



Non-polar crew training in non-polar environment

Vladimir Kuzmin
Makarov Training Centre

LNG/C “Christophe De Margerie”

First YAMALMAX for **YAMAL LNG**



Owner: SOVCOMFLOT

Builder: DSME

Class RS+BV, Arc 7

Keel Laid: 2015.11.16

Launched: 2016.01.15

Delivered: 2017.03. 24

Principal Dimensions

Length Over All : 299.000 m

Breadth (Molded) : 50.000 m

Scantling Draft (Molded) : 13.000 m

LNG Cargo capacity 172,6K m3

Main Generator Engine

Type and number : Wärtsilä 12V50DF x 4 sets, 9L50DF x 2 sets

Propulsion Unit

Type and Number : ABB POD x 3 sets

Rated Motor Power : 45,000 kW

Speed & Cruising Range

Service Speed : 19.5 knots

Cruising Range : 10,000 nautical miles

Christophe de Margerie – the first in the series



Newbuilds:

- 1 – SOVCOMFLOT**
- 5 – DYNAGAS**
- 6 – TEEKAY**
- 3 – MOL**

Vessel successfully passed Ice Trials over February and March 2017 performing ice operations in the remote Kara and Laptev Seas.

performing ice operations in the remote Kara and Laptev Seas.

MV Boris Vilkitsky

Modern LNG, 2nd ship in Yamal Project series

Started operation November last year

Ice conditions were moderate (~ 1 meter)

Able to operate without Icebreaker (mild conditions)



**Admiral Makarov
State University of Maritime
and Inland Shipping**



PROFESSIONAL DEVELOPMENT PROGRAMMES INSTITUTE

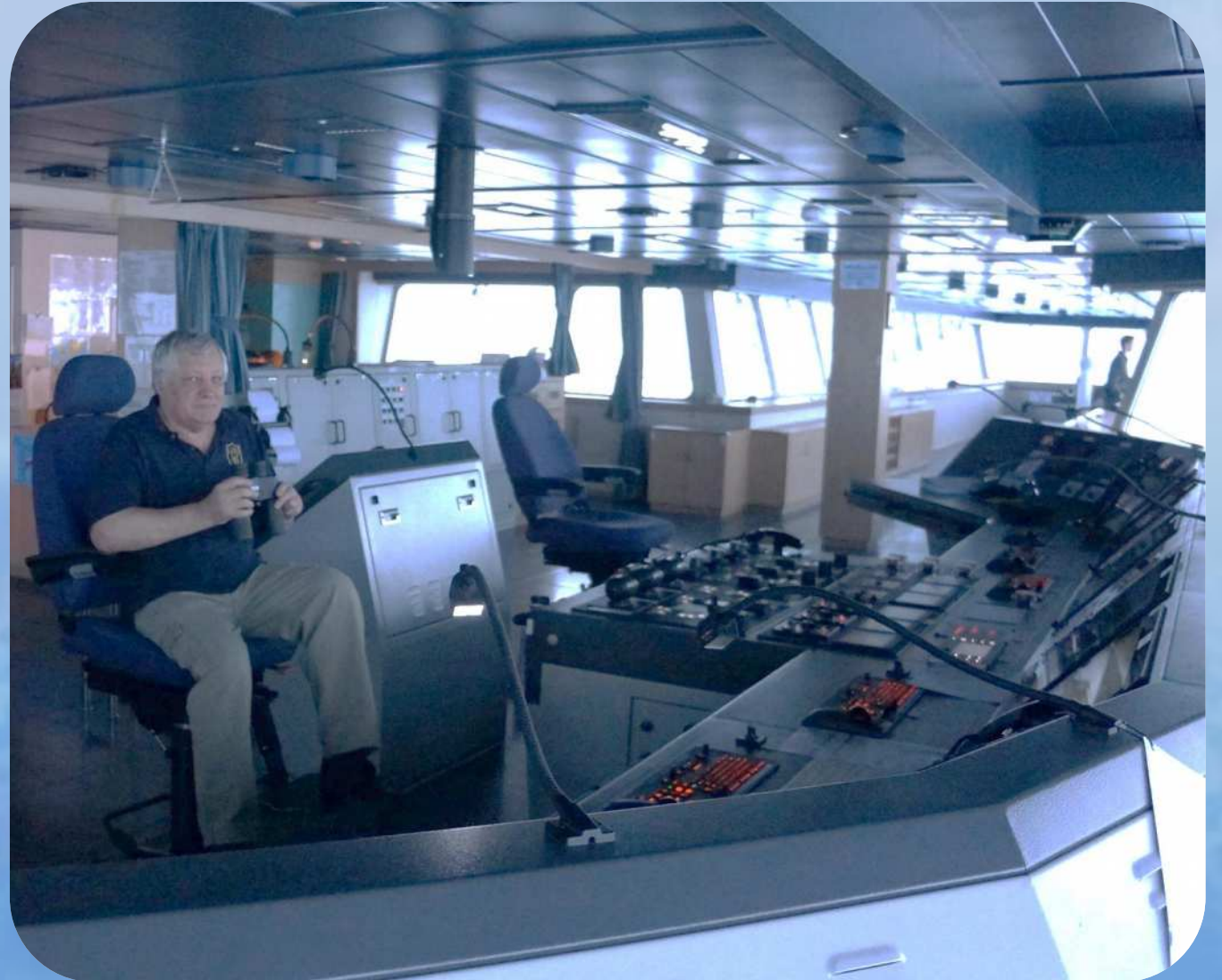


INSTRUCTOR **Igor Zlodeev**

- ❖ Instructor of the Makarov Training Centre.
- ❖ Master Mariner, Ice-pilot.
- ❖ 25 years of Arctic navigation experience and the ice-navigation experience in Canada and the USA navigating regions.
At the moment he works as an instructor for Makarov Training Centre of the Makarov State University of Maritime and Inland Shipping.

Ship features

- ❖ Ergonomic issues
side windows angle
does not allow to
see ship's sides.
- ❖ VHF station too far
from azi-control
station.



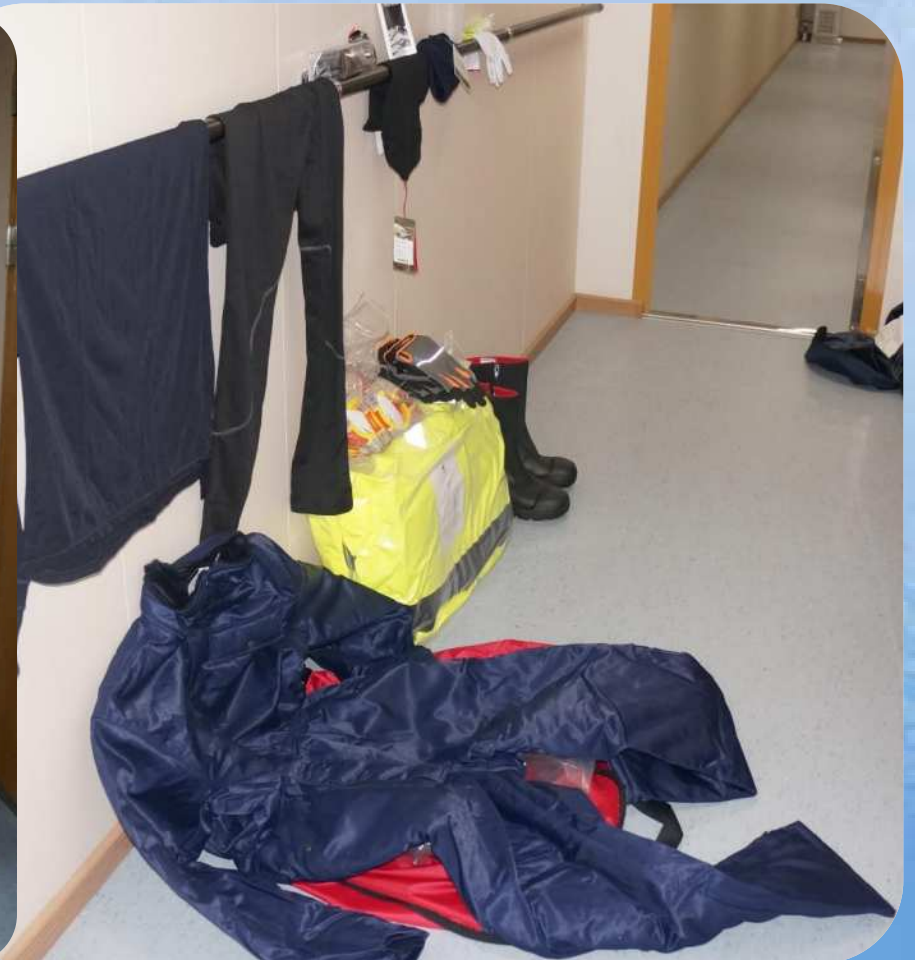


PROTECTION FROM COLD

Protective shields
and coverings



- › PSK 'grab bag scenario' – does not work - it is simply not enough space inside lifeboat...



LIFESAVING APPLIANCES

Ship was equipped with normal life raft, not the polar edition

As well as lifeboat – both do not take into account requirement to stay in for 5 days – no toilet, no ventilation, insufficient room for well being etc.

No special means were also provided for boarding them



LIFESAVING APPLIANCES

The tent was easy to install onboard the ship, but it is too big and too high to be installed in real ice conditions with strong wind present



**Crew
compliment**

50 people

**Human
factor?**

(Name of shipping line, agent, etc.)

IMO CREW LIST

		<input type="checkbox"/> Arrival	<input checked="" type="checkbox"/> X	
1. Name of ship BORIS VILKITSKY		2. Port of arrival / departure Okpo, S. Korea		
4. Nationality of ship Cyprus		5. Port arrived from N/A		
7. No.	8. Family name, given name	9. Rank/Rating	10. Nationality	11.
1		Master	Indian	
2		A / Master	Indian	
3		Tr. Master	Indian	
4		AZ C/O	Russian	
5		ACO / ICE NAV	Russian	
6		ACO	Indian	
7		ACO / ICE NAV	Russian	
8		2/O	Indian	
9		2/O	Russian	
10		2/O	Russian	
11		2/O	Pakistani	
12		3/O	Russian	
13		3/O	Russian	

NKK accreditation



- › Admiral Makarov State University of Maritime and Inland Shipping has successfully passed international accreditation of its polar navigation courses.



Makarov + Krylov





Accredited by
Marshall Islands

Republic of the Marshall Islands
OFFICE OF THE MARITIME ADMINISTRATOR

**CERTIFICATE OF APPROVAL
TRAINING CENTERS**



It is my pleasure to inform you that the

- Basic Training for Ships in Polar Waters (PWBT) and
- Advanced Training for Ships in Polar Waters (PWAT)

courses offered by

**MAKAROV TRAINING CENTER
of the ADMIRAL MAKAROV STATE UNIVERSITY OF MARITIME
AND INLAND SHIPPING**

are hereby recognized as approved training courses as outlined in the STCW Convention, as amended. This approval is valid through the expiration date below, unless sooner surrendered or revoked.

Issued by order of the Maritime Administrator this 21st day of March 2017 .
Expires 20 March 2022 .


John K. Hafner
MARITIME OFFICER





**Approved by Russian
Federation as Flag
State on 11/09/2018**

МИНИСТЕРСТВО ТРАНСПОРТА
РОССИЙСКОЙ ФЕДЕРАЦИИ
(МИНТРАНС РОССИИ)
Рождастенка ул., д. 1, стр. 1, Москва, 109012
Тел.: (499) 495-00-00, факс: (499) 495-00-10
E-mail: info@mintrans.ru, http://www.mintrans.ru

№ 1109-2018 от 05.09.2018-ИС
На № _____ от _____

Ректору
ФГБОУ ВО
«ГУМРФ им. адм. С.О. Макарова»

С.О. Барышникову

Уважаемый Сергей Олегович!

В Минтрансе России в соответствии с Порядком признания организаций в целях наделения их полномочиями по освидетельствованию судов и организаций, осуществляющих подготовку членов экипажей морских судов в соответствии с Международной конвенцией о подготовке и дипломировании моряков и несении вахты от 1978 года с поправками, а также по проведению проверок, связанных с освидетельствованием этих судов и организаций, утвержденным приказом Минтранса России от 8 июня 2011 г. № 157 (далее – Порядок), рассмотрено заявление ФГБОУ ВО «ГУМРФ имени адмирала С.О. Макарова» от 8 августа 2018 г. № 125-16/2266 на право осуществления деятельности в качестве признанной организации по подготовке членов экипажей морских судов и приложенный к заявлению пакет документов.

В соответствии с п. 18 Порядка уполномоченным в установленном порядке заместителем Министра транспорта Российской Федерации – руководителем Федерального агентства морского и речного транспорта Ю.А. Цветковым принято решение о наделении ФГБОУ ВО «ГУМРФ имени адмирала С.О. Макарова» полномочиями признанной организации по подготовке членов экипажей морских судов, с правом выдачи соответствующих свидетельств от имени Российской Федерации в порядке, предусмотренном международными договорами Российской Федерации, по программам подготовки:

Подготовка по плаванию в полярных водах базового уровня;

Подготовка по плаванию в полярных водах по расширенной программе для старших помощников капитана и капитанов.

И.о. директора Департамента
государственной политики
в области морского и речного транспорта

Б.В. Французов

Гузенко Нина Андреевна
8 (499) 495 00 00 доб. (1736)



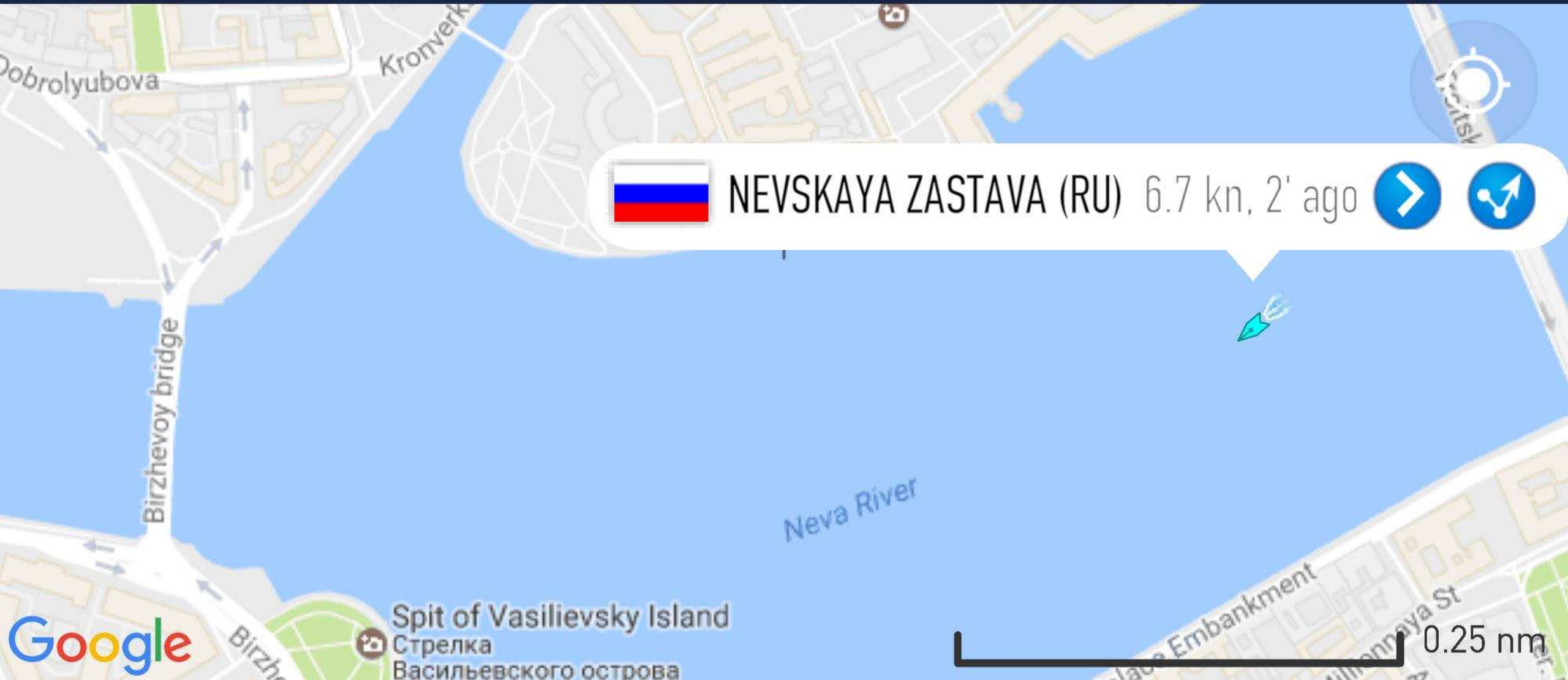
IB Nevskaya Zastava

LOA=38,0m
Breadth=11,8m
Draft=3,8m
ME 2x1800 kW





MarineTraffic



NEVSKAYA ZASTAVA (RU) 6.7 kn, 2' ago



Practical IceNav Training on board city icebreaker

This add-on course includes trip on board in ice conditions and adds practical skills and more information on ice navigation such as:

- › Safe working mooring practice in cold weather
- › Navigation and use of propulsion in variable ice field and packed ice



PRACTICAL SUPERVISED OPERATION BY AZIMUTH PROPULSION SYSTEM

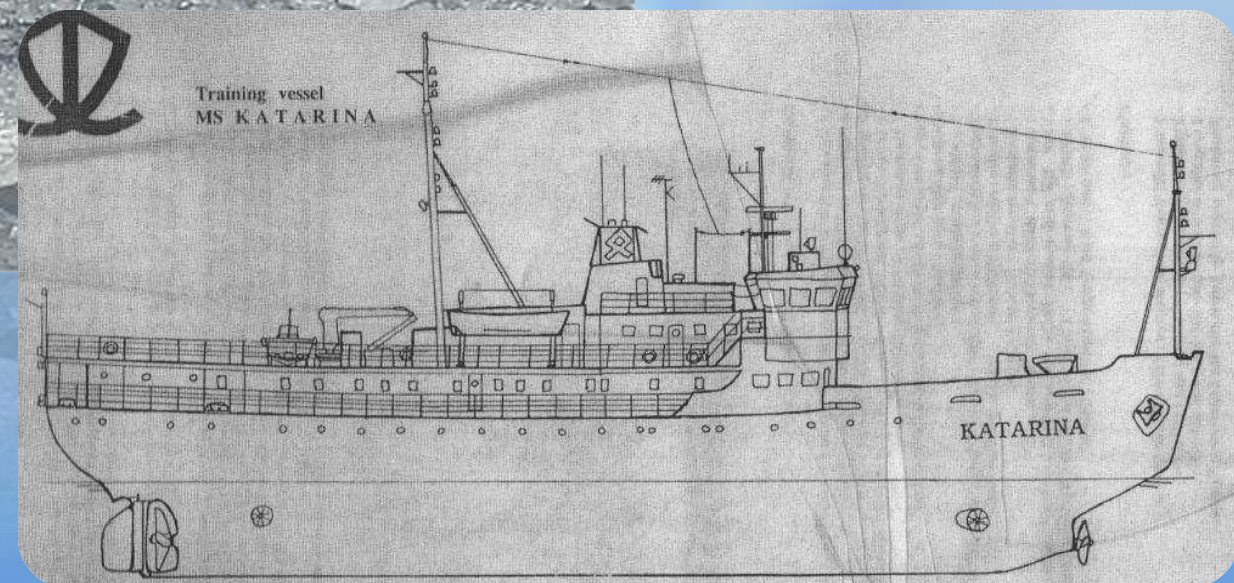


ICE SELFIE – IMPORTANT PART OF TRAINING



Kotka





Living onboard





Sauna x 2





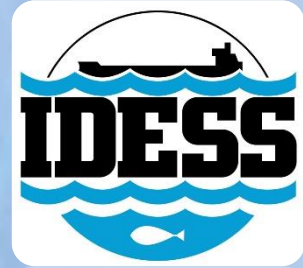
Peter Thesleff

Master of the MV KATARINA
Teaching students on ice
navigation during joint
Makarov-Kotka courses









**Survival Training at IDESS
(Subic Bay, Philippines)**

NON-POLAR CREW TRAINING IN NON-POLAR ENVIRONMENT





**Environmental limitations,
Lack of practical experience,
Limited area for exercises**

Snow World Facilities



Snow World Facilities





The LNG carrier *Boris Vilkitsky*, a new ice-class vessel transporting natural gas from Russia's Yamal LNG project, disregarded a number of safety rules on an Arctic voyage to the Port of Sabetta.

- › The vessel, operated by a Dynagas LNG Partners, a joint venture by Dynagas, Sinotrans, and China LNG Shipping, entered the Northern Sea Route (NSR) despite the inoperability of its stern thrusters and port steering column.
- › This malfunction, which occurred at least 10 days prior, limited the vessel's capabilities and reduced its ice-classification from Arc7 to Arc4, prohibiting it from operating independently or even with an icebreaker escort in the waters of the Kara Sea. In violation of the rules the *Boris Vilkitsky* proceeded into the ice-covered waters of the NSR.
- › The Russian Northern Sea Route Administration (NSRA) calls the incident a gross violation of the Rules of navigation in the waters of the NSR and states that "the vessel did not have the right to enter the water area of the Northern Sea Route. By its actions, the ship poses a threat to the safety of navigation, as well as the protection of the marine environment."



Граница акватории СМП

EDUARD TOLL
"ЯМАЛ КРЕЧЕТ"
"ЯМАЛ ИРВИС"
м. Желания
"ТОРИЙ АРШЕНЕВСКИЙ"

Kara Sea

BORIS VILKITSKY

Координаты 77° 15.237' N - 69° 37.789' E
Скорость 10.30 узл. Курс 125°
Дата 09.04.2018 12:30:46 UTC
Источник Спутник. АИС

BORIS VILKITSKY

Координаты 75° 35.700' N - 74° 33.700' E
Скорость 12.00 узл. Курс 153°
Дата 10.04.2018 01:44:27 UTC
Источник Спутник. АИС

BORIS VILKITSKY

Координаты	72° 40.758' N - 73° 51.450' E	Скорость	0.10 узл.
Дата	12.04.2018 06:47:36 UTC	Курс	130.2°
IMO	9768368	PPP	—
MMSI	212654000	PMPC	—
		Позывной	5BST4
		Источник	Спутник. АИС

арх. Новая Земля

Карское море

WEICHELSTERN
WOLGASTERN

ШТУРМАН КОЩЕПЕВ
"ТАЙМЫР"
ШТУРМАН ОВЦЫН
"ИДИЯ"
"ШТУРМАН МАЛЫГИН"

Ob Bay

1. Name of Ship: BORIS VILKITSKY

2. IMO Number: 9768368

3. Date of report: 19/04/2018

4. Place of inspection: Sabetta

DEFICIENCIES FOUND AND FOLLOW UP ACTIONS **)

Nr.	Code/Defective Item	Nature of defect ¹⁾	Convention ref.	Ground for detention	Action taken	Additional Comments	ISM Related
1	99101 Other safety in general	Other	Other Conventions - S/II-1/R.3-10/2.4	<input checked="" type="checkbox"/>	10 - Rectified	Operation of the vessel beyond assessed area, period and limitations and capabilities as stated in the Certificate.	<input type="checkbox"/>
2	99102 Other (SOLAS operational)	Other	Other Conventions - S 74/R.11(c)	<input checked="" type="checkbox"/>	10 - Rectified	One of three azipods out of order. NSR Administration not reported in 72 hrs notice about the situation. No confirmation reporting to Cyprus Flag Administration.	<input type="checkbox"/>
3	01314 SOPEP	Not updated	MARPOL Annex I - R.26	<input type="checkbox"/>	10 - Rectified	Annex II contact points to be updated according MEPS 6/16 from 31/03/2018. Coastal State contact - wrong information.	<input checked="" type="checkbox"/>
4	10112 Electronic charts (ECDIS)	Not as required	SOLAS ch. V - R. 19, 27, 34.	<input type="checkbox"/>	10 - Rectified	ECDIS charts not corrected by local warnings. Local warning 04/18 not corrected.	<input checked="" type="checkbox"/>
5	14503 Garbage management plan	Not as required	MARPOL Annex V - An. V	<input type="checkbox"/>	10 - Rectified	Garbage Management Plan. Should be assigned the persons responsible for the implementation of the plan	<input checked="" type="checkbox"/>
6	14801 Ballast Water Management Plan	Not updated	Ballast Water Management - BWMP/A/R. B-6	<input type="checkbox"/>	10 - Rectified	Ballast Water Management Plan - officers taking part in ballast operation not sign famiarisation for ballast operations.	<input checked="" type="checkbox"/>

1. Name of Ship: BORIS VILKITSKY**2. IMO Number:** 9768368**3. Date of report:** 19/04/2018**4. Place of inspection:** Sabetta

Nr.	Code/Defective Item	Nature of defect ¹⁾	Convention ref.	Ground for detention	Action taken	Additional Comments	ISM Related
7	01220 Seafarers' employment agreement (SEA)	Expired	MLC 2006 Title 2 - R. 2.1 Par. 1 & 3	<input type="checkbox"/>	10 - Rectified	Contracts expired for 1 person onboard for period of one month. (SIMAC MARIO expired 18/03/2018)	<input checked="" type="checkbox"/>
8	11129 Operational readiness of lifesaving appliances	Not as required	SOLAS ch. III - R. 20, 36.	<input type="checkbox"/>	10 - Rectified	Man overboard buoy (port /s) not ready for immediate use	<input checked="" type="checkbox"/>
9	07106 Fire detection and alarm system	Not as required	SOLAS ch. II-2 - R. 7.	<input checked="" type="checkbox"/>	10 - Rectified	Fire alarm control panel at bridge - detectors f.zone 5MCP 102 accom. A deck port lobby (March 25)	<input checked="" type="checkbox"/>
10	11117 Lifebuoys incl. provision and disposition	Not as required	SOLAS ch. III - R. 20, 36.	<input type="checkbox"/>	10 - Rectified	MOB - length of line not according manufactures instructions.	<input type="checkbox"/>
11	10109 Lights, shapes, sound-signals	Not as required	COLREG - A 1, R. 8	<input type="checkbox"/>	10 - Rectified	NUC shapes(balls) not ready for immediate use. Length between balls not as required by COLREG.	<input checked="" type="checkbox"/>
12	13101 Propulsion main engine	Not as required	SOLAS ch. II-1 Parts C, D, E, F - R. 26	<input checked="" type="checkbox"/>	46 - To be rectified at agreed repair port	One of three azipods out of order from 26.03.2018. Class survey required.	<input type="checkbox"/>
13	10112 Electronic charts (ECDIS)	Not as required	SOLAS ch. V - R. 19.2.1.4, .5, R. 27	<input checked="" type="checkbox"/>	47 - As in the agreed class condition	Port Sabetta not existing on used official charts AVCS, depth missing, incorrect. Class survey required	<input checked="" type="checkbox"/>
14	15150 ISM	Not as required	ISM Code - S74/CIX/R3 ISM/C1.2	<input checked="" type="checkbox"/>	21 - Corrective action taken on the ISM system by the Company is required within 3 months	Corrective action taken on the ISM system by the Company is required within 3 month	<input type="checkbox"/>

What's on the other side of the coin?





Baltic Sea

Ice horn





© JOHNNY VERHULST
MarineTraffic.com
MarineTraffic.com
© JOHNNY VERHULST

MV MATSUSAKA



NAVIGATING IN ICE

VOY. 178 ST. PETERSBURG 120514

1. Have the following been informed of the ice conditions?

- the Master

- the engine room

- the crew

2. Have watertight doors been shut, as appropriate?

3. Has speed been adjusted (N.B. momentum varies at the square of the ship's speed)?

4. Have instructions been issued on the following matters?

- monitoring ice advisory service broadcasts

- transmitting danger messages in accordance with SOLAS 1974 Chapter V, Regulation 2(a)

Are you prepared?

DATE: 04 JAN. 2017

DATE: 04 JAN. 2017

3(g)

Icing



Vessels, barges or floating objects may accumulate atmospheric & sea icing, which influences the stability characteristics and port operations





Voyage: SSL

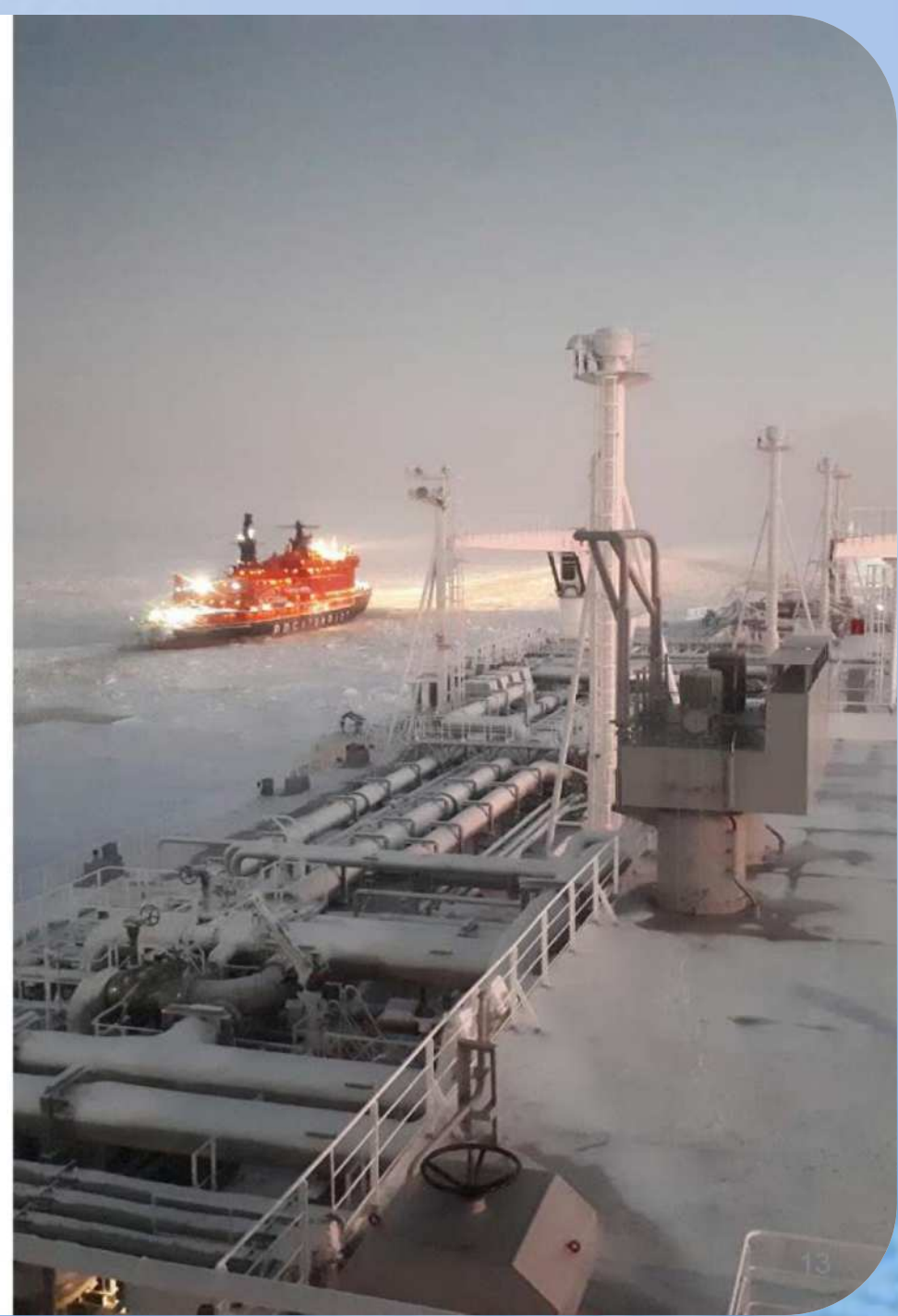
Date: 24/01/2018

Local time: 1200

No	Action	Yes/No	Taken by
1.	Have the following been informed of the ice conditions? The Master The Engine room The crew	YES	Officer in charge of navigational watch
2.	Have watertight doors been shut, as appropriate?	YES	Master
3.	Have speed and course been adjusted as necessary? (N.B. momentum varies as the square of the ship's speed)	YES	Master
4.	Have instructions been issued on the following matters? Monitoring ice advisory service broadcasts Transmitting danger messages in accordance with SOLAS 1974 Chapter V, Regulation 2 (a)	YES	Master

Operational Project Statistics

- Project plan totalling 1534 tasks and sub task
- Total time spent 33 months
- 13,000 plus emails generated
- 249 conference and video calls
- 176 individuals consulted
- 49 Individual Organisations consulted
- 23,769 man hours of work undertaken by the team on top of their day jobs

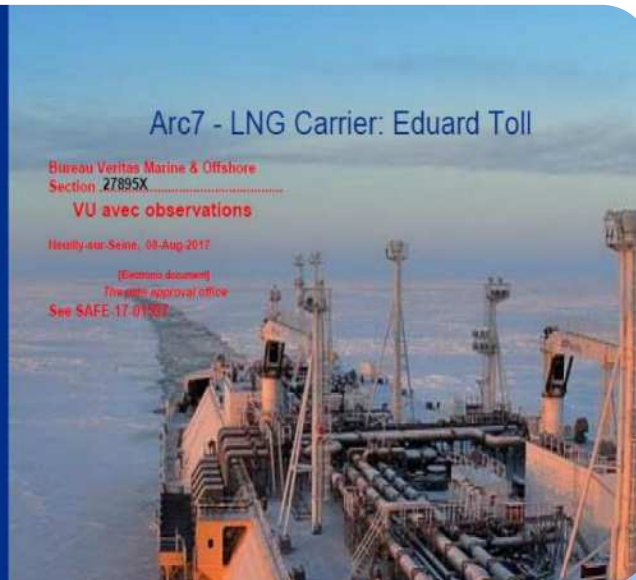


Management of Change

- Strict Process Observed Bi-weekly
- Reference documents scrutinised
- Changes implemented where necessary
- Inputted into Ship Management System
- Electronic Format
- Live document.

79 Documents and
468 pages later

Paper safety?

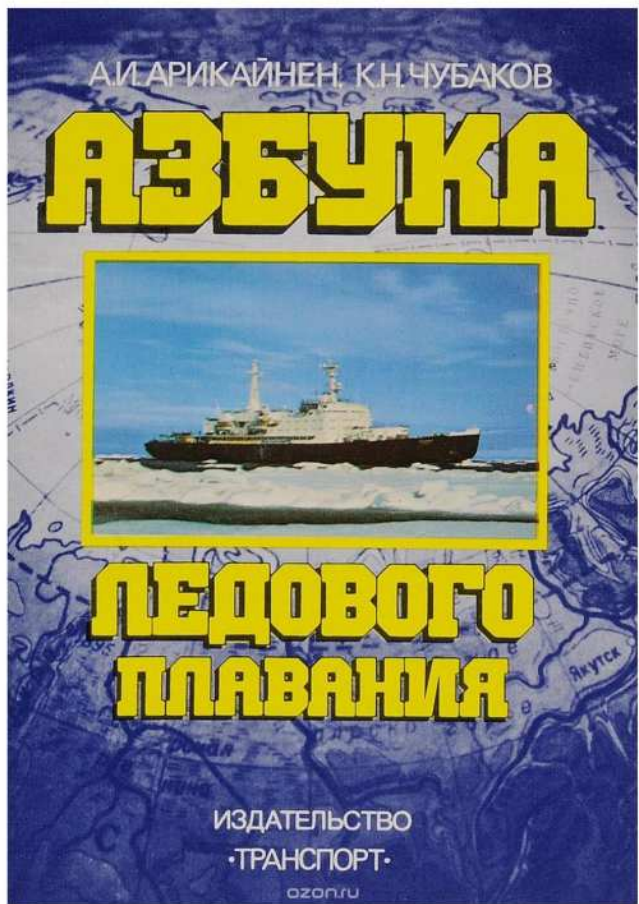


Date: 15th March 2018

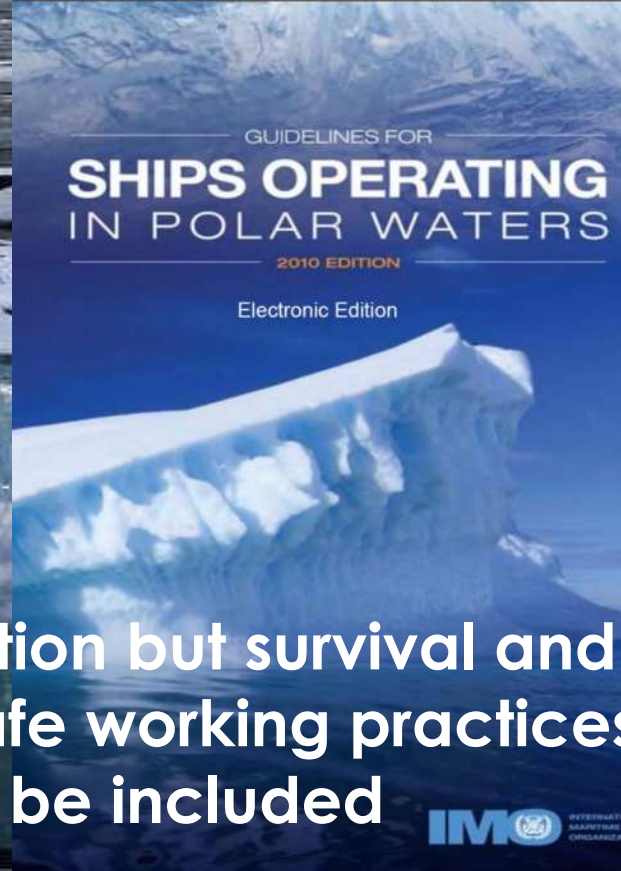
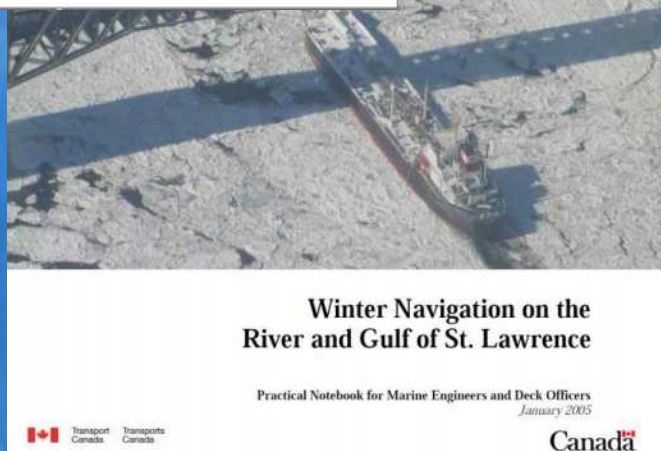
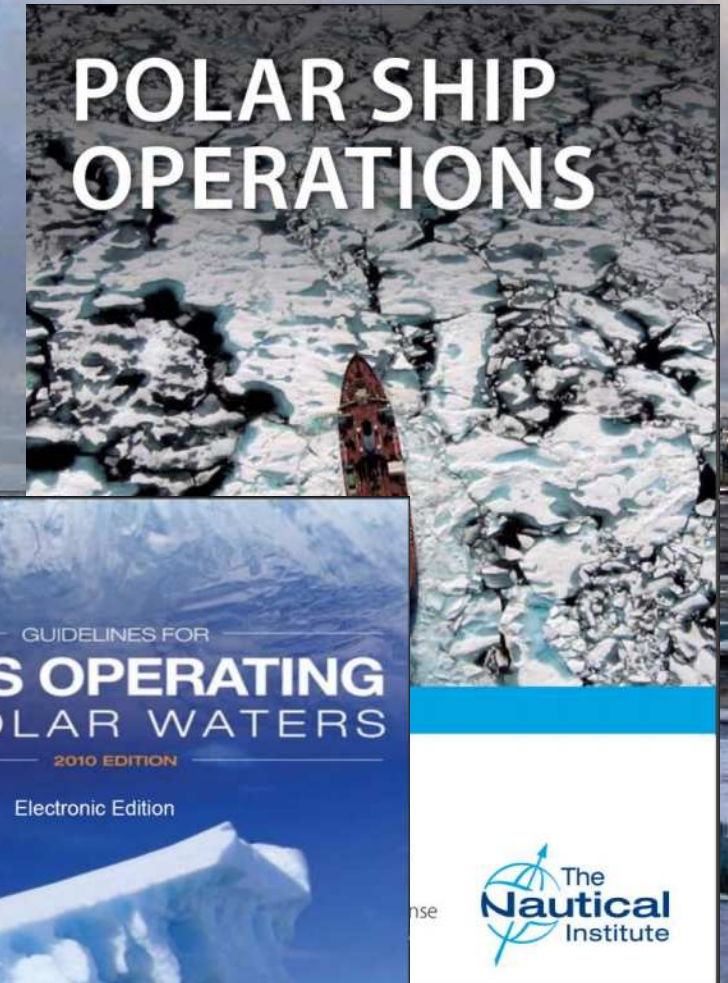
Attendees:	James Thomson	Fleet Manager
	Andrew Roberts	Marine Manager
	Dilys Lim	HSEQ Manager
	Roger Barber	Facilitator

Item 1) The following documents were reviewed for final approval by the MOC board.

- a) SPXXXX Polar Arctic Jurisdiction – Approved with no changes.
- b) SPXXXX Russian Northern Sea Route Rules of Navigation (Polar) - Approved with the following changes:
 - a. Page 5: Fuel capacity to include LNG in addition to HFO and MDO
- c) SPXXXX Permit for Russian Northern Sea Route (Polar) – Approved with the following changes:
 - a. Page 2: Where the following statement is, make it into bold type to reflect the importance:
The application and attached documents must be submitted to the NSR Administration not earlier than 120 calendar days and not later than 15 working days before the estimated date of arrival in the Northern Sea Route.
- d) FMXXXX Application for Navigation in Russian Northern Sea Route (Polar) - Approved with no changes
- e) FMXXXX Appendix to Application for Navigation in Russian Northern Sea Route (Polar) - Approved with no changes
- f) RFXXXX Criteria for Admission to Russian Northern Sea Route (Polar) - Approved with no changes
- g) SPXXXX Canadian Polar Arctic Waters - Approved with no changes
- h) SPXXXX Canadian Arctic Ice Regime Shipping System (Polar) - Approved with no changes.
- i) SPXXXX Polar Class Vessels – Operational Assessment - Approved with no changes
- j) SPXXXX Survival Equipment for Polar Class Vessels – Approved with no changes
- k) SPXXXX Daily Inspection of Exposed Safety and Life-saving Equipment – Approved with no changes
- l) FMXXXX Exposed Safety and Life-saving Equipment Checklist (Polar) – Approved with no changes



Though these all are very good books, seafarers are often in need of something more simple, more straightforward . All known books are intended for deck officers, nothing for engineers and ratings.



Not only navigation but survival and first aid as well as safe working practices onboard should be included

Checklists

❖ It is not an easy task as it seems. It should be neither too long (we have manual for this) nor too short as it becomes too general and useless

❖ Ideally it should be a supplement for PWOM.

❖ Arctic Shipping Best Practices Information Forum website is a good place for information sharing

Date: 24 / 01 / 2018

Local time: 1200

No	Action	Yes/No	Taken by
1.	Have the following been informed of the ice conditions? The Master The Engine room The crew	YES	Officer in charge of navigational watch
2.	Have watertight doors been shut, as appropriate?	YES	Master
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4.	Have instructions been issued on the following matters? Monitoring ice advisory service broadcasts Transmitting danger messages in accordance with SOLAS 1974 Chapter V, Regulation 2 (a)	YES	Master

1. Ha

2. Have watertight doors been shut, as appropriate?

3. Has speed been adjusted (N.B. momentum varies at the square of the ship's speed)?

4. Have instructions been issued on the following matters?

- monitoring ice advisory service broadcasts
- transmitting danger messages in accordance with SOLAS 1974 Chapter V, Regulation 2(a)

DATE: 04 JAN. 2017

Ice navigation courses advisory?

- › There are a number of good courses available though for now there is no accreditation system, and we are in position to make at least a list of such courses available and promote those who complies with high standards of training

BALTICE.org
Baltic Icebreaking Management

Ships, icebreakers, ports...

[Home](#) [Icebreaking & Traffic](#) [Ice & Weather](#) [Reporting & Instructions](#) [Training & Courses](#)

Ice Training Movies

[f](#) [t](#) [in](#) [G+](#) [e](#) [+](#)


Ice training movie can be downloaded from the link below, or it can be used as a short course of safe winter navigation. More information from <http://shipgaz.com/courses/baltice-ice-navigation>.

[Download full video](#)

Compressed ZIP format, 720x576, 119MB

Part I - Ice conditions and Types

Part I Ice Conditions and ice types ...



New ice-channel. A passage through

Ice Navigation Courses

On the following links you can find the ice navigation course providers, schedules and course program.

[Aboa Mare](#)

[Marstal Navigationsskole Denmark](#)

[Kalmar Navigation Institute](#)

[Makarov Training Centre Russia](#)

Before linking the contact information to the baltice.org web pages, a course organizer should contact by e-mail winternavigation@baltice.fi. The course will then be evaluated by BIM according to certificate and references.

[Description of the icebreaking process](#)



*Thank you
for attention!*

*Vladimir Kuzmin,
Makarov Training Centre*



Future?

- ❖ Increasing co-operation in different subjects between training providers
- ❖ Jointed courses in co-operation
- ❖ Verified training providers list?
- ❖ Ice training via local providers?

