



# Transit Navigation on the Northern Sea Route

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





# ICE IS A KEY FEATURE WITHIN OUR FLEET



Marinvest is providing management services for the following vessels:



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

# ICE EXPERIENCE OF MARINVEST



# 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.
- $580 \text{ tons} * \text{USD } 650 = \text{USD } 377\,000$
- $18 \text{ days} * \text{cargo value of USD } 50\,000\,000 * r \text{ of } 4\% = \text{USD } 5480/\text{day} = \text{USD } 99\,000$
- ./.. Cost of Ice Breaker
- ./.. Risk of trade
- ./.. Cost of insurance
- ./.. Loss of maintenance
- ./.. Additional OPEX
- ./.. Additional wear & tear



# SAFETY IN NSR



## Prior

- Adequate ice class + winterised & equipped vessel
- Experienced crew, who is familiar with the vessel and each other as a team
- Well prepared crew and vessel
- Shore side assistance & evaluation of ice condition

## During

- Good communication and collaboration with ice breaker and ice advisor
- Slowing down is safest way to protect vessel
- Adequate level of look out and watchkeeping

## After

- Post voyage analysis ship/shore & with Atomflot
- Build up of best practises

# 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

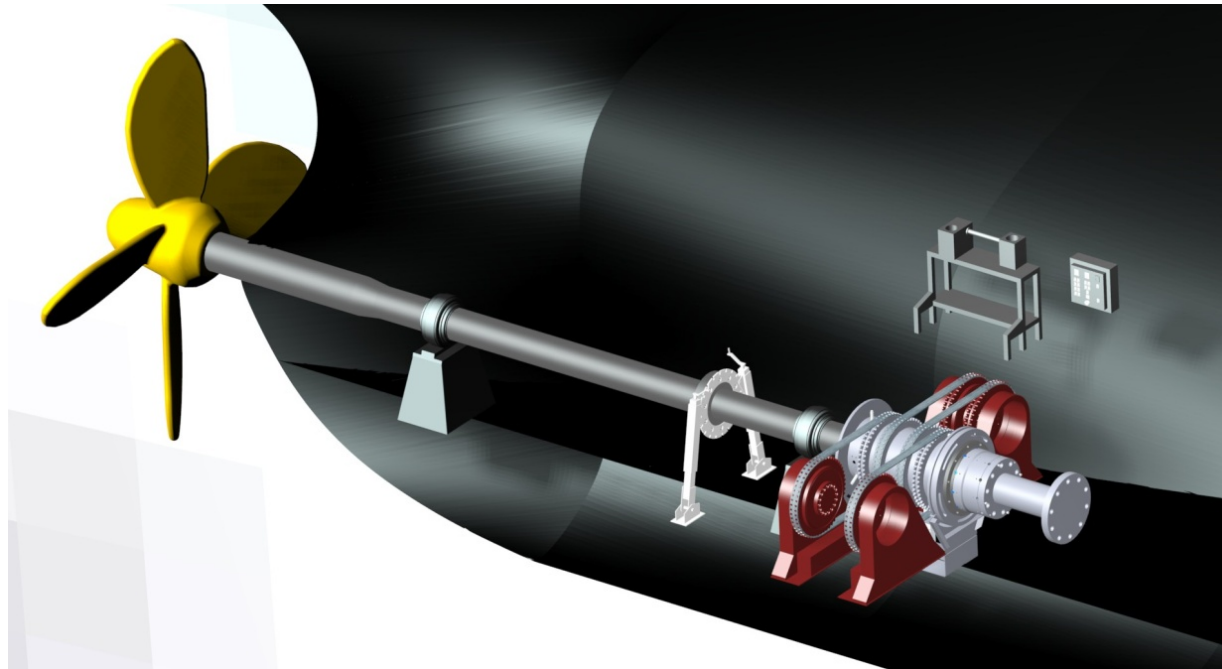




# CREW BRIEFINGS PRIOR NSR

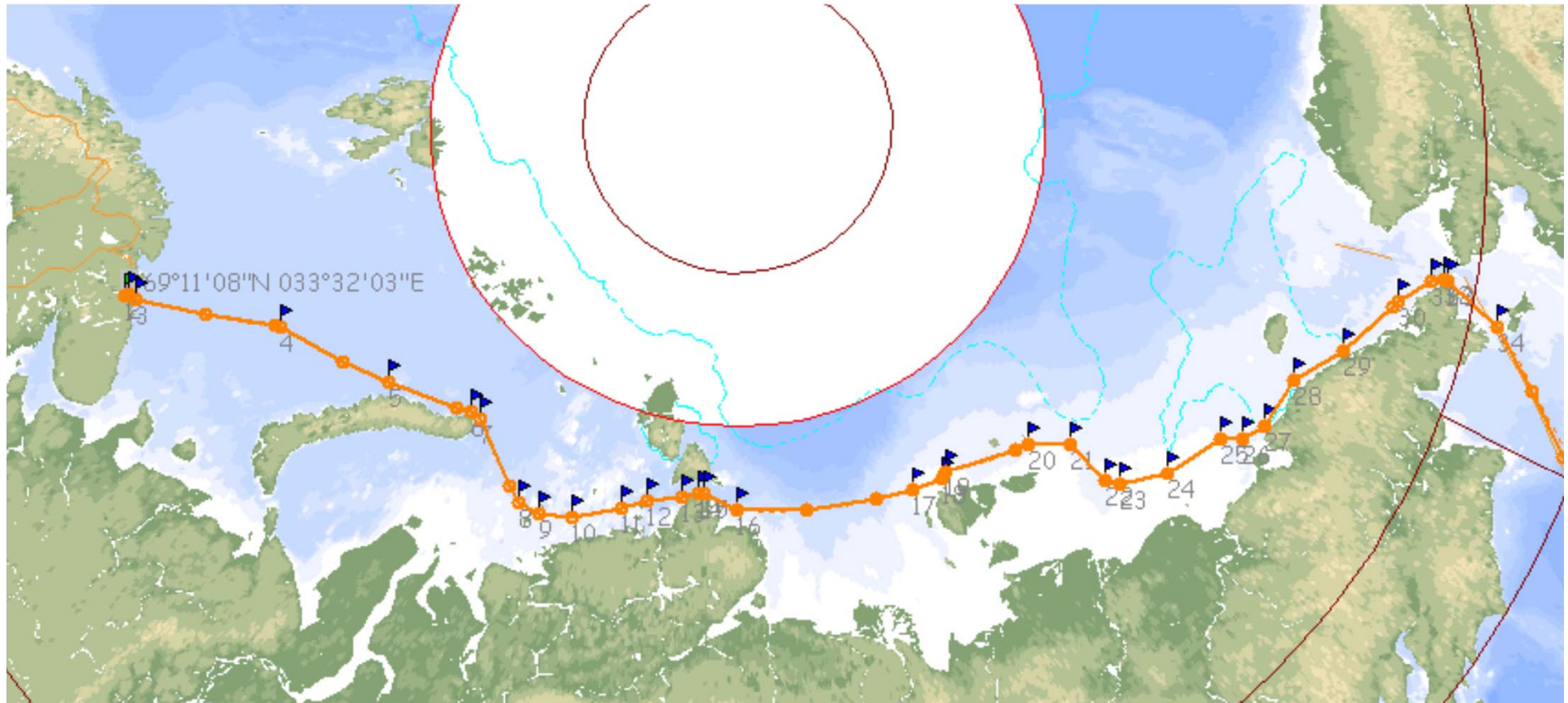


## REINFORCED ICE SAFETY

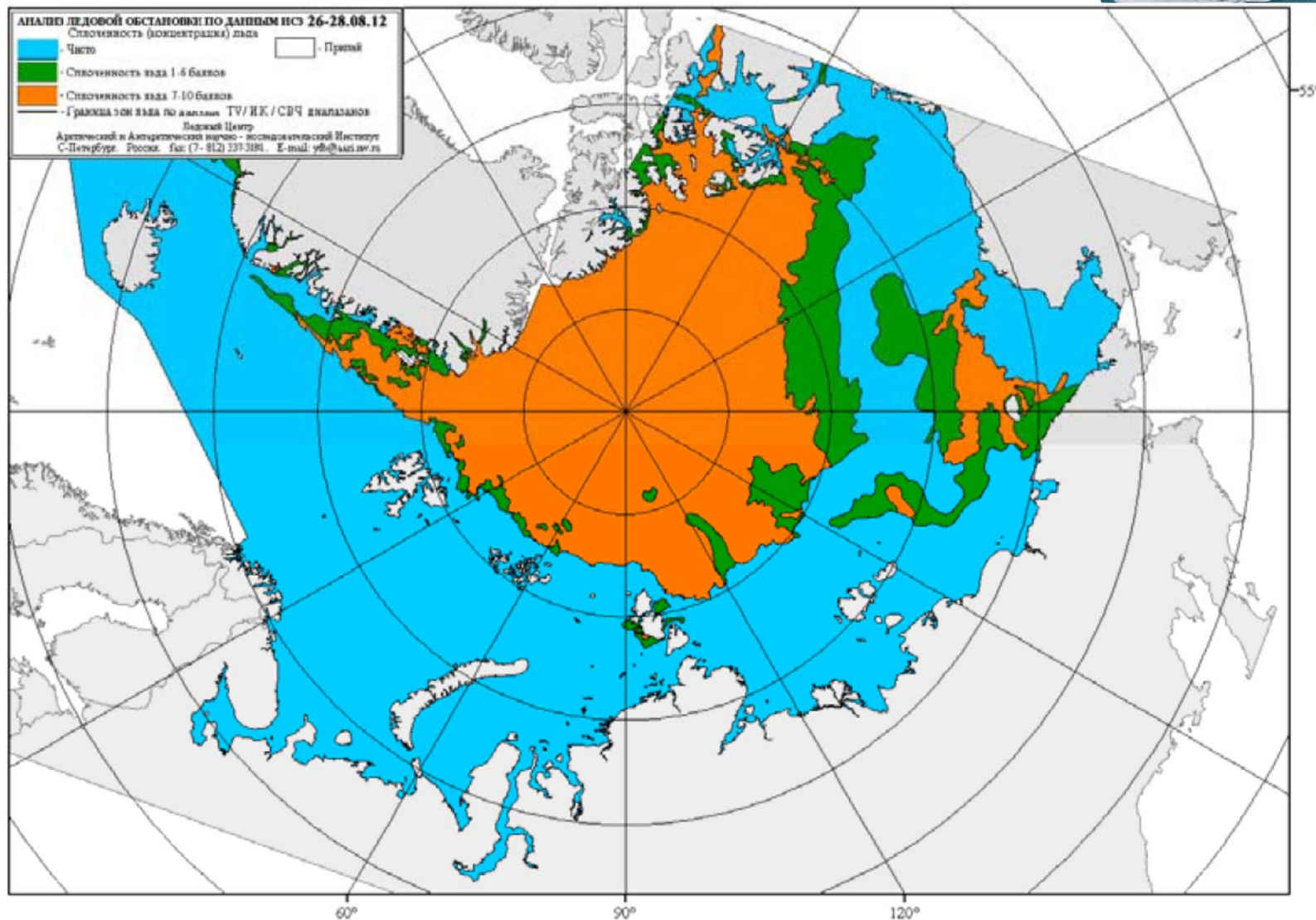


- "Marinvest Alternative Propulsion" added safety, takes 15 minutes to connect.
- Over 10 knots achieved
- In commercial use since 2006 on 4 vessels
- World wide patented by Marinvest Engineering

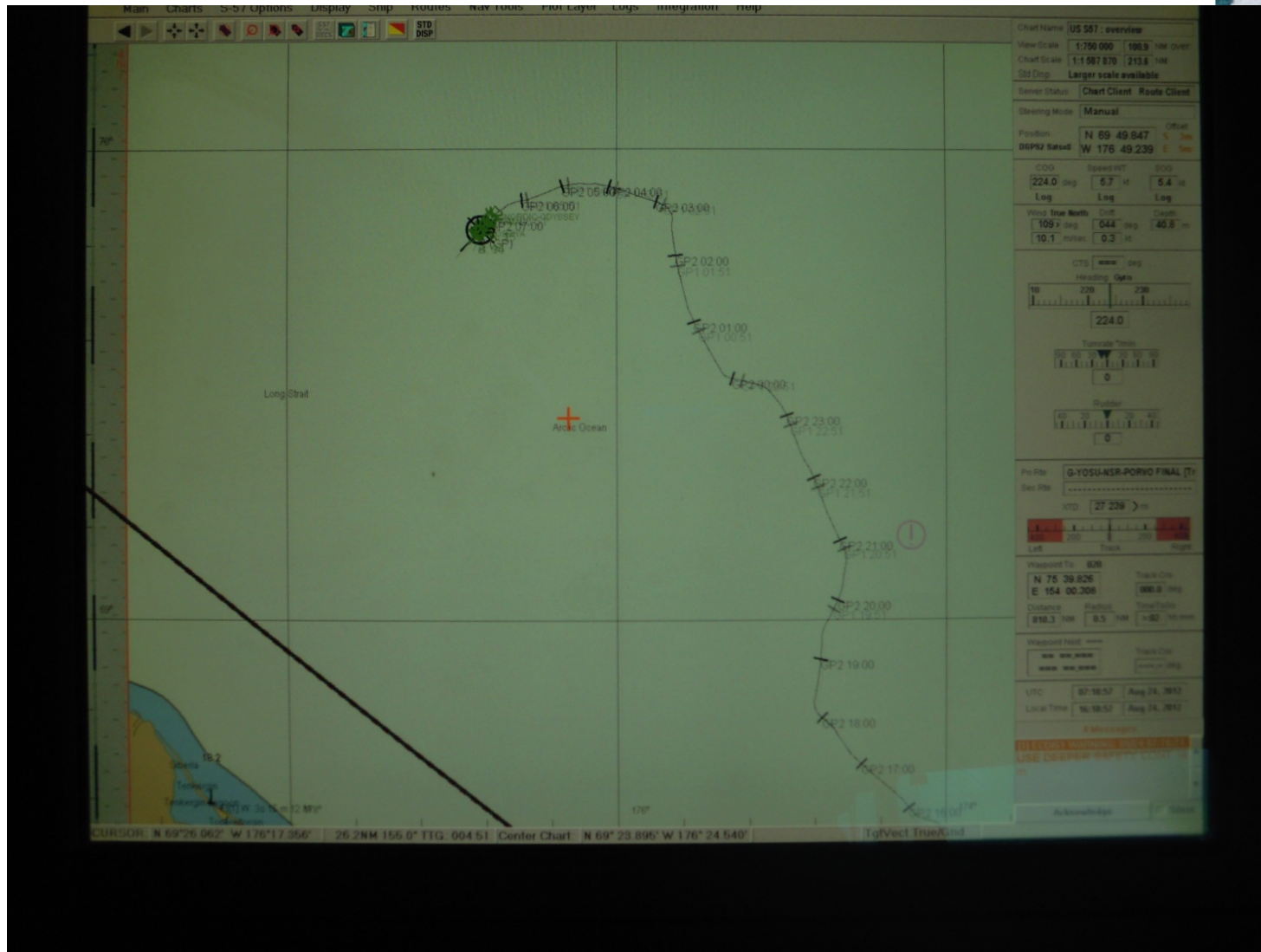
# MARINOR NSR TRANSIT SEP 2012



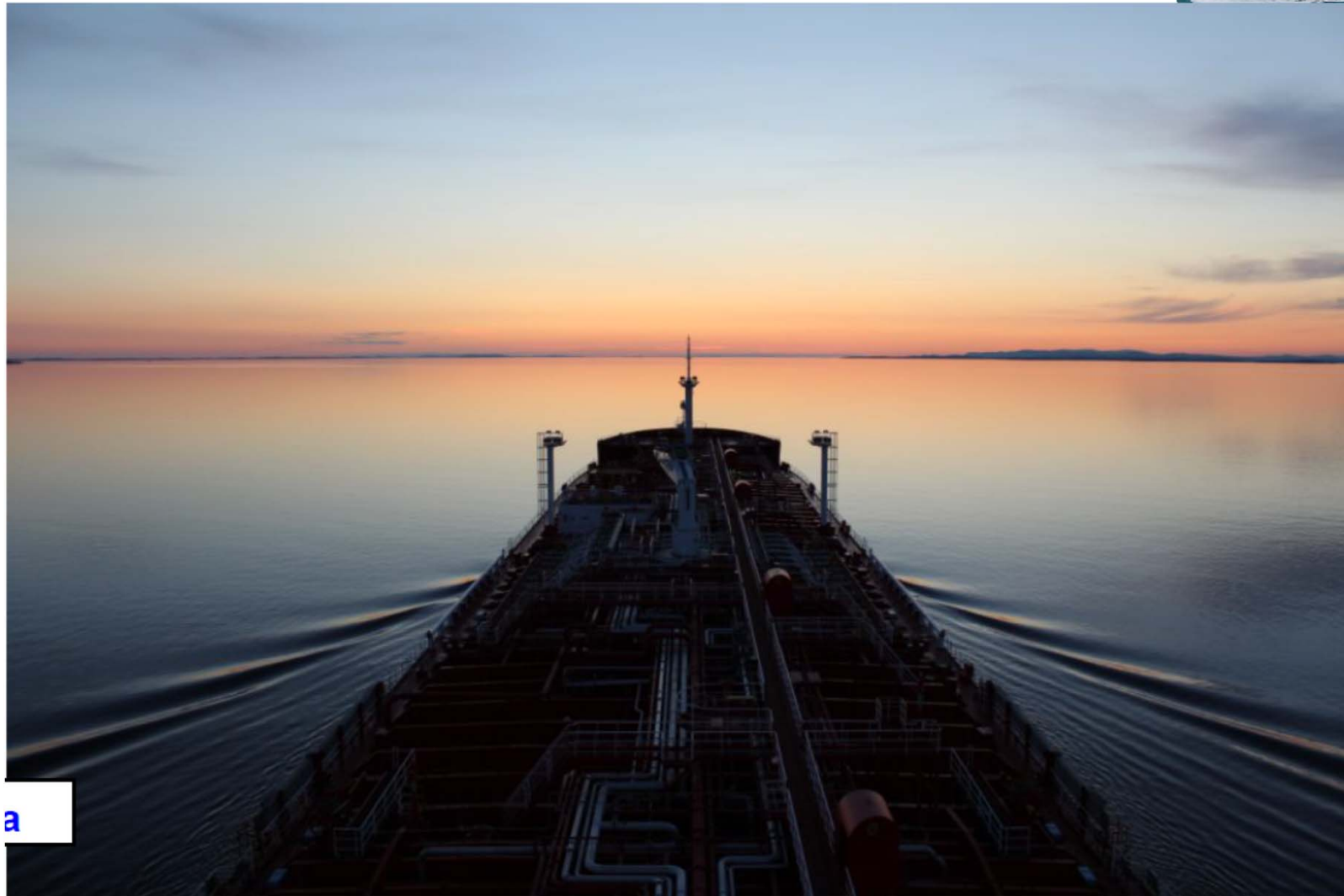
# ICE MAP NSR SEP 2012



# NAVIGATING THRU ICE



# WEATHER CAN BE FAVORABLE



# ICE NAVIGATION IN VERY OPEN ICE



# ICE NAVIGATION IN VERY OPEN ICE





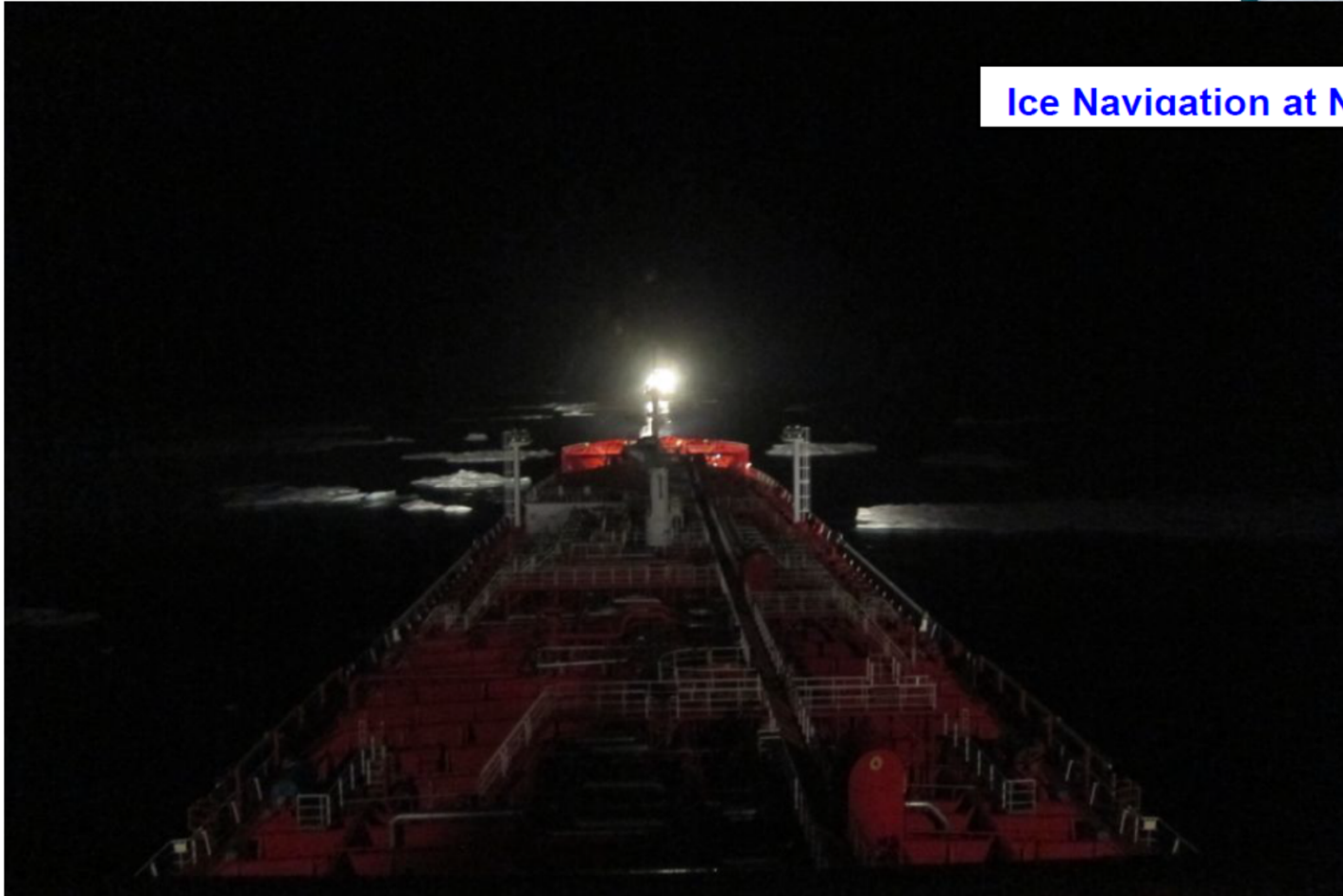
# DISTANCE TO ICE BREAKER DEPENDING ON ICE CONDITIONS



# SUEZ LIGHTS, RADAR, IR & ADEQUATE LOOK OUT



## Ice Navigation at Night



FOG + ICE NAVIGATION, REQUIRES GOOD  
COLLABORATION BETWEEN ICE BREAKER &  
VESSEL, ADEQUATE SPEED & LOOK OUT





**Transit in Fog**





OPEN ICE BEING PUSHED TOGETHER BY THE WIND

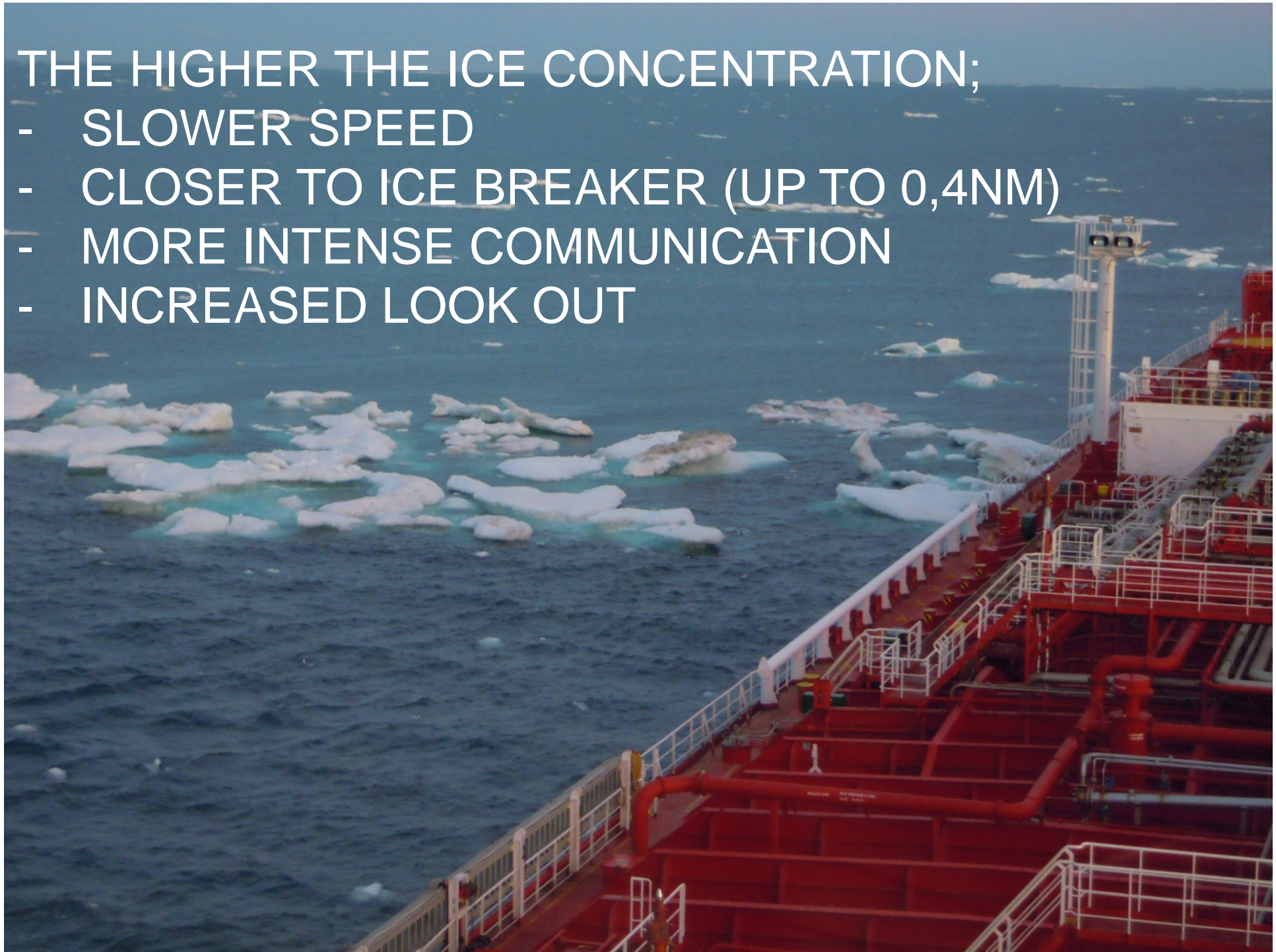


# ESCORT ALONG THE CONCENTRATED ICE



THE HIGHER THE ICE CONCENTRATION;

- SLOWER SPEED
- CLOSER TO ICE BREAKER (UP TO 0,4NM)
- MORE INTENSE COMMUNICATION
- INCREASED LOOK OUT







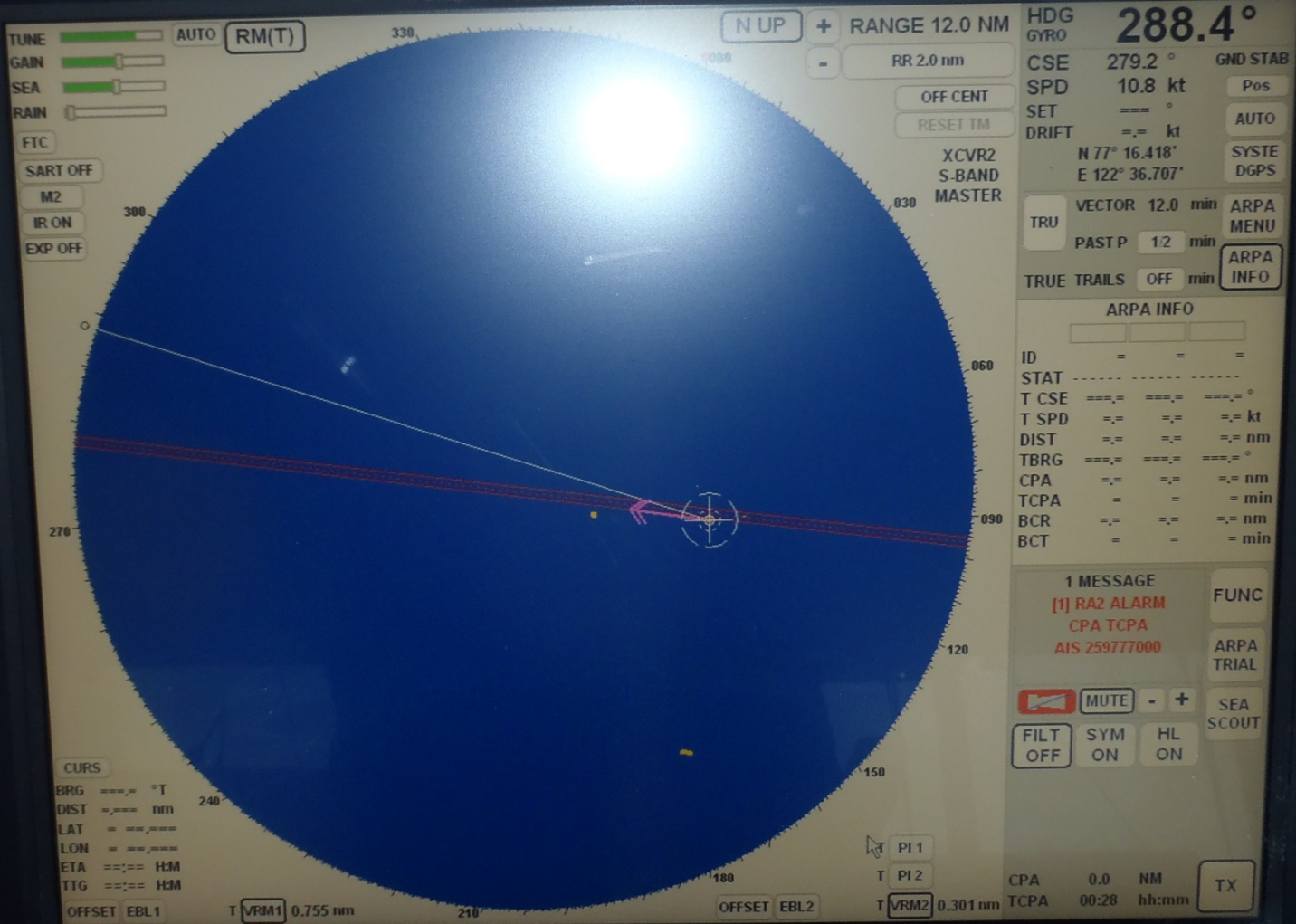


A wide expanse of dark blue ocean with two icebergs visible on the horizon under a grey sky. The water is choppy with small waves. The sky is overcast and grey. The icebergs are white and blue, floating in the distance.

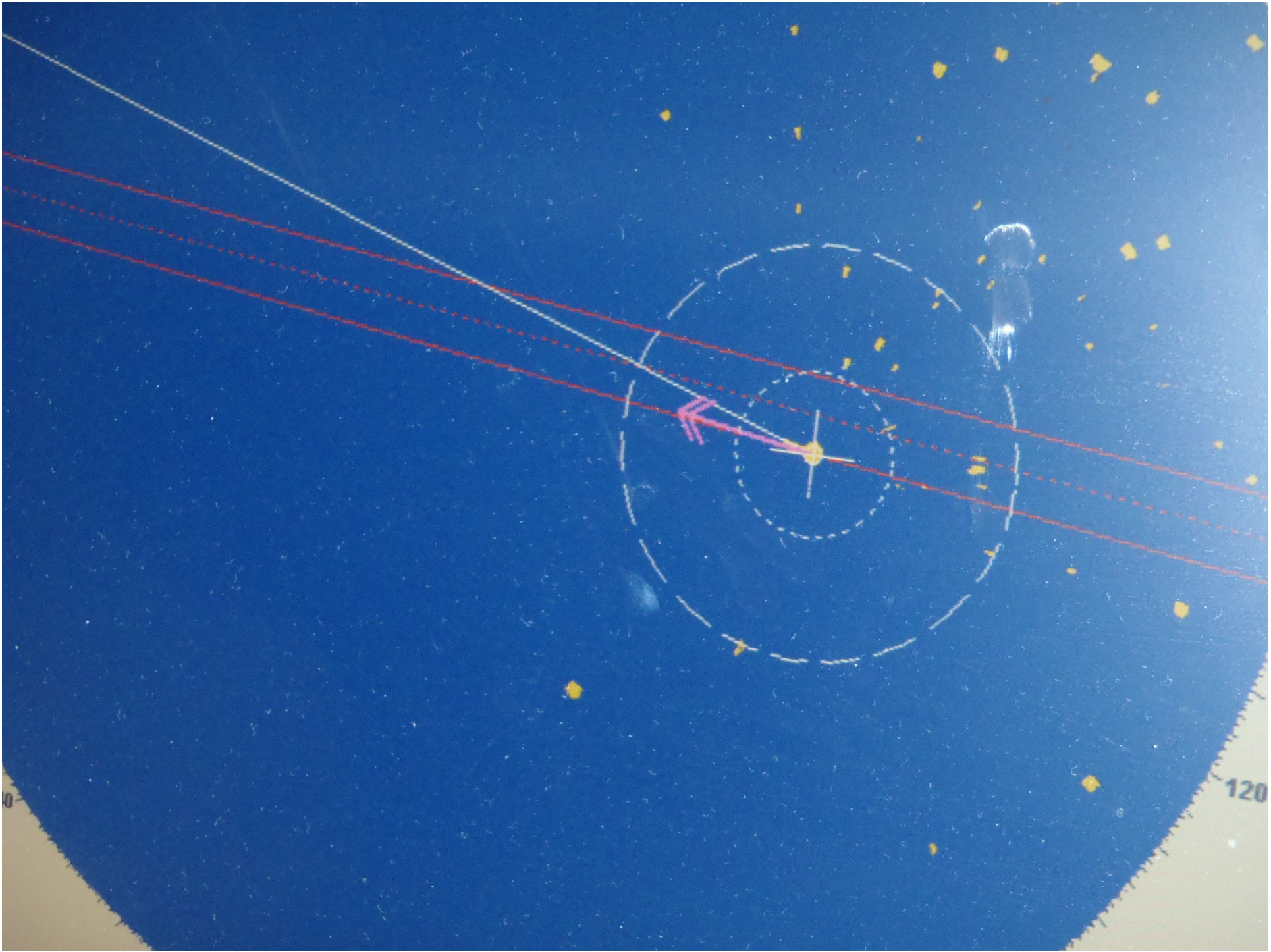
EVEN IN OPEN WATERS VIGILANT LOOK OUT IS  
MANDATORY

RADAR 2

10 CM RADAR







TUNE  AUTO RM(T)  
 GAIN   
 SEA   
 RAIN   
 FTC  
 SART OFF  
 M1  
 IR ON  
 EXP OFF

N UP + RANGE 3.0 NM  
 RR 0.5 nm  
 OFF CENT  
 RESET TM  
 XCVR1  
 X-BAND  
 MASTER

HDG GYRO 327.6°  
 CSE 325.7° GND STAB  
 SPD 9.2 kt Pos  
 SET --- ° AUTO  
 DRIFT --- kt SYSTE  
 N 67° 09.439' DGPS  
 W 171° 22.925'

TRU VECTOR 3.0 min ARPA  
 PAST P OFF min MENU  
 TRUE TRAILS 6.0 min ARPA  
 INFO

ARPA INFO

ID	96	=	=
STAT	TN	---	---
T CSE	326.2	---	---
T SPD	9.4	---	---
DIST	1.1	---	---
TBRG	329.1	---	---
CPA	1.1	---	---
TCPA	0	---	---
BCR	0.9	---	---
BCT	-46	---	---

0 MESSAGES  
 MUTE - +  
 FILT ON SYM ON HL ON  
 SEA SCOUT  
 FUNC  
 ARPA TRIAL

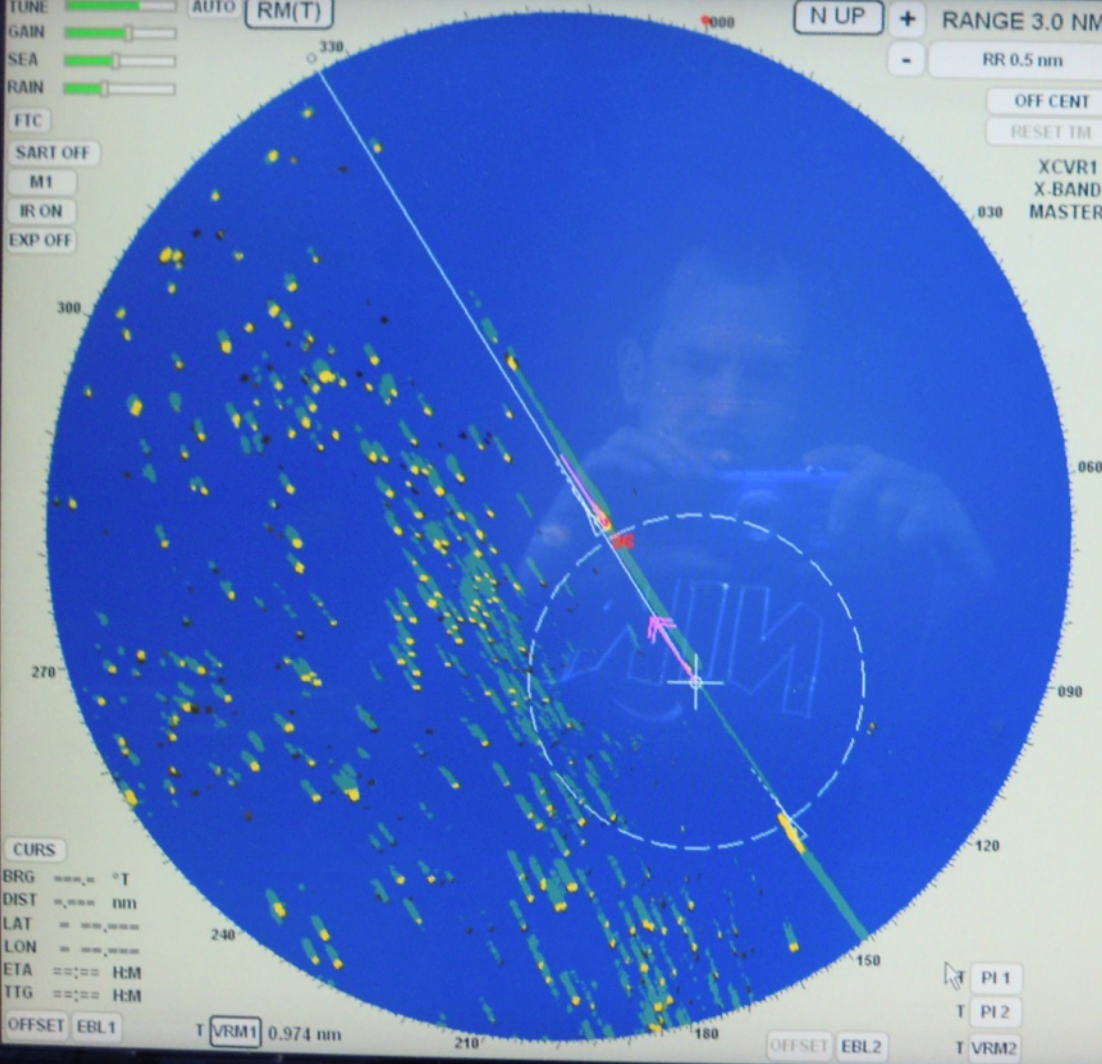
CURS  
 BRG --- °T  
 DIST --- nm  
 LAT ---  
 LON ---  
 ETA --- H:M  
 TTG --- H:M

T VRM1 0.974 nm

PI 1  
 T PI 2  
 T VRM 2

CPA 0.0 NM  
 TCPA 00:28 hh:mm

TX



# 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

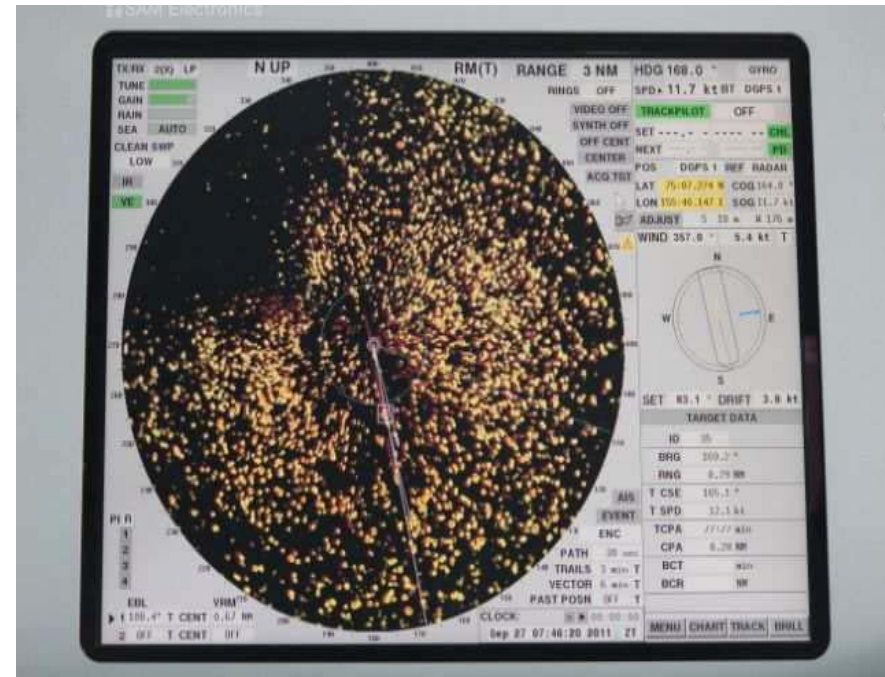


- Preparations are no different to other ice navigation areas like Baltic Sea, St Lawrence and Arctic Canada
- Preparations is aided by checklists, procedures, guidelines, relevant and updated manuals and contingency planning

# 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
- If the level of English can be enhanced that would further improve the communication between ice-breaker and vessel
- With increased trading there is a risk of more convoy
- With increased trading there is a risk of scarcity of experienced ice pilot advisors

THANK YOU















