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The Northern Sea Route:
Turning a transportation Disadvantage into an Advantage

Arctic Tipping Points
Tromsø, January 25, 2010
CONVENTIONAL SHIPPING

ICE CLASS MULTIPURPOSE CONTAINER VESSELS
PROJECT CARGOES

TANKERS, BULK AND COMBINATION CARRIERS
COMMODITY SHIPPING
OFFSHORE

• Anchor handling tug supply vessels
• Ocean going tugs
Tschudi Logistics

- Container lines
- Door – door transportation
- Project cargoes
- Rail and road forwarding

Including Tschudi Northern Logistics based in Kirkenes and Murmansk, specialising in cross border transportation and custom clearance
We like to see the Earth from this Direction
The TSC rationale for focusing on logistics in the High North is:

- Energy and Mineral Resource development in the High North is now accelerating
  - transport solutions are key to realising this

- This development is more realistic than ever before due to:
  - ice reduction
  - technological developments
  - high commodity prices
  - and, not least, an interest from Russia in making it possible.
Too large savings to be ignored!
An example: Iron ore prices and the importance of freight
Centre for High North Logistics

An international independent non-profit organisation initiated by TSC and supported by the Norwegian MFA, Statoil, DnV and others (www.chnl.no)

Vision: To be the preferred knowledge network for creating and developing efficient and sustainable logistical solutions for the High North through practically oriented research projects in interaction between businesses, academic institutions, organizations and public authorities

The international gateway to relevant knowledge about logistics in the High North

Presently seeking a new Managing Director in Kirkenes
"Opening the Northern Sea Route for regular oil, gas and dry bulk transportation between Europe and Asia" - Shipment of iron ore concentrate from Kirkenes to China

To invite relevant participants in the value chain around one table:
Cargo owner- Ship owner- Traders – ice breakers – brokers – Insurance –CP& law – Classification - public authorities – research institutions
For the first time ever, a bulk carrier with non-Russian flag is using the Northern Sea Route as a transit trade lane, when transporting iron ore from the Northern part of Norway to China via Arctic and Russian waters.
MV Nordic Barents NSR Transit September 2010 from Kirkenes to China

Vessel loaded 40140 MT of iron ore concentrate from the Sydvaranger Mine
07.09.10 Satellite ice image Vilkitskyi Strait, near 106 E
### AIS Target '477612700: MMST'

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Different conditions Sep. 9
Separate ice floes and icebergs, ice fields 2-3 m thickness.

Remark from vessel Sep. 10:
Sailing in the wake of th Atomic Icebreaker "50 Let Pobedy"
bypassing ice fields and forcing ice crosspieces
Growlers may cause damage to the hull if the vessel hits one at excessive speed.
Rain or snow and sea may cause interference making it difficulty to see smaller icebergs and growlers on the radar screen. Picture dated 12.09.10. Vsl’s pos. 73 14 N 159 30 E
Sailing in the wake of the Atomic Icebreaker "50 Let Pobedy" bypassing ice fields and forcing ice crosspieces, maneuvering speed 7-12 kts, 2030-0500 visibility 1-3 cables. Pictures received along with noon report Sept. 13th. 70 23 N 169 57 E
Not only ice – difficult depths and different routes.
Voyage recapitulation

During the escort by the nuclear ice breaker, i/b 50 Let Pobedy, Sept. 8th – Sept. 14th, 1746 nm, ice of different concentrations, was reported during five days.

Isolated icebergs and ice fields of 2 – 4 m thickness were reported. Nordic Barents was sailing in the wake of the ice breaker at about 1 nm distance.

On Sept. 12th -13th, (160 E – 177 E) the convoy experienced the most difficult ice conditions during the transit. The distance to the icebreaker was reduced to 0.3 - 0.5 nm. During two days, the speed was reported to be kept between 6 – 12 knots.

The visibility was reported to be poor from time to time. During the NSR transit, high/low air temp. : +5 / -1, high/low sea water temp.: +1 / 0 Strongest wind: ESE force 8

Departure Kirkenes/Norway 4th Sep
Passing Bering Strait (3067 nm) 15th Sep
Arrival Lianyungang/China 27th Sep
Total distance: 6504 Nm
Voyage duration: 22 days 12, hrs 30 mins.
Average speed: 12,03
**SAVINGS**

- Distance Kirkenes - Lianyungang via Suez: about 12175 nm
- Estimated expected speed: 13 knots
- Estimated voyage time: 40 days including 1 day at Port Said.
- Voyage duration via NSR (about 6500 nm): 22.5 days
- Estimated time saved via NSR: 17.5 days @ 28.2 MT of fuel
- Estimated fuel saved: 493 M.tons. @ USD 500/tonn = 246500 USD

- Environmental savings, all figures approximate.
  - NOx 50 tonn
  - CO2 1557 tonn
  - SOx 35 tonn

- In addition the threat of piracy was avoided
SCF Program of NSR development

**Y2010**
- NSR voyage with Aframax size tanker drawing 11.0 m draft via Sannikov Strait in August / September - COMPLETE

**Y2011**
- **Extending «navigable window»** - voyage with Panamax size tanker (Ice class Arc-6) in May-June
- **Cargo parcel increase** - voyage with fully-loaded Suezmax size tanker (Ice class Arc-4) by newly-established high latitude deepwater track in July-August
NSR TOWAGE AND HEAVY LIFT TRANSPORTATION
Can solutions for the movement of larger modules for offshore and industrial use be found?
Northern passage 2010 – Børge Ousland and his team around the North Pole in 3 months - www.ousland.no/blog
Is the Northern Sea Route ready for international commercial transit?

Important questions:

Which operational requirements and additional costs apply?
Will Russia simplify the application regime?
Will ice breaker fees be open and standardized?

The Northern Sea Route is ready –
but the commercial international fleet and the market are not - yet!

But with improved information that will change!

Need for?
Ice classed fleet
Infrastructure
Regulatory regimes
Operational knowledge
Conclusion: Joint opportunities and challenges by the NSR for the northern regions of the Pacific and the Atlantic

• The Arctic region – rich in petroleum and mineral resources – has changed from having a distance disadvantage to having a transport advantage to the fast growing markets in the Far East during the ice free season.

• Further cost savings can be achieved by generating return cargoes from the Far East!
Short term: What will determine the use of the NSR?

- The Freight level for different cargo types
- Type of cargo – time sensitive cargoes vs others
- Time required for passage - Ice conditions and waiting time
- Availability of ice class tonnage – which level of ice class is required?
- Cost elements: Fuel prices - Insurance – NSR Transit and Suez canal tariffs
- Piracy threat – cost of insurance and protection – risk of non-delivery of cargo

The criteria which will determine the use of the NSR is that the cost of delivering the cargo is lower than that of the alternative routes.
Long term: What will determine the usage of the NSR?

- Climatic developments
- Continued imbalance in resource production and needs – asia vs the rest
- Regulations
- Russia’s continued interest - the next generation ice breakers
- Availability of suitable ice class tonnage
- Types of cargoes and commodity prices
- Freight markets
- Piracy and other factors influencing the cost of alternative routes

The main determinant will always remain a competitive overall cost level!
In the medium term: Regional destination transport will be the most relevant activity.

- Transport of oil, gas, minerals and equipment by:
  - Specialised shuttle multipurpose vessels
  - Shuttle tankers
  - Shuttle LNG carriers?
  - Shuttle bulkers?
  - Purpose built offshore vessels
Beluga Shipping, Germany, carried two project cargoes, modules for GE powerplants, from Korea to the Ob river estuary via the Northern Sea Route last summer and two more performed from Europe this season!
VOYAGE OF “MONCHEGORSK” VIA NORTHERN SEA ROUTE TO SOUTH EAST

- 23.09 11.45 pm
- 26.09 7 am
- 27.09 6.30 pm
- 02.10 am

ETA 13.10
ETA 17.10
The Varandey offshore terminal in the Pechora Sea serving the Conoco Philips/Lukoil JV, Naryanmarneftegaz, with 3 Sovcomflot operated 70 000 dwt double acting ice breaking crude oil tankers.

Price: Usd 130 million a piece

Year around service
NORILSK NICKEL has introduced double acting ice breaking multipurpose vessels designed by Aker Arctic for serving their mining operations in Siberia – a true High North logistics system!

Such specialised vessels should keep time outside the ice area to a minimum and tranship their cargo as close to their area of operation as necessary.

Year around operation

New Technology

Price: Euro 80 million a piece
5 vessels delivered
ARCTIC CONTAINER SHIP - ICE CLASS ARC 8

Main Dimensions:
- Length overall: 234.8 m
- Length at construction water line: 192.45 m
- Length at summer water line: 192.88 m
- Breadth, moulded: 39.90 m
- Breadth, overall: 31.37 m
- Depth: 15.40 m
- Draught design, ice class: 9.5 m
- Deadweight (draught 9.5 m): 26,950 t
- Gross tonnage: 26,600 t
- Cargo capacity: 41,100 m³

Container capacity (TEU):
- In holds, with hatch covers open:
  - On deck: 750
  - Total: 1,429
- Special containers:
  - 10 ft. refrigerated containers: 729
  - 10 ft. containers: 101
- Tank capacity: HFO: 3,400 m³

Performance:
- Speed (draught 9.5 m, calm water): 17 knots
- Ice breaking capability with full short power: 2 m level ice
- Radius of action (draught 9.5 m): max 14,000 nm

Class:
- RMRS: KM 10, Arc 8 [1], AUT1-ICS, EPP
- Flag of Registry: Russian Federation

Machinery:
- 4 main diesel engines: 34,600 kW
- 2 harbour diesel engines: 2,700 kW
- 2 propulsion units: 2 x 13,000 kW
- 4 blade propeller, with fixed pitch
- Votages for electrical equipment: 6,600/400/230/24 V, 50 Hz
- 2 steam boilers: capacity: 2 x 5,000 kg/h
- 2 exhaust gas boilers: total 5,500 kW
Transportation Options from Yamal – Floating Liquefaction Plant is possibly the only feasible solution
NORTHERN SEA ROUTE

- LNG Terminal location

- Sovcomflot Staff Quarters for Ice Operations
50 million Russians east of the Urals
Most of Russian on-shore oil activity east of Urals
Several Russian mines and heavy industry east of the Urals
All accessible by new transportation routes.
Arctic Roads
The Norwegian Jonas Lied and the Kara Sea Route 1912 - 18
Northern Norway – a logistics and service platform

The ports of Finnmark can serve as supplement to the draft and ice restricted Russian ports serving inbound and outbound cargoflows.

Kirkenes port, particular focus on overflow from Murmansk such as:
- Oil transhipment and transhipment of bulk cargoes and at a later stage:
  Logistics related to offshore and industrial projects

At a later stage ports in northern Norway could serve Finnish and Swedish mining activities which require access to ice free ports. This would require investments in new rail infrastructure
Bulk Logistics
In the ice free port of Kirkenes

Using the Kirkenes port facilities reopened for the Sydvaranger iron ore mine able to serve vessels up to 100 000 dwt with an ambition to increase this to 170 000 dwt.

Silo storage capacity of 370 000 m³ offers the possibility of storage and transshipment of bulk minerals from the region both in direction the Atlantic and the NSR
Kirkenes Integrated Logistics Area (KILA) in the port of Kirkenes
Potential for 800,000 sqm industrial port area – 600m deep water quays

**POTENTIAL USE:**
- Marine Transportation and logistics including offshore base activities.
- Service providers for the oil and offshore industry.
- Combined waste incinerator and power plant.
- Industrial use
Handling and Storage of Offshore Equipment from the Far East to the forthcoming Oil Exploration in the Barents Sea?

Handling and Storage of Mining Equipment to the Norwegian, Finnish, Swedish and Russian Mining Industry?
Offshore Activity already started

Jack-Up Rig "Energy Exerter" towed by russian tugs from the Pechora Sea. Prepared for loading in Kirkenes and transported on Heavy Lift Vessel "Fjord" to the UK.
So, in our opinion it’s time to wake up and ......
Look towards the North!