region. The field is situated away from the existing pipeline infrastructure; so oil is shipped from the Arctic Gate offshore oil terminal by three icebreaking shuttle tankers. The first large cargo of oil was loaded on 12 September 2016 from Novy Port for Murmansk. All three ships were active by January 2017, and the milestone millionth ton cargo of oil was loaded on 29 January 2017, less than six months after the first shipment. The port is expected to deliver 8.5 million tons of crude oil and condensate in 2017.

The Yamal LNG carriers and Novy Port shuttle tankers are designed to operate year round from the Yamal peninsula in the Kara Sea. The operational experience in the winter months will be valuable in increasing commercial confidence to further utilise the NSR. The steady flow of hydrocarbons from the Yamal area will be the main source of cargo volume through the NSR until the economy of the transit voyages through the NSR regains viability.

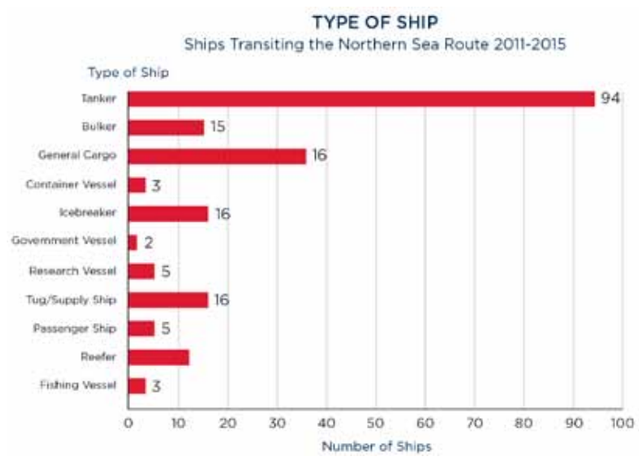
Safe navigation

Newcomers to the NSR need to have a firm understanding of the challenges and requirements.

Help is available in the ABS advisory, 'Navigating the Northern Sea Route', which was published in January 2014. The advisory provides information to support ship owners and operators that want to transit the region safely and efficiently and includes information on applying for permits as well as guidance for identifying technical and operational risks. Additional guidelines and standards are needed, and ABS will continue in its role of helping to develop tools for safer Arctic operations. FE



Transits through the NSR peaked in 2013. (Source: Protection of the Arctic Marine Environment using statistics from the Northern Sea Route Information Office – www.arctic-lio.com)



The vast majority of vessels transiting the NSR between 2011 and 2015 were tankers. (Source: Protection of the Arctic Marine Environment using statistics from the Northern Sea Route Information Office – www.arctic-lio.com)