ROSATOM Functions as the Infrastructural Operator of the Northern Sea Route
State Policy in the Sphere of Arctic Development

We are facing ambitious tasks of the Arctic and the Northern Sea Route development. This does not mean mineral resources production and creation of such gas liquefaction enterprises only, it means further development of nuclear shipbuilding. Development of the icebreaking fleet and the Northern Sea Route will make it possible to perform shipments from the Yamal LNG to all parts of the globe and all year round”.

President of the Russian Federation Vladimir Putin
Sabetta, December 08, 2017

I already mentioned this but I would like to repeat – rephrasing the great Lomonosov who said that Russia will expand through Siberia. Now Russia should expand through the Arctic, since there we have our main supply of mineral resources.

President of the Russian Federation Vladimir Putin
major press-conference December 14, 2017
15. Government of the Russian Federation to prepare in accordance with Strategy of spatial development of Russian Federation in collaboration with regional public authorities and by 01 October adopt a comprehensive plan of modernization and expansion of backbone infrastructure, which should ensure by 2024::

a) Development of “West-East” and “North-South” transport corridors for cargo transportation, through, among others::

...>

Development of Northern Sea Route and increase flow of goods through it to 80 million tons.
The “Two Keys” Approach to Managing the Northern Sea Route according to the Federal Law #525 dd December 27, 2018

Government of the Russian Federation

- Adopts the Rules of Navigation on the Northern Sea Route;
- Adopts the Plan of the Northern Sea Route Infrastructure Development.

Ministry of Transport

- Regulation of navigation via the Northern Sea Route;
- International obligations of Russian Federation;
- Federal state supervision in the sphere of transport;
- State port control of vessels;
- Legislative regulation, control of navigation safety;
- Harbour masters management;
- List of port dues adoption.

ROSATOM

- Management of state Arctic icebreaking fleet;
- Proposals for state policy implementation on the NSR, building sea ports and objects of infrastructure;
- Management of state property;
- Organization of navigation;
- Provision of safety of navigation.

Ministry of Transport adopts after approval from Rosatom

- Mandatory regulations in the seaport;
- Rules of icebreaking assistance on the NSR, rules of ice piloting of vessels, etc.;
- List of port dues charged in each NSR seaport;
- Decision to establish a seaport on the NSR, etc.
State Corporation ROSATOM is the Infrastructural Operator of the Northern Sea Route

Competence according to the Federal Law # 525 dd December 27, 2018

Proposals for state policy implementation on the NSR

Organization of navigation

State Service Delivery

State Property Management

Directorate of the Northern Sea Route

FSUE Atomflot

Navigation Headquarters

Auxiliary Services

Arctic Fleet Building

Navigation and Hydrographics

NSR Infrastructure Management

NSR Infrastructure Construction

Recommended Navigation Routes

Vessel Positioning Systems

Sea Canals

Vessels Traffic Control System

Hydro-technical Installations

FSUE Hydrographic Enterprise*

Navigation and Hydrography

NSR Infrastructure Management

NSR Infrastructure Construction

Sea Canals

Vessels Traffic Control System

Hydro-technical Installations

Goal

Task

Instrument

Function

NSR users provision with safe, sustainable, economically feasible and year-round navigation

Information Provision to Arctic going Vessels

Icebreaking Assistance

Port Services

Pilot Services

Emergency Response & Rescue

Atomic Icebreakers

LNG Icebreakers

Support Fleet

Recommended Navigation Routes

Vessel Positioning Systems

Sea Canals

Vessels Traffic Control System

Hydro-technical Installations

Navigation Headquarters

Arctic Fleet Building

NSR Infrastructure Construction

Recommended Navigation Routes

Vessel Positioning Systems

Sea Canals

Vessels Traffic Control System

Hydro-technical Installations

NSR users provision with safe, sustainable, economically feasible and year-round navigation
Required Icebreaking Capacity to Provide Year-Round Traffic of 80 mln. tons via the Northern Sea Route

- **Gazprom neft**: 8.5 mln. tons
- **Yamal LNG**: 19.5 mln tons
- **Arctic LNG-2**: 19.5 mln tons
- **Taimyr Coal**: 10.0 mln tons
- **Payaha Crude Oil field**: 10 mln tons
- **Norilsk Nickel**: 1.5 mln tons

The scheme does not account for summer-autumn transit cargo and supply of northern areas (5-10 mln tons according to expert evaluation)

Decision to build 4<sup>th</sup> and 5<sup>th</sup> universal atomic icebreakers was adopted at the meeting headed by the Prime Minister of Russian Federation Dmitry Medvedev on 28<sup>th</sup> of November, 2018 in Saint-Petersburg

<table>
<thead>
<tr>
<th>icons</th>
<th>UAIB-1</th>
<th>UAIB-2</th>
<th>UAIB-3</th>
<th>UAIB-4</th>
<th>UAIB-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIB 60 MW</td>
<td>AIB 54 MW</td>
<td>IB LNG 40 MW</td>
<td>Does not require icebreaking support</td>
<td>Sea Canal in Obskaya Bay to Sabetta Port</td>
<td></td>
</tr>
</tbody>
</table>
Transportation of LNG from Obskaya Bay (Yamal Peninsula / Gydan Peninsula)

Eastbound navigation through the NSR brings reduction of a voyage from 14 to 22 days and enables much faster transportation of LNG to Asia-Pacific.
Arctic Fleet Positioning by 2035

Europe: 30 mln. tons
Asian-Pasific: 70 mln. tons

Year-round

Western sector
Eastern sector

40 IB40
3 IB40
2 IB40
1 IB40

50 Let Pobedy

Port of Sabetta – Yamal LNG
Noviy Port
Arctic LNG 2
Payaha
Dudinka
Khatanga Licensed Area

Pevek Baimskaya Ore Area

Will be built by 2022
Active icebreakers (the last one will be decommissioned in 2035)
Must be built by 2028
Decision to be adopted when cargo traffic reaches 50 mln tons in the Eastern part of the NSR
Number of Icebreakers will be increased from 4 to 13 Vessels to Ensure Cargo Volume Growth and Year-Round Navigation via the Northern Sea Route

Active Atomic Icebreakers

- Taimyr
- Vaygach
- Yamal
- 50 Let Pobedy

2017 2019 2021 2023 2025 2027 2029 2031 2033 2035 2037 2039

IB 60

- Arktika
- Sibir
- Ural
- IB60 - 4
- IB60 - 5

IB 40

- LNG IB - 1
- LNG IB - 2
- LNG IB - 3
- LNG IB - 4

IB 120

- Leader 1
- Leader 2
- Leader 3

50 Let Pobedy + 5 IB60 + 4 LNG IB + 3 Leaders = Year-round navigation
New Generation Icebreakers is the Basis for Year-round Navigation along the Northern Sea Route

**Universal atomic icebreaker** Project 22220 (IB60) with the propulsion power of 60 MW

**KM Ω Icebreaker9 [2] AUT2-ICS EPP**
Length - 173,3 m, beam - 34 m, draught maximum - 10,5 m, minimum operating draught - 8,55 m. Water displacement – 33 540 tons.

IB60 is equipped with dual-reactor nuclear power plant RITM-200 with the overall power of 175 MW.

**Icebreaking capability:**
The icebreaker navigates with even speed of 1,5-2 kn at full draught and power through flat solid ice with maximum thickness of 2,9 – 3,0 m.

**Atomic turbo-electric icebreaker** Project 105010 (IB Leader) with the propulsion power of 120 MW

**KM Ω Icebreaker9 [2] AUT2-ICS EPP SDS<60 HELIDECK-H Special purpose ship**
Length – 209,0 m, beam – 47,5 m, maximum draught – 13,0 m, water displacement – 70 674 tons

IB Leader is equipped with dual-reactor nuclear power plant RITM-400 with the overall power of 315 MW.

**Icebreaking capability:**
The icebreaker navigates with even speed of 1,5-2 kn at full draught and power through flat solid ice with maximum thickness of 4,1 m.

**Line Icebreaker Aker ARC 123**

Ice class: **Icebreaker8 (designed for RMRS)**
Propulsion power: 40 MW
Length overall: 154,8 m (with towing notch – 160.0 m)
Beam: 31,4 m
Draught max: 9.0 m

Main fuel type: Liquefied Natural Gas

**Icebreaking capability:** flat ice 2,85 m thick with constant speed 2 knots
International Transit Voyages via the Northern Sea Route in 2018

COSCO

Nordic Bulk Carriers

Maersk
### International Transit Voyages via the Northern Sea Route in 2018

<table>
<thead>
<tr>
<th>Vessel</th>
<th>Ice Class</th>
<th>Gross-tonnage</th>
<th>Shipowner</th>
<th>Cargo</th>
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</thead>
<tbody>
<tr>
<td>mv &quot;Tian Hui&quot;</td>
<td>Arc 4</td>
<td>26 787</td>
<td>COSCO</td>
<td>General cargo 29 938</td>
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<td>COSCO</td>
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<tr>
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<td>Ice 1</td>
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<td>COSCO</td>
<td>General cargo 29 772</td>
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<td>Maersk LTD</td>
<td>Frozen Fish 32 716</td>
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<td>Arc 4</td>
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<td>Nordic Bulk Carriers</td>
<td>Iron Ore 72 211</td>
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<tr>
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<td>Nordic Bulk Carriers</td>
<td>Iron Ore 72 288</td>
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Thank you for your attention!