



Transit Navigation on the Northern Sea Route

*“The Northern Sea Route from
a ship owner’s point of view”*



A NEW TRADING ROUTE



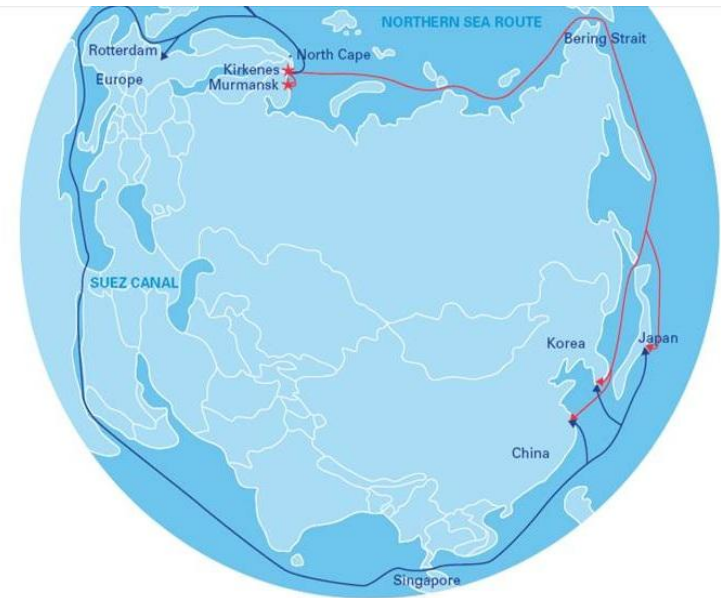
- Establishment of an alternative Europe – Asian route
- Further improving the development of the northern hemisphere oil and gas system
- Substantial savings in time, fuel consumption and emissions



SAVING TIME AND BUNKER



- On a voyage from Vitino to China, about 18 days and 580 tons of bunker is saved compared to a transit via Suez.



SAFETY IS PRIORITY NO1



- NSR is a new global route, transparent information, knowledge and safe operations will build understanding, trust and tradeability
- Marininvest undertook extensive research and training prior to first NSR voyages both onboard and on shore



ICE IS A KEY FEATURE WITHIN OUR FLEET

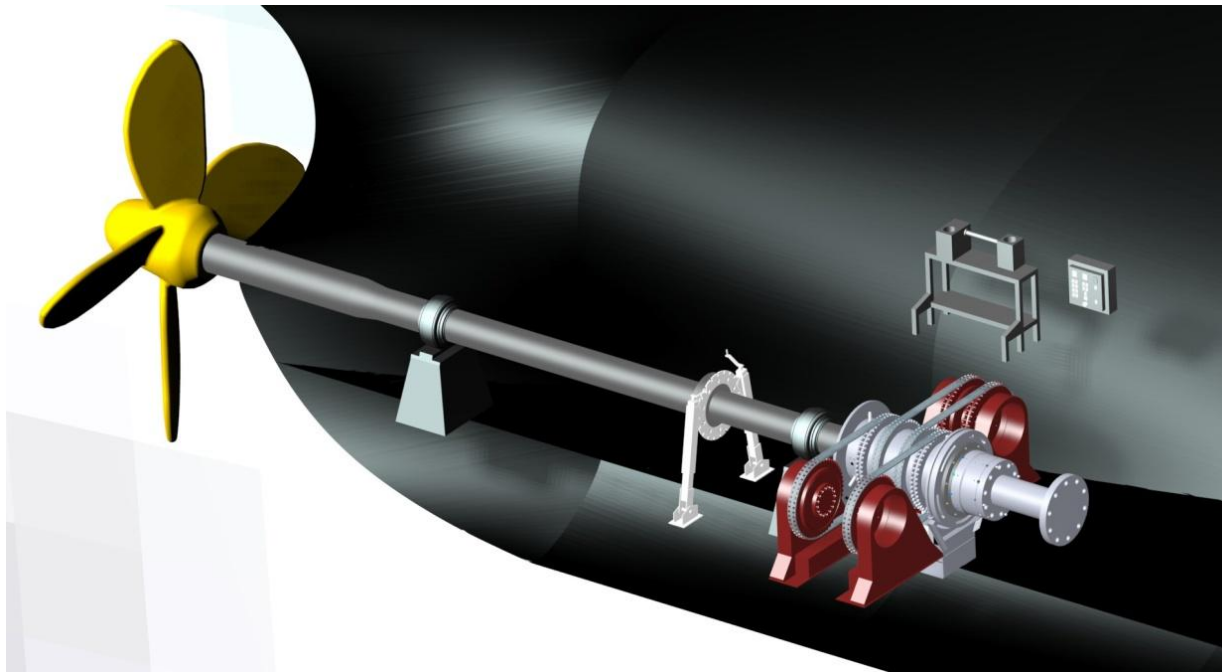


Marinvest is providing management services for the following vessels:



VESSEL	TYPE	DWT/YOB
<u>Northern Bell</u>	Oil / Chemical Tanker	83.600 / 1990 Q3
<u>Kirsten</u>	Oil / Chemical Tanker	83.600 / 1988 Q3
<u>Marinex</u>	Oil / Chemical Tanker	31.206 / 1994 Q2
<u>Mariline</u>	Oil / Chemical Tanker	30.513 / 1996 Q1
<u>Maritina</u>	Oil Tanker	74.993 / 2006 Q1
<u>Marit</u>	Oil / Chemical Tanker	22.820 / 2001 Q1
<u>Marilee</u>	Oil Tanker, Ice 1A	74.999 / 2006 Q4
<u>Maribel</u>	Oil Tanker, Ice 1A	74.999 / 2007 Q2
<u>Mari Ugland</u>	Oil Tanker, Ice 1A	74.999 / 2008 Q1
<u>Mariann</u>	Oil Tanker, Ice 1A	74.999 / 2008 Q2
<u>Marika</u>	Oil Tanker, Ice 1A	74.999 / 2008 Q3
<u>Marinor</u>	Oil Tanker, Ice 1A	74.999 / 2008 Q4
<u>Ilse</u>	Pilot Boat, culture class	1908, reconstructed 2008

REINFORCED ICE SAFETY



- "Marinvest Alternative Propulsion" added safety, takes 15 minutes to connect.
- Over 10 knots achieved
- In commercial use since 2006 on 4 vessels
- World wide patented by Marinvest Engineering

RISKS IN NORTHERN SEA ROUTE



- NSR risks are different compared to routing via Suez
- Risks in NSR are managed by preparations
- Multi-year ice might be encountered, harder than first-year ice

RISK ASSESSMENT



- Ice damage
- Shallow waters
- Heavy weather
- Breakdowns
- Low temperature
- Freezing spray



HOW DO WE PREPARE

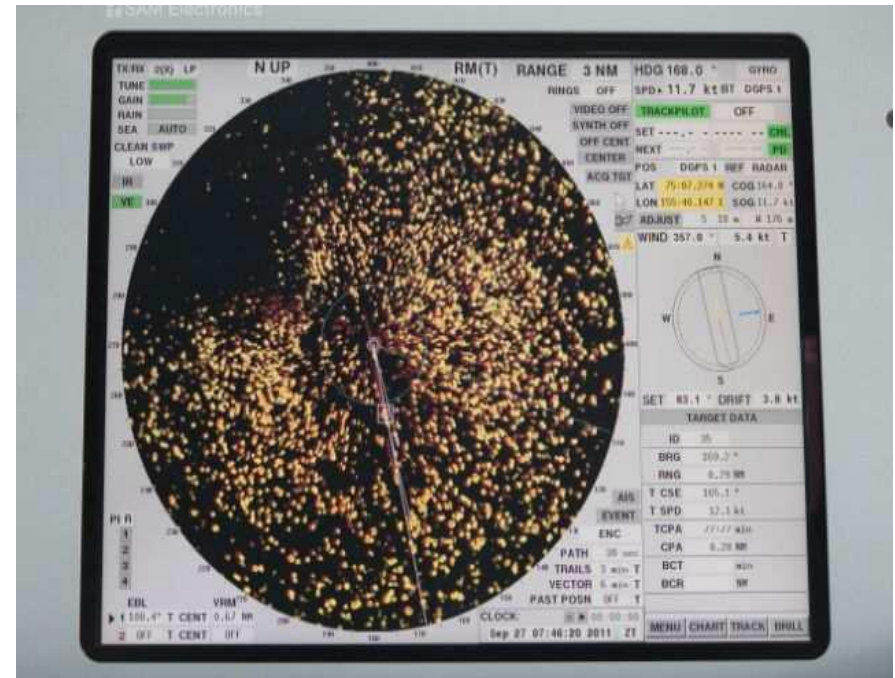


- Preparations are no different to other ice navigation areas like Baltic Sea, St Lawrence and Arctic Canada
- Preparations is aided by checklists, procedures, guidelines, relevant and updated manuals and contingency planning

NAVIGATION EQUIPMENT EXPERIENCES



- Gyro compass remained stable all through the transit
- Magnetic compass show large and varying magnetic error
- GPS remained reliable and stable all through the transit
- Radars are a good aid but limitations in ice detecting capability should be kept in mind. X-band radar works better than S-band.



CHARTS AND PUBLICATIONS



- ECDIS cells covers most of the transit except blank section in Laptev Sea
- Paper charts and publications are in Russian language



CONCERNS



- If supply / support infrastructure along Russian north coast can be further improved it would have a positive impact on the insurers' view on risk
- Charts & Publications in English would even further improve the internationalisation of NSR
- Can the clearing process Vitino/Murmansk be even further improved to increase competitiveness

THANK YOU

