SKULD

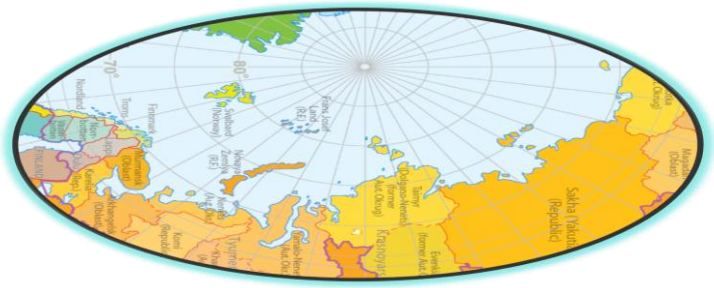
The Rise Of

Northern Sea Route

21st June 2012

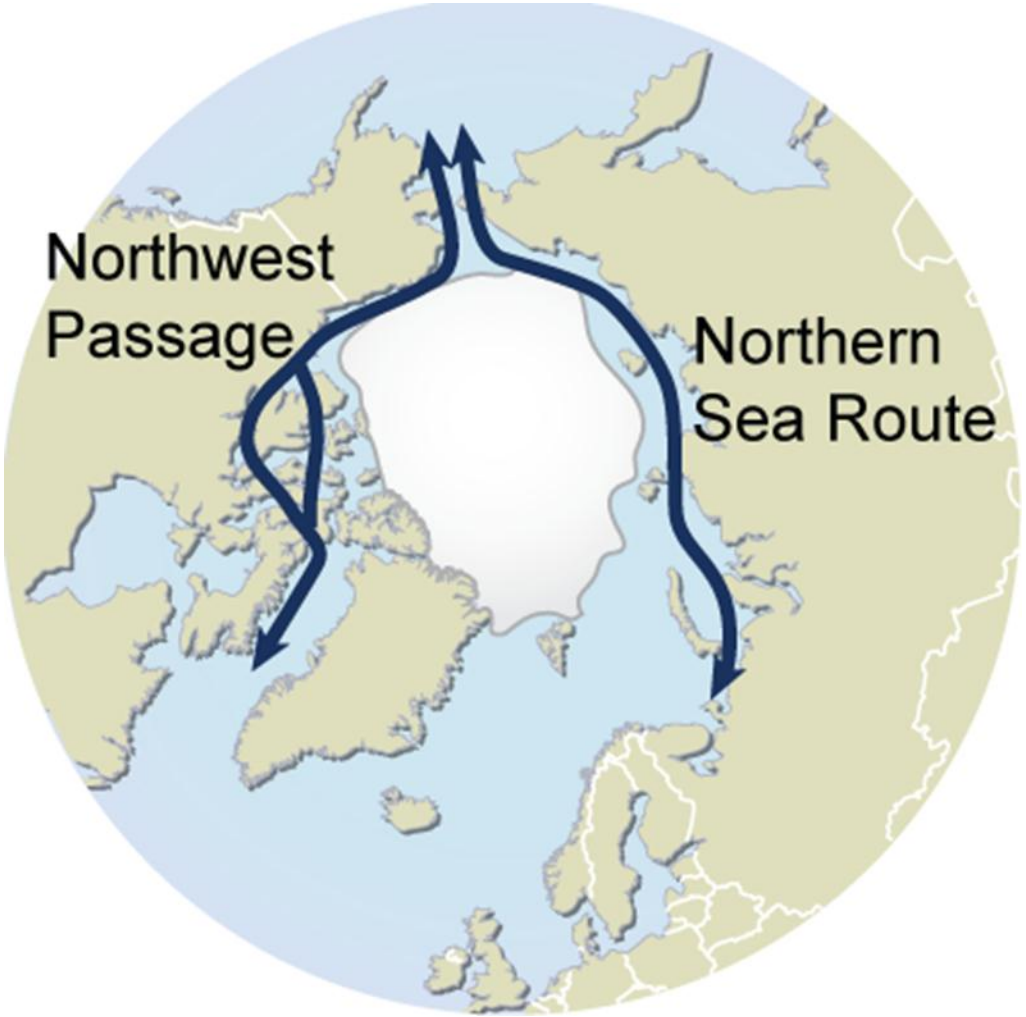
Capt. Binoy Dubey

PRESENTATION TOPICS



- Arctic Opening – The Rise of Northern Sea Route (NE route)
- Maritime Traffic & Logistics
- Challenges – significant and unique risks
- Oil Pollution Management – Liability Regime
- Recent development
  - Arctic Council
  - IMO
  - Northern Sea Route Administration
- Insurers' perspective

ARCTIC OPENING



ARCTIC BOUNDARIES

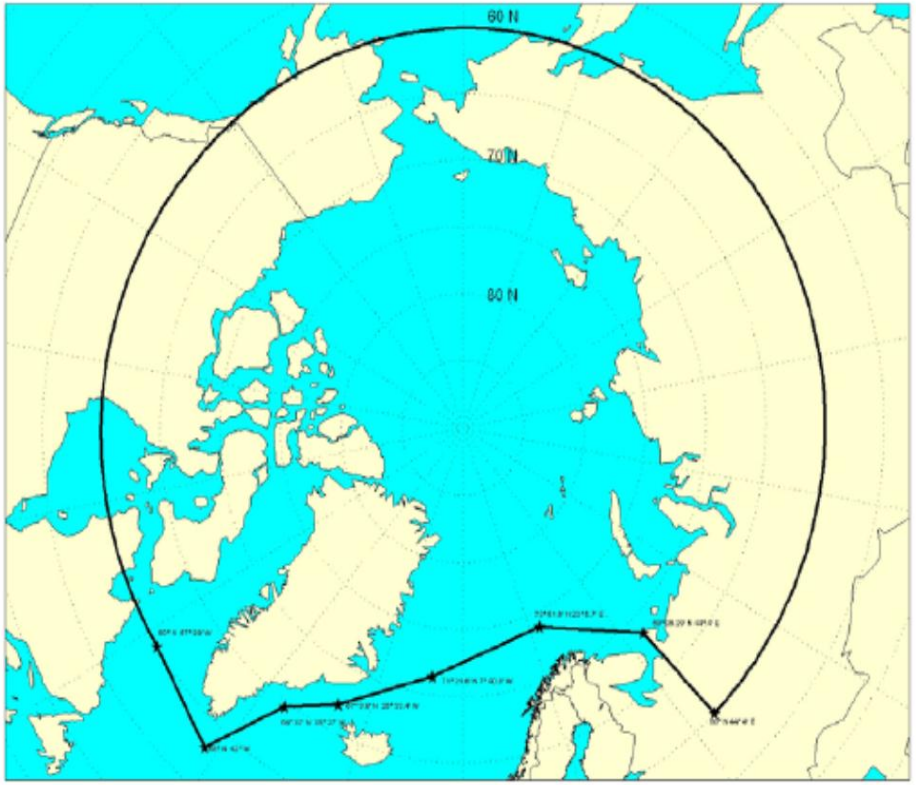
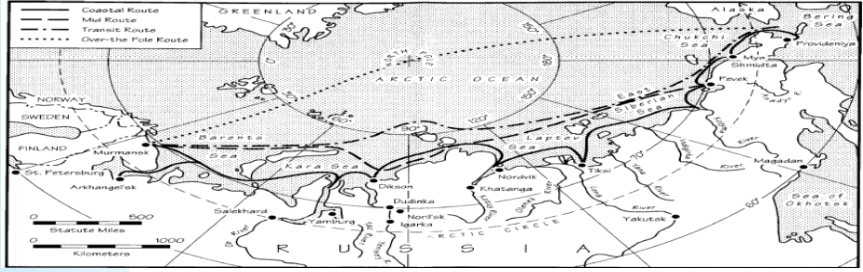


Figure 1 – Maximum extent of Arctic waters application (see paragraph G-3.3)[2]

Picture courtesy – discoveringthearctic
AMAP

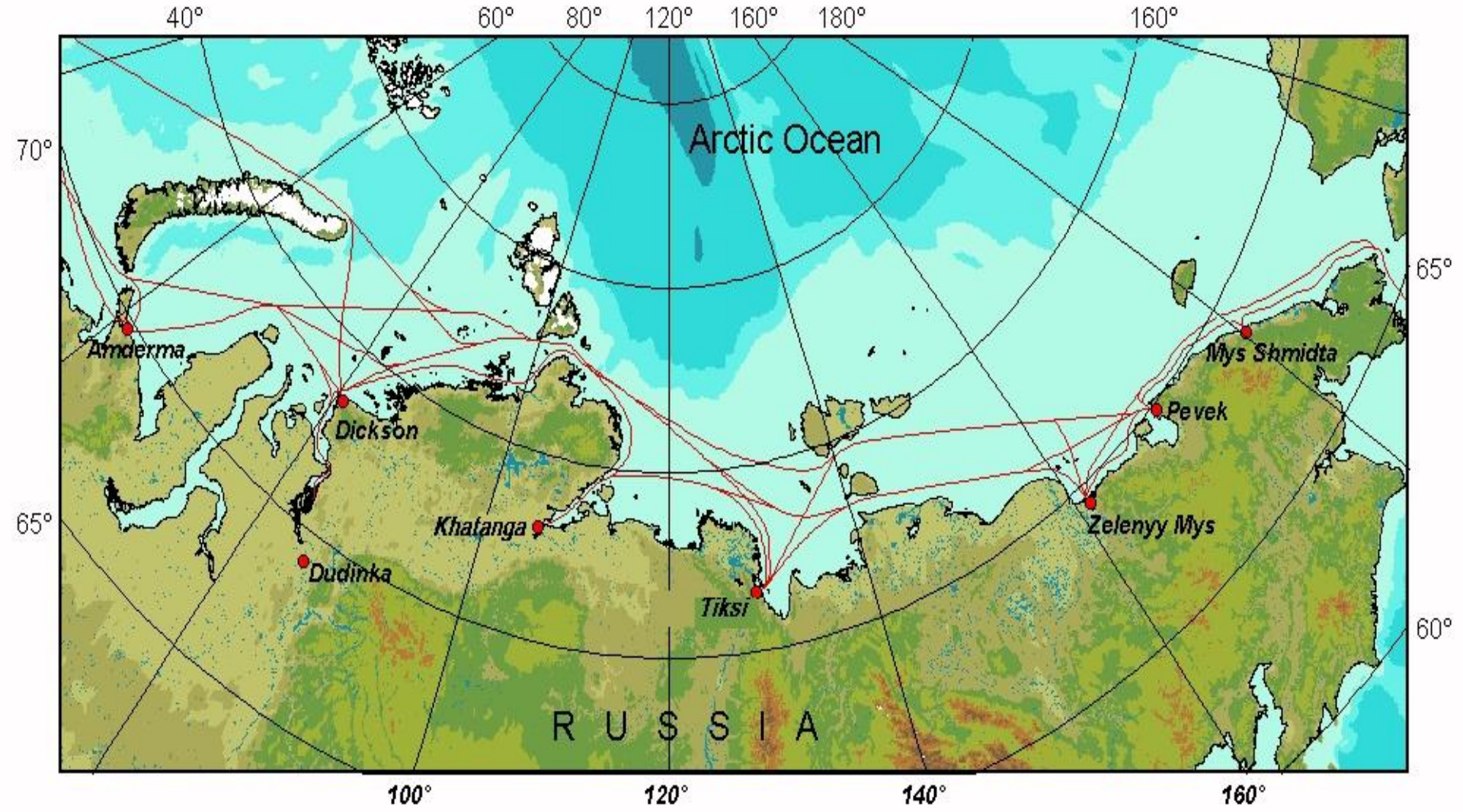
NORTHERN SEA ROUTE



- INSROP (1993 – 1999)
- A lane between the Atlantic Ocean and Pacific Ocean along Russian coast of Siberia and Far East.
- Runs through Barents Sea – Kara Sea – Laptev Sea – East Siberian Sea – Chukchi Sea

Picture Courtesy - Geographicguide

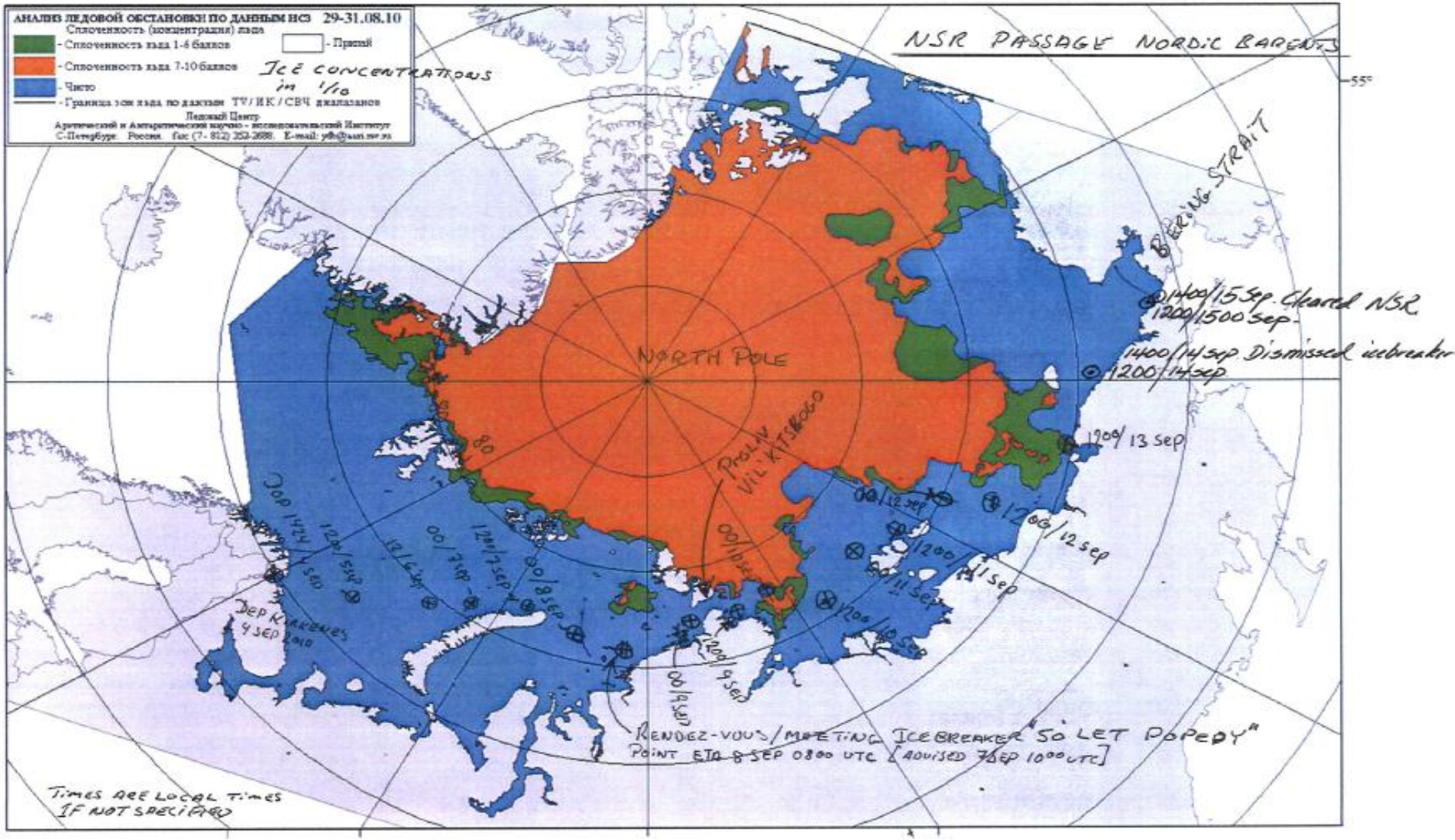
SHIPPING LANES IN THE NSR



Capt. Binoy Dubey

Picture Courtesy - INSROP

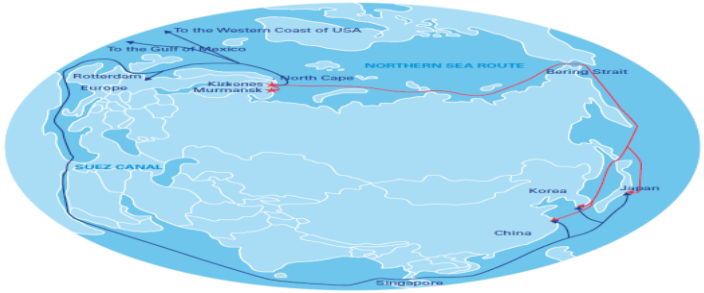
EURASIAN TRADE LINK



Capt. Binoy Dubey

Information Source – Tschudi Shipping

ECONOMIC TO USE NSR ??



- ESTIMATED VOYAGE TIME: 40 DAYS
- VOYAGE DURATION VIA NSR : 22,5 DAYS
- ESTIMATED TIME SAVED VIA NSR: 17,5 DAYS @ 28,2 MT OF FUEL
- ESTIMATED FUEL SAVED 493 M.TONS. @ USD 650/TON = 320 000 USD
- COST OF ICE BREAKER ESCORT APPROXIMATELY USD 200,000
- ADDITIONAL COST OF INSURANCE
- ENVIROMENTAL SAVINGS, ALL FIGURES APPROXIMATE. NOX 50 T, CO2 1557 T, SOX 35 TONN

CARGO FROM KIRKENES AND MURMANSK

Destination	Via Suez Canal			Through Northern Sea Route			Days saved
	Distance Nm.	Speed Knts	Days	Distance Nm.	Speed Knts	Days	
Shanghai, China*	12050	14,0	37	6500	12,9*	21*	- 16
Busan, Korea	12400	14,0	38	6050	12,9	19,5	- 18,5
Yokohama, Japan	12730	14,0	39	5750	12,9	18,5	- 20,5

** Based on an actual voyage performed by M/V Nordic Barents from Kirkenes to Lianyungang (China), September 2010*

MARITIME TRAFFIC

NSR Transits 2011

- 75 600 dwt “Sanko Odyssey” loaded with 66,000 mt of iron ore became the first Panamax and largest bulk carrier to sail NSR

- The first known passage of a 3D seismic vessel through the NSR. Polarcus Alima departed Hammerfest on 15th Sept 2011. After only 9 days and 3.000 nautical miles the vessel reached Cape Dezhnev in the Bering Strait. As exploration in the Barents Sea will continue, future voyages are very probable.

- Largest vessel ever, 162 000 dwt Suezmax loaded with 120 000 mt gas condensate. “Vladimir Tikhonov” was the first Suezmax to take this route in August 2010

- Gas condensate from Russia to China and jet fuel from Korea to the Continent. Same vessel using the NSR both ways. First tanker to make return voyage in one season

- Three reefer vessels, all taking between 4,700 tonnes and 8,500 tonnes of frozen fish from Eastern Russia to St Petersburg.

- First passenger ship completed Russia’s North East Passage in Sept. 2011

- During 2011, 34 vessels sailed to Asia, 30 more than in 2010

- Speed record, 14 knots and 8 days reached by MV Sanko Odyssey

TRAFFIC DEVELOPMENT 2012

Total: 377 74

Yamal targets Arctic brawn

A Russian project is working up an LNG-carrier design that can cope with some of the harshest conditions yet.

Lucy Hine London

Partners in Russia's Yamal LNG project have started talking to shipyards about a slew of LNG carriers capable of working in harsh Arctic conditions.

Novatek and Total are said to have kicked off discussions over the design of up to 16 vessels of around 177,550 cbm that will need to have ice-breaking capabilities. Invitations to yards to prequalify for the business are expected to emerge in the next few months with a tender due to be launched later this year.

Aker Arctic, which is leading the work on the design and testing of the LNG carriers for Yamal, is understood to be continuing to test various models for the concept design. Further clarity on this is expected by the end of this month.

The Yamal newbuildings would have to withstand tough Arctic winter conditions requiring Arc7 specifications. This Russian Maritime Register notation allows a vessel to navigate through Arctic ice up 1.4 metres thick in winter and spring and up to 1.7 metres thick in summer and autumn, or astern of an icebreaker where the ice is up to two metres thick in winter and spring and 3.2 metres thick during the rest of the year.

Those working on the business suggest the interest is for the ships to be able to work independently of icebreakers, particularly since the contracting of icebreaker tonnage is done through state outfit Atomflot and would need government approval.

Novatek has said ice-model tests on the LNG-carrier concept for Yamal has shown that the capabilities of the vessel would allow it to achieve speeds of 19.5 knots in open water and 5.5 knots in ice 1.5 metres thick.

A number of shipping scenarios are under consideration, including direct transport to markets, cargo transhipments either in ship-to-ship (STS) mode or an ice-free port or a combination of both.

Those following the business say Yamal needs to prove up a workable design for the vessels so this can be added into project costings to assess the development's feasibility. "Technically, it [Yamal] can be achieved but pricewise it won't work. It needs long-term [sales] contracts," one said, explaining that the question will be asked if it should be developed as a pipeline project.

"Being realistic about this, it is very early to talk about orders," another said. "We need total clarity on the project first."

Novatek and Total, which hold a 20% stake in the project, plan to take a final investment decision (FID) on Yamal either this year or in 2013. Additional partners are expected to be brought in.

The project would entail the construction of an onshore liquefaction facility comprising three five-million-tonne-per-annum (mtpa) trains near Sabetta on the Yamal peninsula. Gas would be supplied from the South-Tambeyskoye field.

CB&I Lummus completed pre-front-end engineering and design (FEED) on the project last year and is now working on its FEED. This is due to be completed in the first half of 2012.

In a presentation in December 2011, Novatek priced the cost of the field development and LNG facilities at $18bn to $20bn, without accounting for the LNG carriers, based on the results of the pre-FEED study.

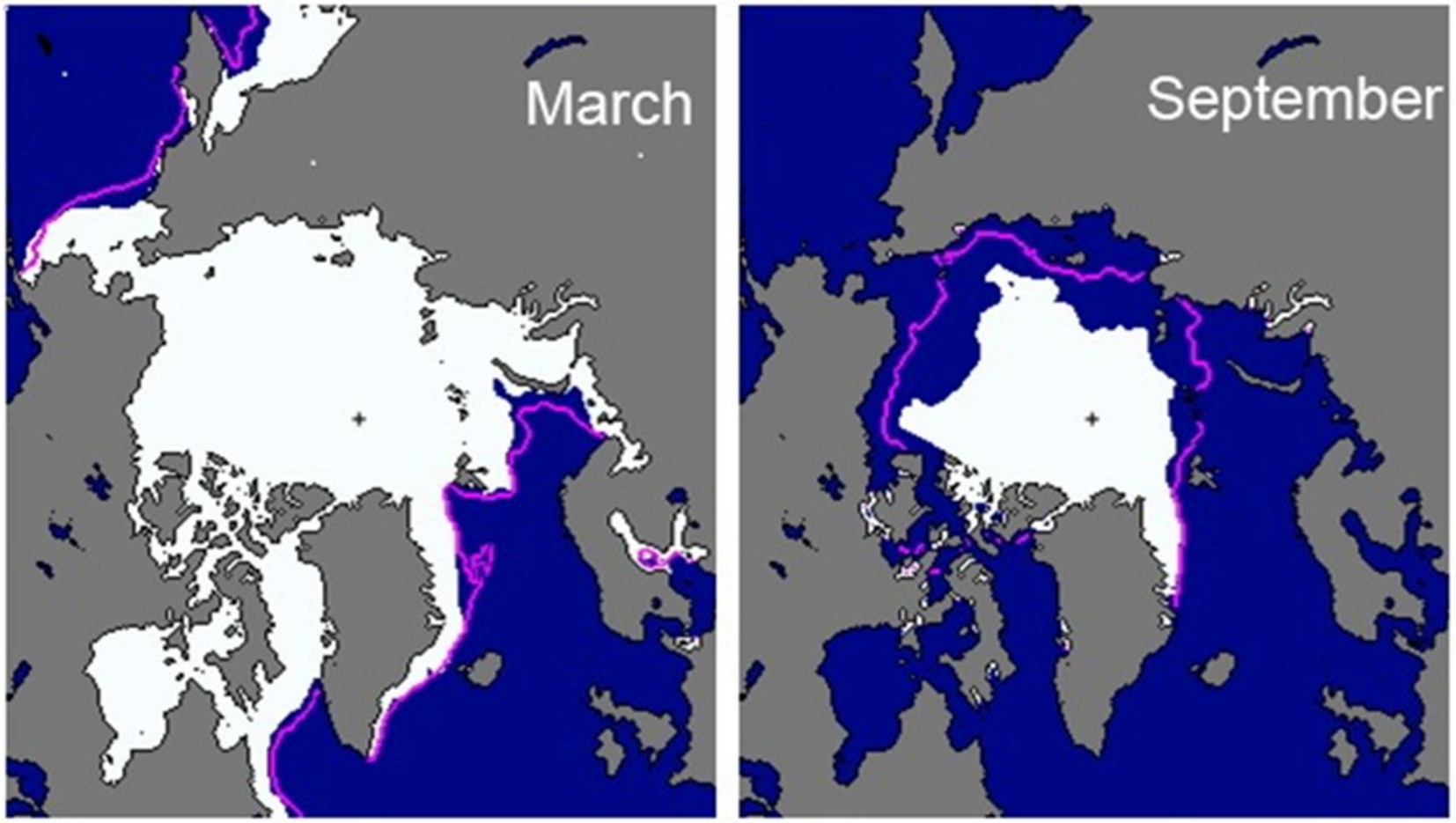
Novatek plans to launch Yamal's first production train in the fourth quarter of 2016.

ARCTIC RENDEZVOUS: The interest is for the new LNG ships for Yamal LNG to work independently of icebreakers. Pictured, the Russian icebreaker "Yamal" (foreground) near the North Pole. Photo: Bloomberg News

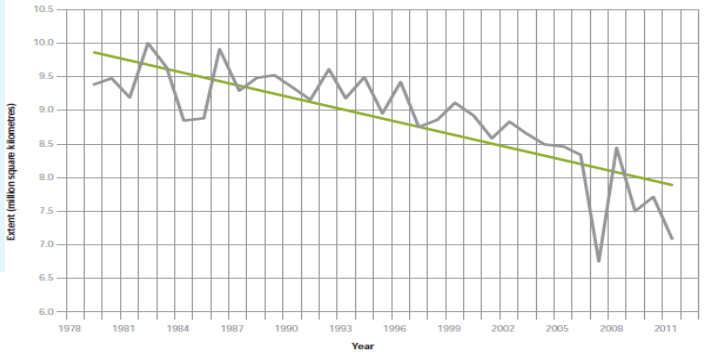
Source – Trade Wind

CONSTRAINS-SEASONAL CONDITIONS

SEA ICE EXTENT 2011



SEASONAL CONDITIONS



	Kara Sea	Laptev Sea	East Siberian Sea
Winter Season	Oct-May	Oct-June	Oct-May/June
Temp typical	-26°C	-30°C	-21°C
Temp extreme	-48°C	-50°C	-48°C
Ice thickness	1.8-2.5m	1.6-2.5m	1.2-2m
Fog	100 days	75 days	80 days
Summer Season	June-Sept	July-Sept	Mid June-Sept
Temp typical	7°C	8°C	15°C
Temp extreme	20°C	26°C	30°C

Source: London Market Joint Hull Committee 2012/004

PRESENT NSR SYSTEM

- Transit close to the coast line and therefore limiting draft to 15 m. deeper draft permission depend on prevailing ice condition;
- Any vessel intend to transit must notify to NSRA . Inspection prior to granting permission;
- CNIMF issues the ice certificate;
- Nuclear Ice Breaker available with ice breaking capacity – 2.8 m level ice;
- Russian authorities also insist on one or two ice breaker as escort. Cost information not available in public domain;
- Taking one Russian Ice Pilot is must during the transit;

Source : picture - Barent Obserevr
London Market Joint Hull Committee 2012/004

ICE BREAKERS AVAILABILITY

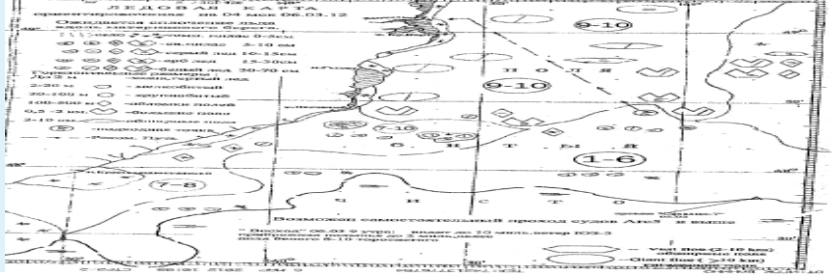
Ship Name	Country of Ownership	Year Entered Service	Propulsion Plant*	Operations
ARKTIKA	Russian Federation	1975	N:75,000	NSR
ROSSIYA	Russian Federation	1985	N:75,000	NSR
SOVETSKIY SOYUZ	Russian Federation	1990	N:75,000	NSR; Arctic tourism
YAMAL	Russian Federation	1993	N:75,000	NSR; Arctic tourism
50 LET POBEDY	Russian Federation	2006	N:75,000	NSR
POLAR STAR	United States	1976	GT:60,000 DE:18,000	Arctic and Antarctic research and logistics
POLAR SEA	United States	1977	GT:60,000 DE:18,000	Arctic and Antarctic research and logistics
TAYMYR	Russian Federation	1989	N:47,600	NSR
VAYGACH	Russian Federation	1990	N:47,600	NSR
KRASIN	Russian Federation	1976	DE:36,000	NSR; Antarctic

Source : ARCTIC COUNCIL - AMSA

CHALLENGES

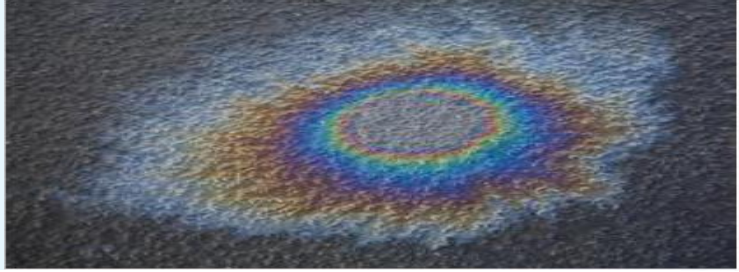
- Geographic remoteness
- SAR
- GMDSS
- Communication – edge of INMARSAT boundary
- Ice Accretion Ice accretion slide show.ppt
- Ice damages ice damage.ppt
- Cold weather injuries – long polar night/day can disrupt sleep

CHALLENGES



- Chart adequacy – insufficiently detailed chart
- Availability and interpretation of meteorological data
- Limited knowledge of local oceanographic condition
- Compass issues
- Fog – extended area of restricted visibility
- Lack of information about safe ports
- Unavailability of Salvors

OIL SPILL MANAGEMENT



Limiting factor	Ice coverage					Wind			Wave height			Visibility		
Conditions	<10%	11% to 30%	31% to 70%	>70%	Solid ice	0-20 mph	21-35 mph	>35 mph	<3 ft	3-6 ft	>6 ft	High	Moderate*	Low*
Mechanical recovery with no ice management														
Mechanical recovery with ice management					N/A									
In-situ burning														

Favourable conditions for response technique

Conditions likely to impede particular response technique

Conditions which will render particular response technique impossible

Note that any single grey factor could shut down a response. Similarly, a combination of yellow factors may have an aggregate impact on response.

* Moderate visibility = light fog < 1 mile visibility; low visibility = heavy fog < 1/4 mile visibility, or darkness.

Source – Nuka Research & Planning Group, Oil Spill prevention and response in the U.S. Arctic Ocean

THE NEED FOR HOLISTIC APPROACH

- ARCTIC COUNCIL
  Arctic Marine shipping assessment 2009 report.pdf
- UNCLOS (art 234 applies to ice covered water)
- The Basel Convention (control of transboundary movement of hazardous wastes & their disposal)
- The London Convention (& Protocal)

THE DEVELOPMENTS AT THE IMO

- IMO (IMO guidelines for polar water.pdf)
  - Requirements for ship construction, equipment, operation and environmental protection
  - Application extended to all polar waters, i.e. Arctic and Antarctic, and not only ice-covered
  - Only partially or totally enclosed lifeboats allowed
  - Qualifications of ice navigators
  - High standards for environmental protection
  - New damage stability provisions in line with revised SOLAS chapter II-1

IMO guidelines for passenger ship in remote places.pdf

IMO – POLAR GUIDELINES

ONLY appropriate Polar Class Ships or equivalent Ice Class Ships in Polar Waters

- Only ships with Polar Class designation, based on IACS Unified Requirements for Polar Class Ships, should operate in polar waters
- Or comparable alternative standard of ice-strengthening

POLAR GUIDELINES – STCW requirements

- Measures to ensure the competency of masters and officers of ships operating in polar waters

MANDATORY POLAR CODE

Categories of ships operating in polar waters

A (Polar class or equivalent)

- Operating in waters with 10% or more ice

B (Assessment/ice-strengthening)

- Operating in waters with less than 10% ice, but which may pose a structural risk

C (No ice-strengthening)

Operating in waters with 0 to 10% ice, but which does not pose a structural risk

MARINE INSURANCE

- Hull Insurance – (additional Arctic premium??) case by case basis
- Cargo Insurance- may not charge AP for Arctic trade under worldwide policy.
- P&I Coverage – a trading requirement for Northern Sea Route
- How risk management would response to such query

CONCLUSION

Is NSR, as trans-Arctic routes, economically viable today or in near future??

SKULD

THANK YOU FOR LISTENING

Capt. Binoy Dubey