The Northern Sea Route Navigation & Risks

“The navigation of the Polar seas, which is peculiar, requires in a particular manner, an extensive knowledge of the nature, properties and usual motions of the ice, and it can only be performed to the best advantage by those who have long experience with working a ship in icy conditions”

Captain William Scoresby

Prepared by
Igor Savin
Master Mariner

Introduction

- Introduction and history of exploration & polar operations
- Global warming? Environmental changes in Arctic
- Northern Sea Route Economic Aspects
- Ship Operations in Ice. Casualties
- Human issues. Shipowner’s concerns. Warranties
- Preparations for safe NSR passage
- Conclusion

IMO says...

- Ships operating in the Arctic and Antarctic environments are exposed to a number of unique risks. Poor weather conditions and the relative lack of good charts, communication systems and other navigational aids pose challenges for mariners. The remoteness of the areas makes rescue or clean-up operations difficult and costly. Cold temperatures may reduce the effectiveness of numerous components of the ship, ranging from deck machinery and emergency equipment to sea suctions. When ice is present, it can impose additional loads on the hull, propulsion system and appendages.

- Whilst Arctic and Antarctic waters have a number of similarities, there are also significant differences. The Arctic is an ocean surrounded by continents while the Antarctic is a continent surrounded by an ocean. The Antarctic sea ice retreats significantly during the summer season, thus there is relatively little multi-year ice in the Antarctic. Conversely, Arctic sea ice survives many summer seasons and there is a significant amount of multi-year ice. Whilst the marine environments of both Polar seas are similarly vulnerable, response to such challenge should duly take into account specific features of the legal and political regimes applicable to their respective marine spaces

NE Passage Exploration

- 1594 -97 Willem Barents discovers Spitsbergen & Kara Sea
- 1725-42 Russian Great Northern Expeditions - Vitus Bering
- 1878-9 Baron Nordenskiold first successful navigation
- 1908-9 Robert Peary reportedly reached the North Pole
- 1910 -1915 Russian expedition explores and charts NSR
- 1932 Icebreaker "Sibiriakov" sailed from Archangelsk, the propeller shaft broke, and using sails arrived in the Bering Strait in October completing the first successful crossing of the NSR during a single navigation without wintering.
- 1935 the first commercial cruises were carried out by two cargo steamers each way between Murmansk and Vladivostok

Increasing Polar Activity

- Reducing Arctic Ice in summer
- New Transportation routes
- Passenger Cruising
- Mining & energy
- Scientific / exploration
- Government interests

Arctic Sea Ice Extent

On September 16, 2012 sea ice extent dropped to 3.41 million square kilometers. This appears to have been the lowest extent of the year. In response to the setting sun and falling temperatures, ice extent will now climb through autumn and winter. However, a shift in wind patterns or a period of late season melt could still push the ice extent lower. The magenta line shows the 1979 to 2000 median extent for that month.

Northern Sea Route Economic Aspects

Shows comparison of distance between northern route and conventional route via Suez and Indian Ocean. Exploration began as early as 1100's and by 1700 the feasibility had been established, but only in 1878 was the first continuous navigation from west to east completed

Oil & Gas from Murmansk

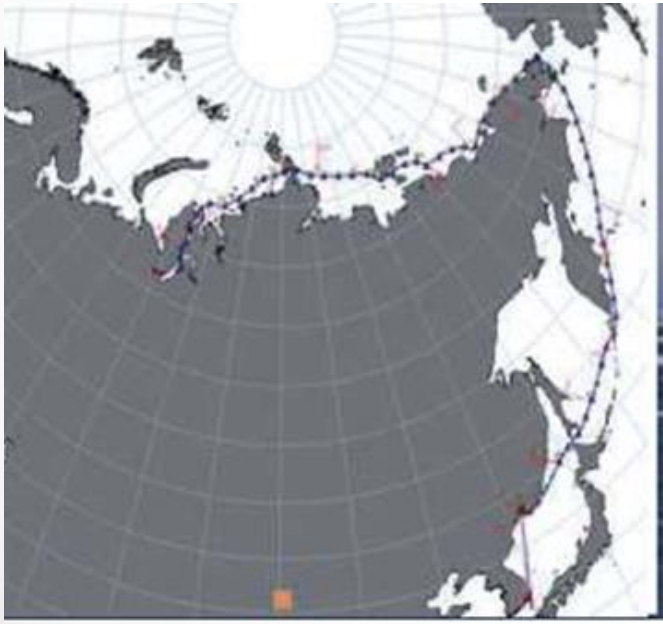
Destination	Via Suez	Via NSR	Savings
Japan, Kobe	12291 miles 37.1 days	6010 miles 18.1 days	6281 miles 19 days
Korea, Busan	12266 miles 37 days	6097 miles 18.4 days	6169 miles 18.6 days
China, Ningbo	11848 miles 35.8 days	6577 miles 19.1 days	5271 miles 15.9 days

From Rotterdam to Asian Markets

Destination	Via Suez	Via NSR	Savings
Japan, Kobe	10969 miles 33.1 days	7610 miles 23 days	3359 miles 10.1 days
Korea, Busan	10754 miles 32.5 days	7697 miles 23.2 days	3057 miles 9.3 days
China, Ningbo	10336 miles 31.2 days	8177 miles 24.7 days	2159 miles 6.5 days

July 2009 Beluga Fraternity and Beluga Foresight

During the passage through the East Siberian Sea, the Sannikov Strait and the Vilkizki Strait, the Beluga vessels followed in a little convoy behind Russian Atomflot-ice breakers 50 Let Pobedy and Rossia. Small icebergs, icefields and iceblocks were safely negotiated. Beluga claimed a saving of 4,000 miles from Ulsan to Rotterdam with costs of Euro 300,000 less



Transit Voyages

- 2010 4 voyages- two in ballast
  - 111,000 tones cargo
- 2011 34 voyages- 10 in ballast
  - 820,789 tones cargo
- 2012 46 voyages- 13 in ballast
  - 1,261,545 tones cargo
- In 2012 25 transits were from West-East and 21 transits from East-West (total 28 non Russian vessels)

Ship Operations in Ice

What could go gone wrong?

- Potential Damages
- Propeller or Thruster
- Rudder
- Shell Plating
- Collision damage
- Freezing damage (to pipelines etc.)
- Bilge Keel
- Paint

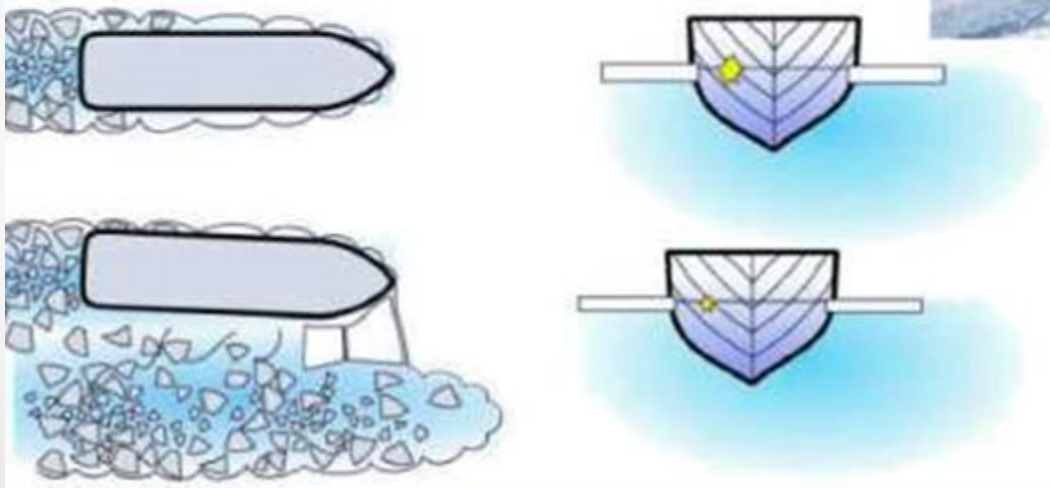
Navigation Approaches

- Independent
- Ice Management
- Escort

All navigation techniques have risk of potential damage

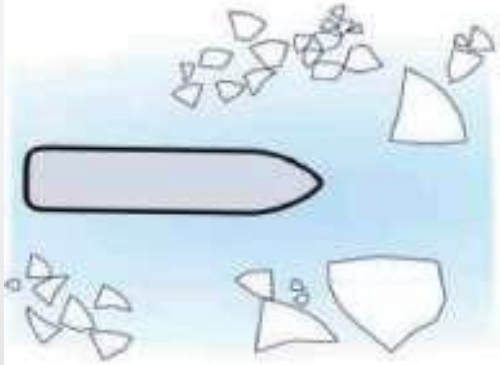
Potential for Ice Damage – Level Icebreaking

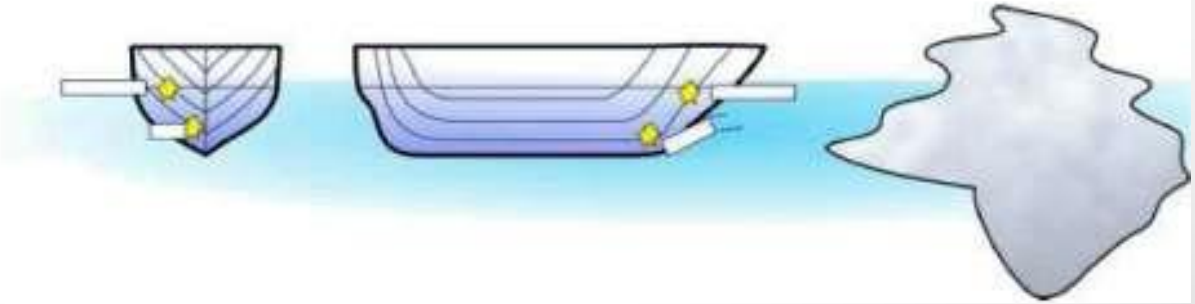
Little Damage Risk



Potential for Ice Damage – Open Pack

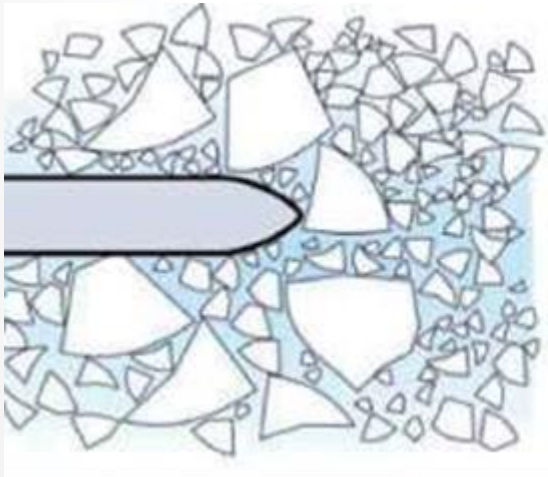
- There may be dangerous fragments (extra thick)
- Speed is the a key risk element
- Normally damage is on the bow
- Deep damage is possible at high speed or with icebergs

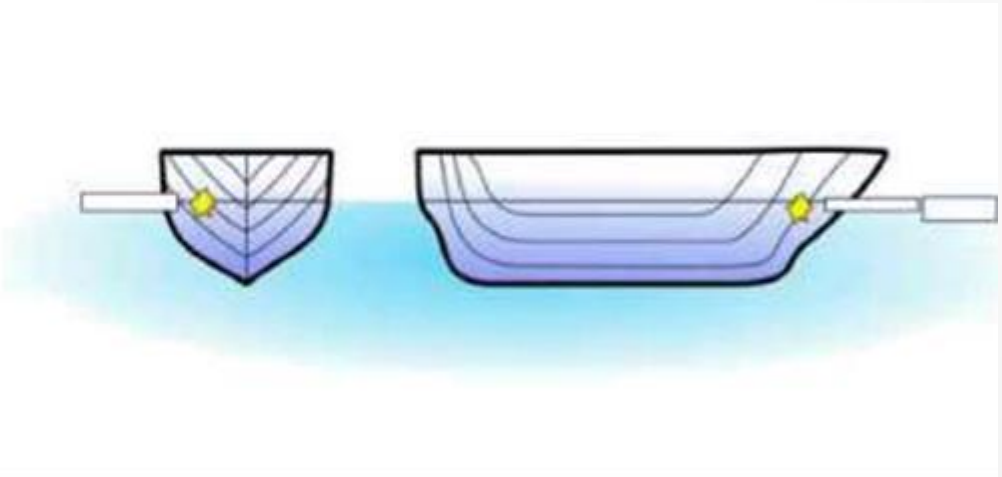




Potential for Ice Damage – Close Pack

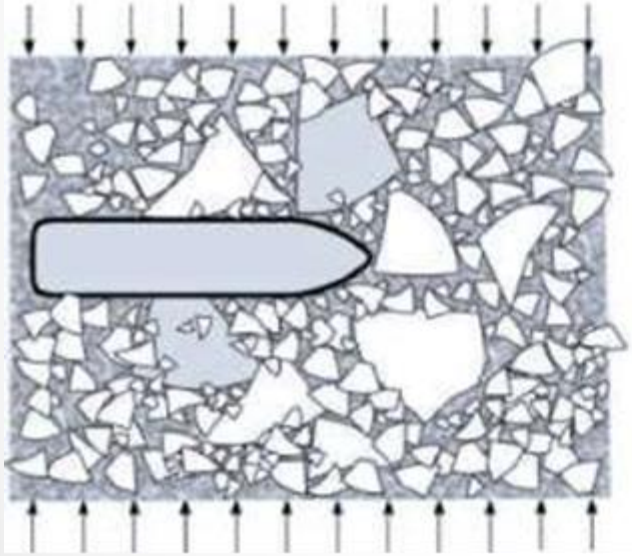
- Speed is usually low
- Damage near bow, waterline

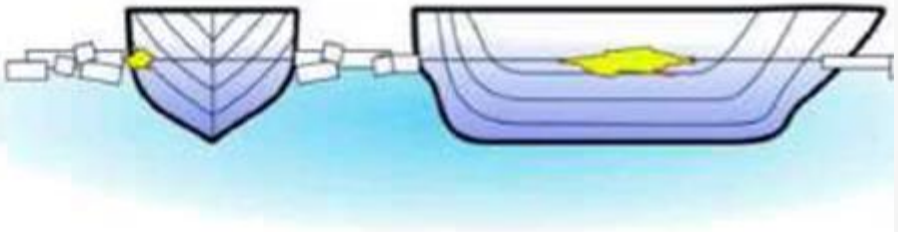




Potential for Ice Damage – Close Pack under pressure

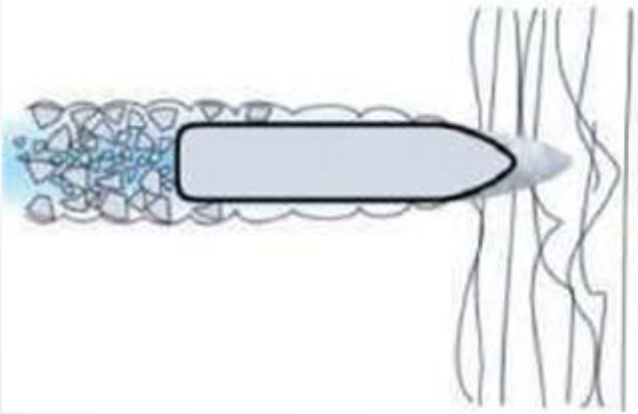
- Speed is low
- Mid body damage is possible

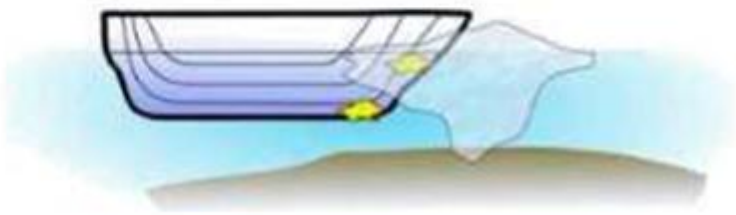




Potential for Ice Damage – Ramming Thick Ice and Ridges

- Ramming can cause local bow damage (thick fragments in ridge)
- Grounded or deep ridges can cause lower bow / bilge damage





Vessel Hull holed by Ice

Hull Damage

NSR Casualties

2009 – tanker Indiga collided with the Russian nuclear powered icebreaker Yamal in the Kara Sea

2010- Indiga collided again, this time with her sister ship Varzuga, while being assisted by two nuclear icebreakers in difficult ice conditions.

July 2011 - Collision between icebreaker Taymyr and Tanker Perseverance

Human Issues

Various "human" problems can be encountered:

- Training as an Ice Navigator or Ice Master - no single agreed qualification
- Experience in the Baltic not similar to polar regions
- Problems of working in very cold weather (-40°C), wind chill, frostbite, etc.
- Clearance of ice from on deck - exhausting work
- Proper protective clothing & training
- Impairment of decision-making in cold conditions
- Continuous noise and heavy vibration in ice resulting in sleep deprivation
- Crew and Passenger SAR

Shipowner’s Concerns

- Supply/support infrastructure along Russian north coast can be further improved
- Charts & Publications should be in English
- Level of English enhanced to improve communication icebreaker to vessel
- With increased trading risk of more convoys
- With increased trading risk of scarcity of experienced ice pilot advisors

Shipowner’s Risk Assessment

- Ice damage - multi-year ice harder
- Shallow waters
- Heavy weather
- Breakdowns
- Low temperature
- Freezing spray
- Free Salvage/towage of casualty by Atomflot
- Fog and ice require good collaboration between icebreaker and vessel
- Fog and higher ice concentrations require:
  - Slower speed
  - Closer to icebreaker
  - More intense communication
  - Increased lookout

Underwriters Warranty used for vessel transiting Northern Route

It shall be a condition precedent to the liability of the Underwriters that:

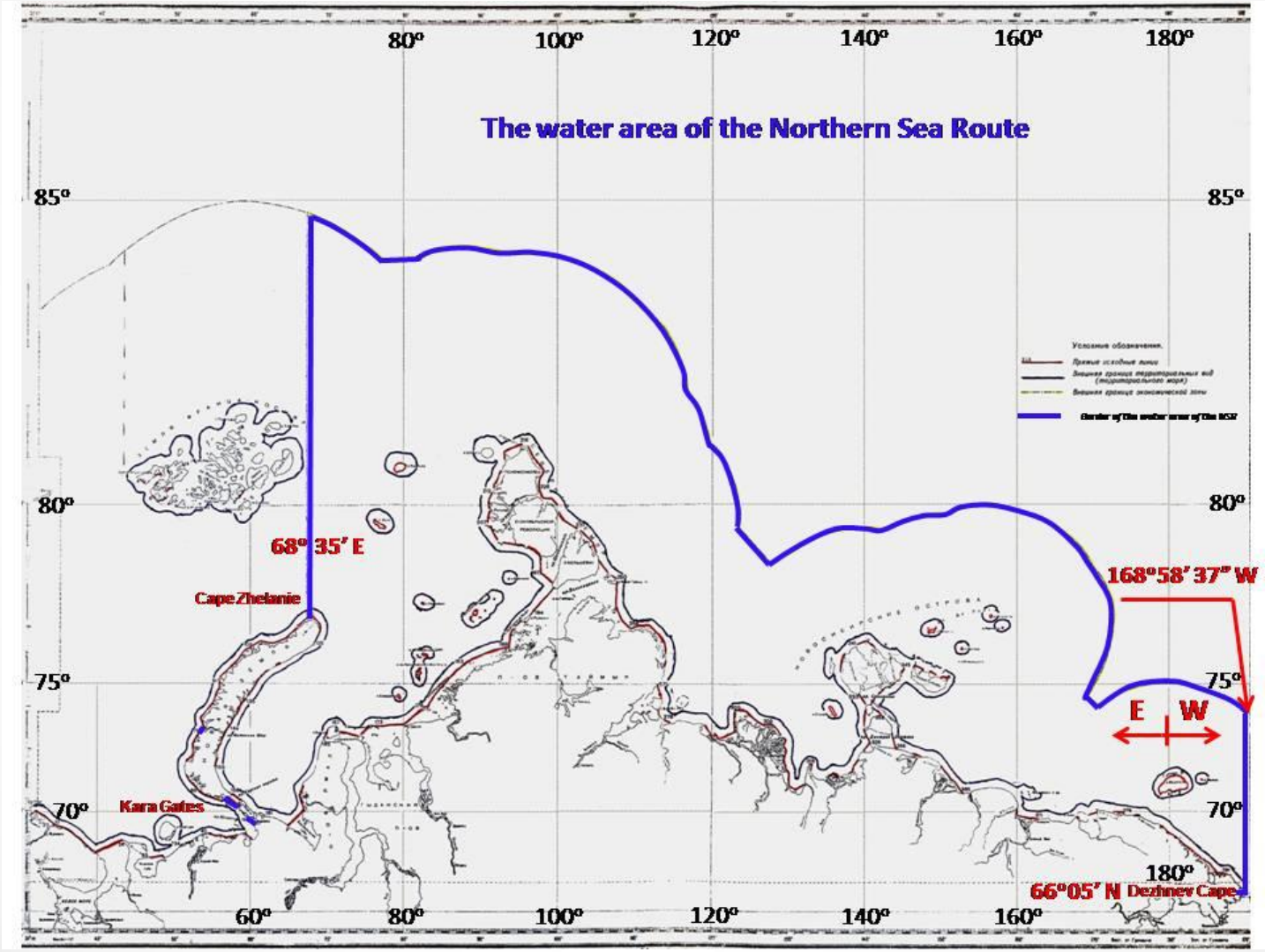
1. the vessel shall be equipped and properly fitted with:-
   1.1 two independent marine radar sets
   1.2 at least one global positioning system receiver (such as US GPS, Russian GLONASS, European Galileo, Chinese Compass)
   1.3 a radio transceiver and GMDSS
   1.4 a weather facsimile recorder or alternative equipment for the receipt of weather and routeing information
   1.5 a gyrocompass, incorporating latitude corrections approved by manufacturers or their agents, when North of 70° N. Lat.

In each case all navigational aids, radar, arpa (automatic radar plotting aid), echo sounders, speed logs, navtex, compasses, chronometers, communication systems etc. should be fully operational and operated by qualified personnel

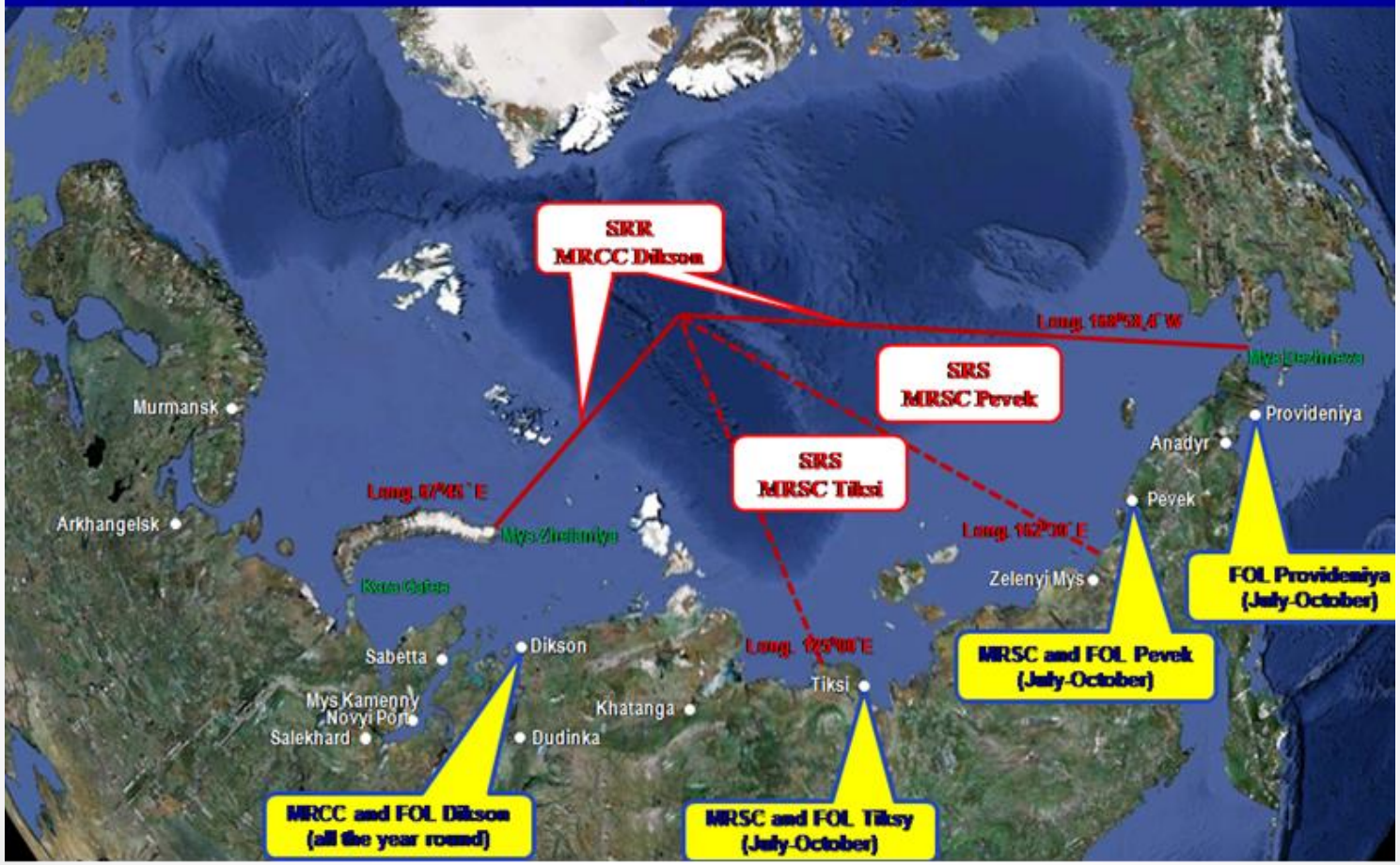
2. the vessel shall be in possession of appropriate navigational charts corrected to the last available notice to mariners, sailing directions, lists of radio signals, log signals, lights and pilot books; and

3. the vessel shall adhere to all pilotage requirements, traffic regulations and controls
as may be established by the applicable coastal state authorities.

Preparations for safe NSR passage



The map of the boundaries of search and rescue region / of search and rescue sub-regions (SRR/SRS), the position of Maritime rescue co-ordination center / Maritime rescue sub-center (MRCC/MRSC) and forward operational location (FOL) with emergency and rescue equipment and oil spill recovery equipment of Federal Budgetary Institution «Marine Rescue Service of Rosmorrechflot» (MRS) in the water area of the Northern Sea Route and in the sea port of Provideniya



General Recommendations:

- Minimum Ice Class Baltic 1A or equivalent
- Compliance with NSR Requirements
- Examination/approval by Administration of NSR
- Stability calculations for cargo plus ice accretion
- Duplicated MF/HF telephony, Iridium
- Sea Area 4 (above 76N) endorsements for Radio Station License, Safety Radio Cert & EPIRB
- Employ 3/2 experienced ice pilots for NSR (24 hr cover)
- Availability of Navigation Charts, verify waypoints, depths etc
- Check operation/coverage of Satellite Navigation Equipment

- Alternate to GSNS as a means of navigation to cross check vessels position
- No ballast passage
- Latest weather & ice information to be obtained
- Suez & bridge wing searchlights
- Sufficient bunkers/water/provisions
- Vessel must be prepared to complete voyage without escort

Detailed Recommendations:

Pls refer to site http://www.nsra.ru/:

1. The vessel should be of ice class according to table below and granted permission for NSR transit (usually 10 days required), providing data below:

Criteria of the admission of ships to the Northern Sea Route in compliance with category of their ice strengthening

1. For ships without ice strengthening and with category of ice strengthening Ice1-Ice 3 during the navigation from July to November 15[1)]

Category of ice strengthening of ship	Mode of ice navigation	Kara Sea		Laptev Sea		East-Siberian Sea		Chukchi Sea
		south-western part	north-eastern part	western part	eastern part	south-western part	north-eastern part	
		HML	HML	HML	HML	HML	HML	HML
No[2)]	Ind.[3)]	– – –	– – –	– – –	– – –	– – –	– – –	– – –
	IA	– – +	– – +	– – +	– – +	– – +	– – +	– – +
Ice1	Ind.	– – +	– – +	– – +	– – +	– – +	– – +	– – +
	IA	– – +	– – +	– – +	– – +	– – +	– – +	– – +
Ice2	Ind.	– – +	– – +	– – +	– – +	– – +	– – +	– – +
	IA	– + +	– + +	– – +	– – +	– – +	– – +	– – +
Ice3	Ind.	– – +	– – +	– – +	– – +	– – +	– – +	– – +
	IA	+ + +	+ + +	– – +	– – +	– – +	– – +	– + +

[1)] For ships without ice strengthening and with category of ice strengthening Ice1 – Ice3 navigation in the water area of the Northern Sea Route from November 16 to December 31 and from January to June is prohibited.

[2)] Oil tankers, gas carriers, chemical carriers with a gross tonnage of 10 000 and over without ice strengthening can navigate in the water area of the NSR only in open water assisted by icebreaker during the period from July to November 15.

[3)] For ships without ice strengthening it is allowed to independently navigate in the water area of the Northern Sea Route only in open water.

2. For ships with category of ice strengthening Arc4 – Arc9 during the period of navigation from July to November

Category of ice strengthening of ship	Mode of ice navigation	Kara Sea		Laptev Sea		East-Siberian Sea		Chukchi Sea
		south-western part	north-eastern part	western part	eastern part	south-western part	north-eastern part	
		HML	HML	HML	HML	HML	HML	HML
Arc4	Ind	– + +	– + +	– – +	– – +	– – +	– – +	– + +
	IA	+ + +	+ + +	– + +	– + +	– + +	– + +	– + +
Arc5	Ind	+ + +	+ + +	– + +	– + +	– + +	– + +	– + +
	IA	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +
Arc6	Ind	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +
	IA	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +
Arc7	Ind	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +
	IA	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +
Arc8	Ind	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +
	IA	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +
Arc9	Ind	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +
	IA	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +

4. For icebreakers with category of ice strengthening Icebreaker6 – Icebreaker8[1] during the period of navigation from January to June and in December[2]

Category of ice strengthening of ship	Mode of ice navigation	Kara Sea		Laptev Sea		East-Siberian Sea		Chukchi Sea
		south-western part	north-eastern part	western part	eastern part	south-western part	north-eastern part	
		HML	HML	HML	HML	HML	HML	HML
Icebreaker6	Ind	– + +	– + +	– – +	– – +	– – +	– – +	– + +
	IA	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +
Icebreaker7	Ind	+ + +	+ + +	– + +	– + +	– + +	– + +	+ + +
	IA	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +
Icebreaker8	Ind	+ + +	+ + +	– + +	– + +	– + +	– + +	+ + +
	IA	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +

Designations used in the present annex:

«Ind.» – independent navigation;

«IA» – navigation under the icebreaker assistance;

«H» – heavy ice conditions in compliance with the official information of Roshydromet;

«M» – medium ice conditions in compliance with the official information of Roshydromet;

«L» – light ice conditions in compliance with the official information of Roshydromet;

«+» – navigation of ship is permitted;

«–» – navigation of ship is prohibited

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[1] For icebreakers with category of ice strengthening Icebreaker9 there are no restrictions as to the independent navigation in the water area of the Northern Sea Route.

[2] For icebreakers with category of ice strengthening Icebreaker6 – Icebreaker8 during the period of navigation from July to November the independent navigation is permitted.

Information on ship and voyage to be provided to NSRA:

1. Name of ship
2. Identification number of the International Maritime Organization (hereinafter referred to as IMO) of ship
3. Flag of ship
4. Call sign of ship
5. Information on shipowner with the indication of full name and (if any) IMO number, family name, first name, patronymic (if any) of supervisor, contact phone, fax, e-mail or family name, first name, patronymic (if any) of shipowner, contact phone, fax, e-mail for a physical person
6. Port/place of departure of ship (the last port of the call of ship before the navigation in the water area of the Northern Sea Route).
7. Port/place of destination of ship (the first port of the call of ship after the navigation in the water area of the NSR).

8. Description of the intended route of navigation (area of operation) of ship in the water area of the NSR.
9. Anticipated dates of the beginning and end of the navigation of ship in the water area of the NSR.
10. Intended number of crew members and passengers aboard.
11. Type and planned amount of cargo to be carried in metric tons.
12. Class and planned amount of dangerous cargo in metric tons (if any)
13. Information on the length of experience with ship master of the navigation in ice in the water area of the Northern Sea Route as a master or chief mate with the indication of the name of ship, IMO number and time, when ship master or chief mate navigated in the water area of the Northern Sea Route.

14. Ship satellite phone number (if any)
15. Ship fax number (if any)
16. Ship e-mail (if any)
17. Type of ship
18. Category of ice strengthening of ship assigned by the organization authorized for the classification and certification of ships.
19. Overall length of ship in meters
20. Overall width of ship in meters
21. Maximum draft of ship in meters
22. Gross tonnage of ship
23. Power of the main power plant of ship in kW
24. Breadth of ice strake of ship in meters
25. Daily fuel consumption moving at full speed in open water in metric tons
26. Information on the structure of forward end and of after end of ship.

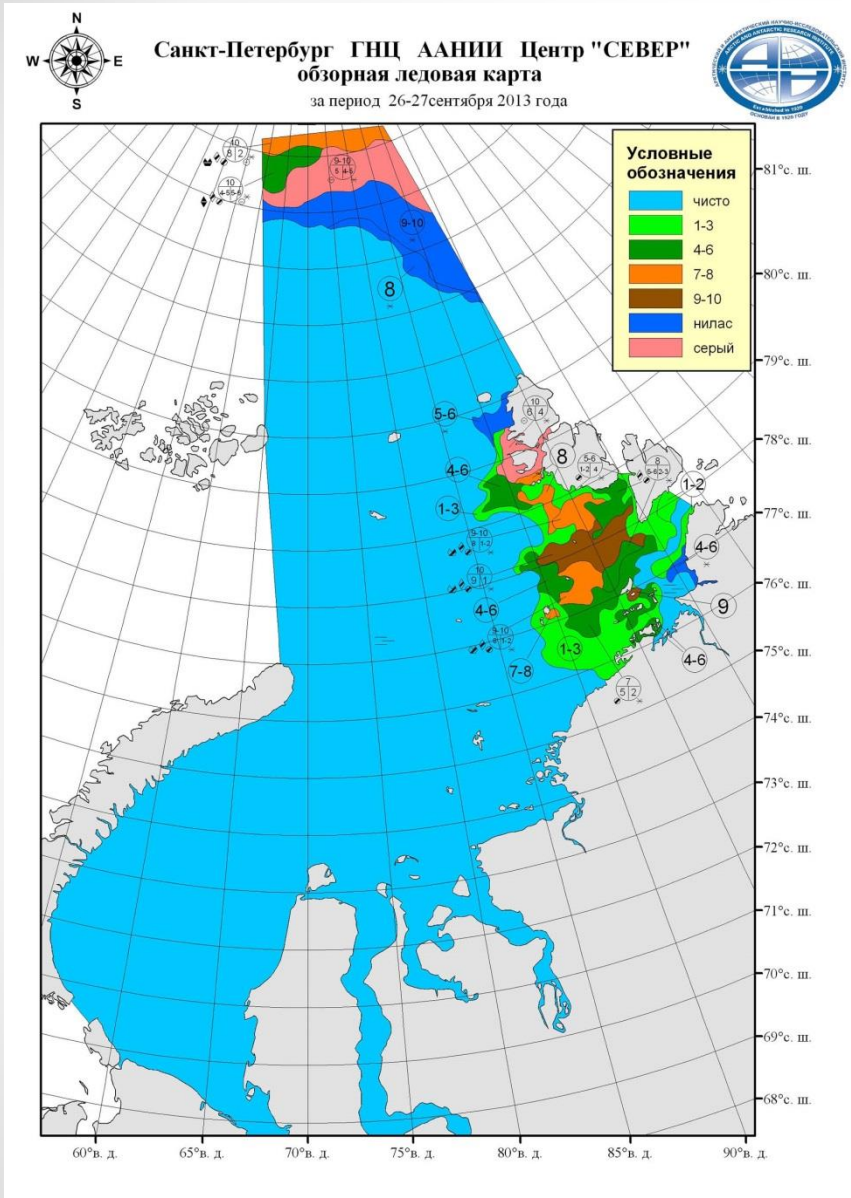
2. Upon granting permission to enter NSR the vessel will undergo standard PSC inspection (in case calling any Russian ports before transit). PSC Officer is checking usual international requirements and additionally compliance with Rules of Navigation in the NSR but are not limited to:

a) Valid certificates, charts and publications for intended route. Also the vessel should be equipped with additional charts for possible route deviations and alternate passages through Yugorkiy Shar strait or by rounding Novaya Zemlya islands from N and are subject to ice condition and Marine Operations recommendations.

The Russian charts / publications are no longer required, however if international charts / publications can’t cover sailing area (including possible deviation) – the Russian charts should be ordered, normally via Agent at first Russian port before passage or by DHL.

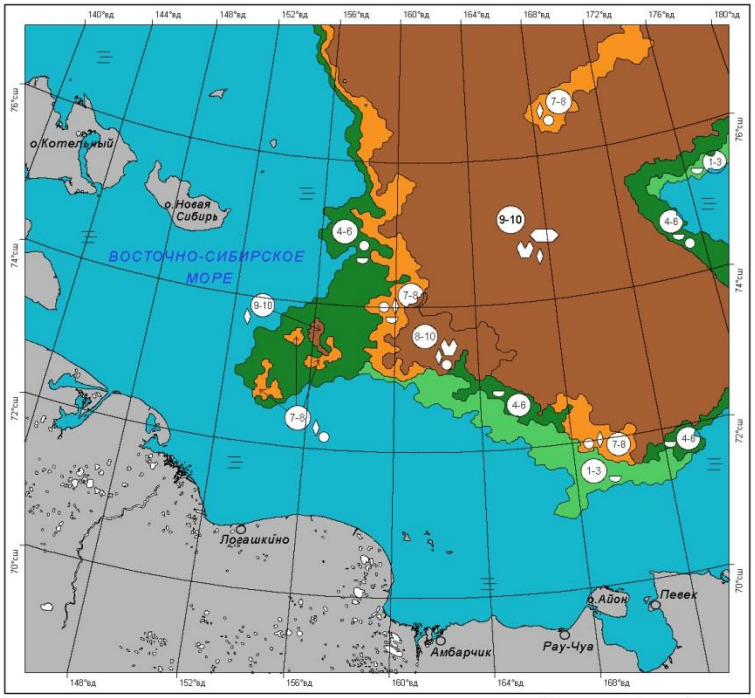
b) Alternatively if ECDIS is available on board, same should be fully licensed to receive vector charts (SENC). At certain area of NSR the vector charts are not available, so paper charts should be used (Russian or International).

c) The vessel’s Radio equipment should comply with GMDSS A4 region. Alternatively possible Region A3 + Iridium phone or any other satellite equipment able to maintain good signal on Lat. above 70 N. Would recommend to arrange Radio survey of all Bridge equipment including Gyro compass service prior to voyage starts. Strongly recommended to have ability to receive ice charts (via internet – there are variety of sites available or via special equipment like IceNav or Narwal – possibility to get up to date ice situation via Radarsat satellites).



ФЕДЕРАЛЬНАЯ СЛУЖБА ПО ГИДРОМЕТЕОРОЛОГИИ И МОНИТОРИНГУ ОКРУЖАЮЩЕЙ СРЕДЫ

ФГБУ "НАУЧНО-ИССЛЕДОВАТЕЛЬСКИЙ ЦЕНТР КОСМИЧЕСКОЙ ГИДРОМЕТЕОРОЛОГИИ "ПЛАНЕТА"



Проекция: стереографическая
Центральный меридиан: 161° вд

КАРТА-СХЕМА ЛЕДОВОЙ ОБСТАНОВКИ В ВОСТОЧНО-СИБИРСКОМ МОРЕ

составлена по данным ИСЗ TERRA / MODIS, Oceansat-2 / OSCAT © NESDIS 05-06.09.2013

Условные обозначения

Сплочённость льда (в баллах 0-10):

- чистая вода
- отдельные льдины (<1)
- редкий лёд (1-3)
- разреженный лёд (4-6)
- сплочённый лёд (7-8)
- сплошной и очень сплочённый дрейфующий лёд (9-10)
- припай

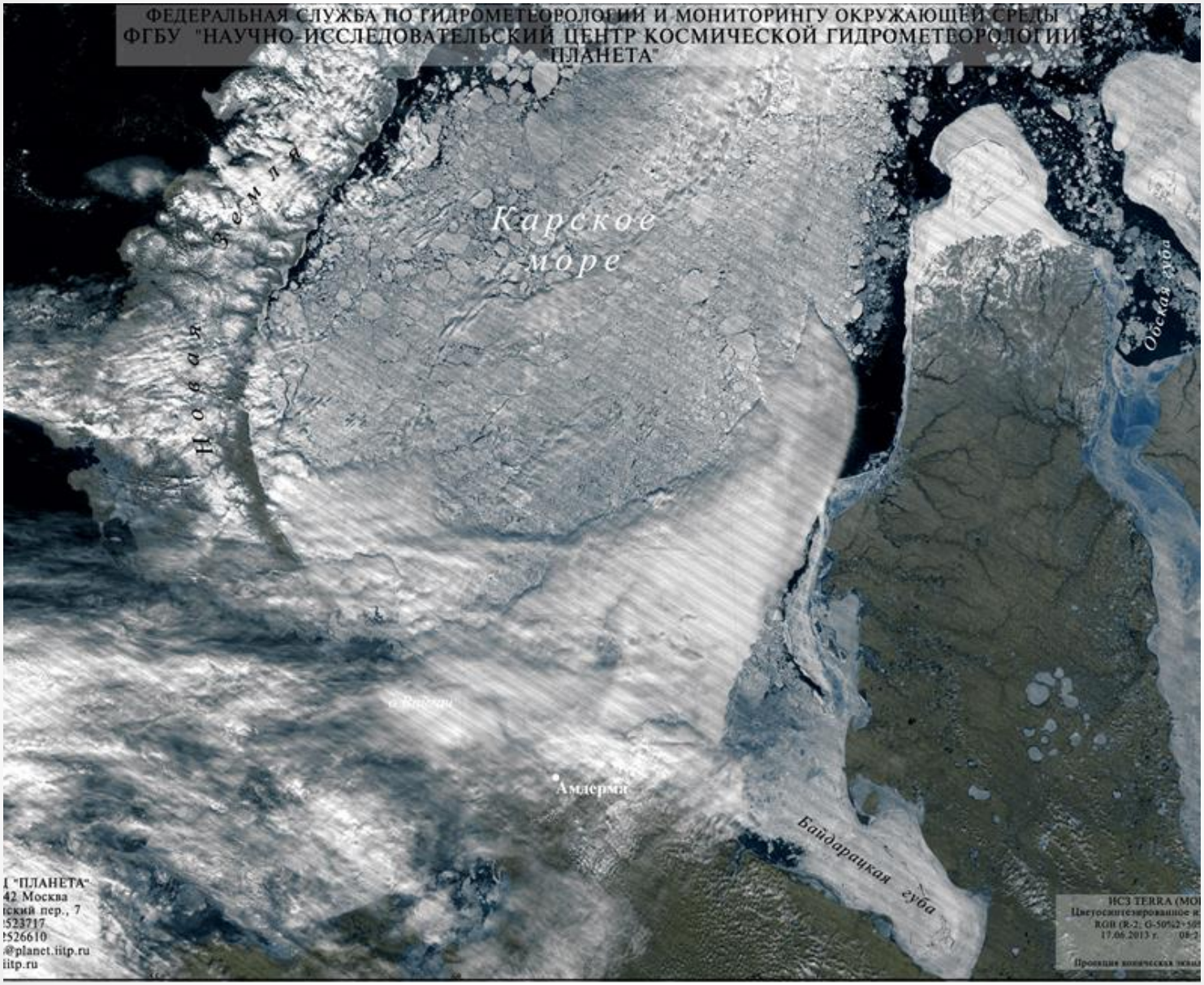
Формы плавучего льда (размеры):

- блинчатый лёд
- тёртый лёд, ледяная каша (<2 м)
- мелкобитый лёд (<20 м)
- крупнобитый лёд (20-100 м)
- обломки ледяных полей (100-500 м)
- большие поля (500-2000 м)
- обширные ледяные поля (2-10 км)

Обобщённые характеристики льда:

- (1-3) - сплочённость льда в баллах
- [3-4] - разрушенность льда (от 0 до 5 баллов)
- ←→ - разрежение льда
- [75-80] - показатель толщины льда (см)
- (2) - торосистость льда (0-5 бал.)
- →2← - показатель сжатия льда (от 1 до 5 баллов)

ФГБУ "НИЦ "ПЛАНЕТА" Россия, 123242, Москва, Б.Предтеченский пер., 7, Тел.: (499) 2523717, Факс: (499) 2526610, E-mail: asmus@planet.iitp.ru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ФГБУ "НАУЧНО-ИССЛЕДОВАТЕЛЬСКИЙ ЦЕНТР КОСМИЧЕСКОЙ ГИДРОМЕТЕОРОЛОГИИ
"ПЛАНЕТА"
Новая Земля
Карское море
Обская губа
Амдерма
Байдарацкая губа
"ПЛАНЕТА"
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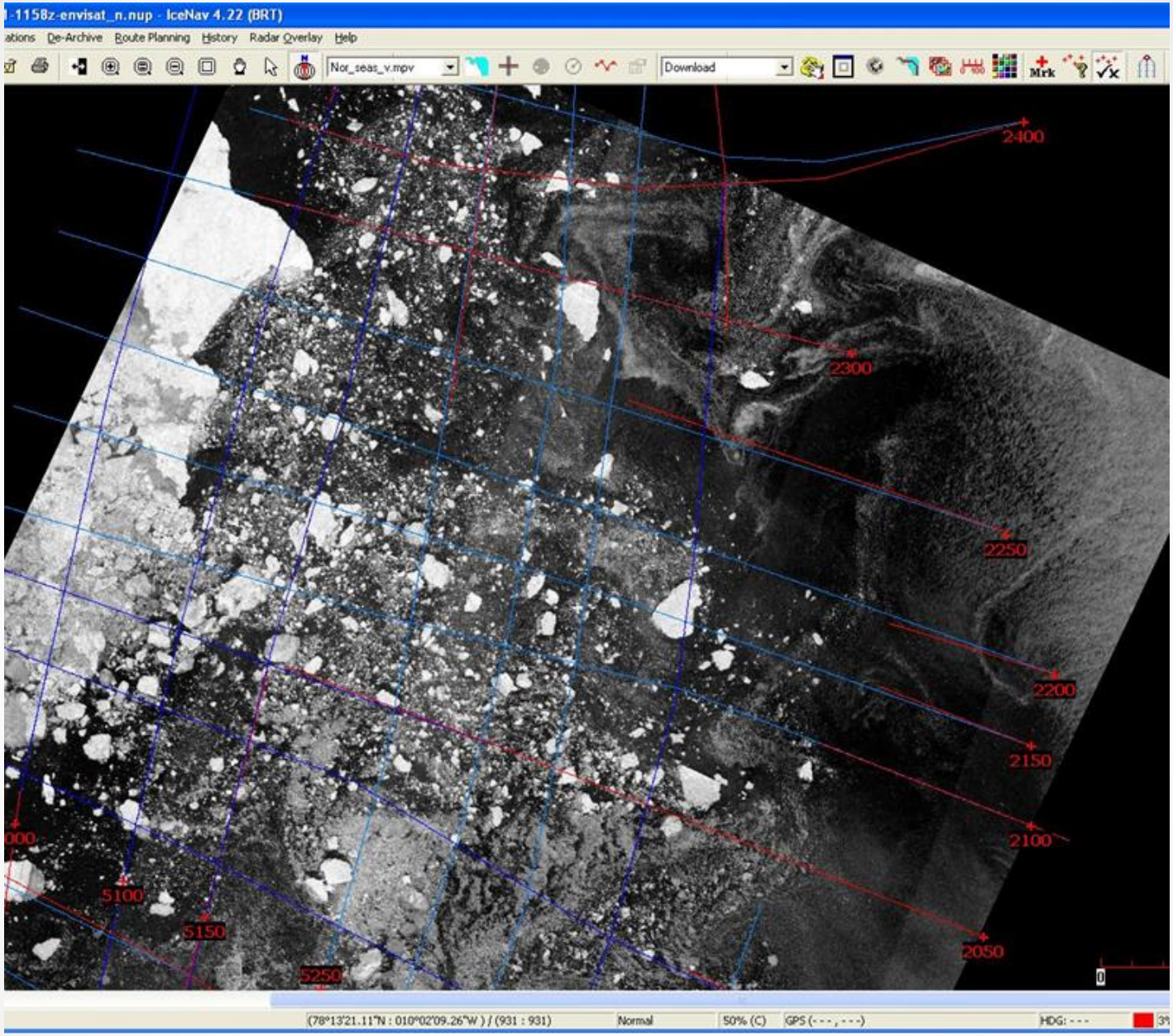
ИСЗ TERRA (MO
17.06.2013 г.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d) Supplementary emergency equipment including: during the polar night navigation – one searchlight with power of at least two kW with a set of spare lamps which can be installed in the fore body of ship or at one of the wings of conning bridge;

e) Per one set of warm clothes for each person on board and in addition to the above amount of warm clothes – three spare sets; hydro suits in a number matching maximum admissible number of persons who can be on board during the navigation.

f) The following requirements should be met on ship navigating in the water area of the Northern Sea Route:

- on board ship there should be a storage tanks of sufficient capacity for the collection of waste (sludge) produced in the operation of ship taking into consideration duration of voyage in the water area of the Northern Sea Route;
- amount of fuel, fresh water and provision on ship should be sufficient for the navigation in the water area of the NSR without replenishment taking into consideration maximum possible duration of navigation.
- during the period from November to December and from January to June ballast tanks adjoining external side above operating waterline should be heated.
- The heaters should be equipped in vulnerable areas of the vessel, i.e. piping systems, living quarters, etc.
- As per Company ISM Manual Check Lists for vessel trading in cold area

3. Upon successful inspection and or granting permission the vessel should report to NSRA at least 72hrs before entering NSR boundaries. Thereafter daily reports as per Rules of Navigation in the area of NSR.
4. Pilot ice assistance of ships is carried out with the purpose of ensuring safety of the navigation of ships and prevention of accidents as well as protection of the marine environment in the water area of the NSR. However the Pilots are not required if Master had experience in NSR navigation during past three years and able to communicate freely in Russian language. If not – Pilot should be ordered (normally one but depending on service period). Cost of the Pilot arranged via Rosatomflot is around 4-5k USD / day.
5. Nationality of the Officers and crew does not a matter. If you ordered Pilot(s) for the passage – Russian language ability of the crew is not required. A twice a day reports

to NSRA and Rosatomflot, same as communication with Russian’s Coastguard should be only in Russian language. Same can be covered by Russian speaking Pilot.

6. Icebreaker assistance involves ensuring safety of navigation of ship in the water area of the NSR. Depending of vessel’s ice-class and the season you may cross NSR without ice-breaker assistance at all. Obviously it’s a decision of the ice-breaker to transit the vessels in the convoy (2-3 vessels) or a single vessel; Definitely the safe passage is highly dependent of the period you intend to cross NSR, meantime for the general cargo vessels below Finnish ice-class A1 (Russian ice class Arc4) the ice-breaker assistance is strongly recommended (especially on the Vilkitsky Strait passage). Average tariffs for the icebreaker escorting of ships rendered by “Atomflot” in the NSR area as per below table.

For ships of gross tonnage from 20 001 to 40 000

Table 7 – Tariffs during the summer-autumn period of navigation							
Ice class of ship	tariff in rubles for a unit of gross tonnage of ship						
	escorting within 1 zone	escorting within 2 zones	escorting within 3 zones	escorting within 4 zones	escorting within 5 zones	escorting within 6 zones	escorting within 7 zones
None	536,21	643,45	750,70	857,94	965,18	1072,42	1072,42
Ice 1	375,35	450,42	525,49	600,56	675,63	750,70	750,70
Ice 2	348,54	418,24	487,95	557,66	627,37	697,07	697,07
Ice 3	321,73	386,07	450,42	514,76	579,11	643,45	643,45
Arc 4	268,11	321,73	375,35	428,97	482,59	536,21	536,21
Arc 5	265,42	318,51	371,59	424,68	477,76	530,85	530,85
Arc 6 - Arc 9	262,74	315,29	367,84	420,39	472,94	525,49	525,49

Table 8 – Tariffs during the winter-spring period of navigation							
Ice class of ship	tariff in rubles for a unit of gross tonnage of ship						
	escorting within 1 zone	escorting within 2 zones	escorting within 3 zones	escorting within 4 zones	escorting within 5 zones	escorting within 6 zones	escorting within 7 zones
Arc 4	670,26	804,32	938,37	1072,42	1206,47	1340,53	1340,53
Arc 5	663,56	796,27	928,99	1061,70	1194,41	1327,12	1327,12
Arc 6 - Arc 9	656,86	788,23	919,60	1050,97	1182,35	1313,72	1313,72
Icebreaker 6 - Icebreaker 8	650,16	780,19	910,22	1040,25	1170,28	1300,31	1300,31

Russian Nuclear Icebreaker Fleet

- Taimyr type are “Taimyr” and “Vaygach” built 1989 & 1990
- Arktika type are "Rossia", "Sovetsky Soyuz", "Yamal" and "50 Let Pobedy" built 1985, 1989, 1992 and 2007

7. Radio communication between ships, icebreakers and the NSR Administration is carried out with the use of radio equipment designed for the application within the operating zones of sea regions A1, A2, A3 and A4 of the Global Maritime Distress and Safety System (hereinafter referred to as GMDSS) in compliance with the Rules of radio communication of the maritime mobile service and maritime mobile satellite service of the Russian Federation. While moving in ice convoy, icebreaker and ships keep continuous radio watch on the VHF channel 16. Contact information for the communication with the NSR Administration is allocated on the official site.

In the independent sailing of ship within sea region A4 of GMDSS (outside the coverage zone of the INMARSAT system, to the north of parallel 75° N) ship master informs the NSR Administration about the planned geographical

coordinates of points of the intersection of parallel 75° N during the movement of ship from the south to the north and from the north to the south. The NSR Administration informs ship master about ships used as mediators for the communication by radio (hereinafter referred to as ships – mediators) and scheme of the communication of ship with the NSR Administration using ships-mediators.

The NSR Administration sends information on the assigned ships-mediators to the State Maritime Rescue and Coordination Center (SMRCC) and /or appropriate Maritime Rescue and Coordination Center (MRCC), Maritime Rescue Sub-Center (MRSC).

Conclusions

Polar regions are remote and unforgiving - lack of SAR & other support (bunkering, supplies, etc.)
Shortage of experienced ice navigators
No single agreed qualification
No single agreed ice classification of vessels
Weather and ice conditions can change very rapidly
Global warming is opening up new routes
Increasing energy and mineral extraction in northern areas
Increasing shipping
Inadequate Charts and navigational aids
Majority of cruise ships observed in the Arctic are not purpose built for Arctic operations

Any Questions?