ADMIRAL MAKAROV STATE UNIVERSITY OF MARITIME AND INLAND SHIPPING

Training of Personnel and Implementation of Research Projects for Arctic Shipping: Admiral Makarov University Perspective

Sergey Aysinov

Director, Professional Development Programmes Institute

prof.gumrf.ru

ADMIRAL MAKAROV SUMIS ARCTRIC PROJECTS EXPERIENCE AND INNOVATIONS

The University has accumulated significant experience in educating and training personnel the Arctic areas industrial development, as well as competencies and a resource base allowing to provide the qualified personnel to various aspects of Arctic projects.

Admiral Makarov SUMIS is the unique university that educates and trains personnel for the civil nuclear fleet operations.

- More than **300 graduates** of higher education programs (a quarter of the total number of graduates) are being employed in the northern latitudes annually.
- More than **2,000** deck and engineering officers have undergone training and advanced training for Arctic shipping operations including Northern sea route as well as port operations.
- **The only university in the world** graduating ship engineers for nuclear icebreakers.
- Specialized training for arctic **hydrographs.**
- More than **10** projects of international cooperation are being implemented in order to employ university graduates in the world's leading shipping companies, their number is expanding annually.

EDUCATIONAL ACTIVITIES TO SUPPORT ARCTIC SHIPPING

Training of nuclear icebreakers crews (navigators, engineers)

Arctic scientific research work

Crew training for ships operating in polar waters at low temperatures

Training of Arctic hydrographs

Admiral Makarov State University of Maritime and Inland Shipping

- Is provided at the Arctic Faculty of the University since 1954.

More than 3000 hydrographic specialists trained for the Arctic	Based on the results of hydrographic survey of the NSR water area, over 680 navigation charts, 440 electronic navigation charts were compiled	Geographical discoveries in the Arctic were made with the participation of faculty staff and students	The leading scientific and pedagogical school «Hydrographic support of the Northern Sea Route» is functioning

- At Professional Development Programmes Institute of Admiral Makarov SUMIS the advanced training program «Hydrographic support for marine engineering surveys» is being implemented. The course is intended for specialists in the oil and gas industry involved in the operation of offshore oil and gas production facilities and includes familiarization with the current state of the theory and practice of hydrography, as well as the methodology, technology and software for performing hydrographic research.

- Navigation Department is one of the oldest departments of Admiral Makarov SUMIS, taking roots from Hydrographic Institute of Glavsevmorput, founded in 1935.

- Deck officer curriculum was added with a special discipline – Operation of ships in the Polar waters – providing a detailed study of the International Polar Code and general instructions for sailing in the Polar waters.

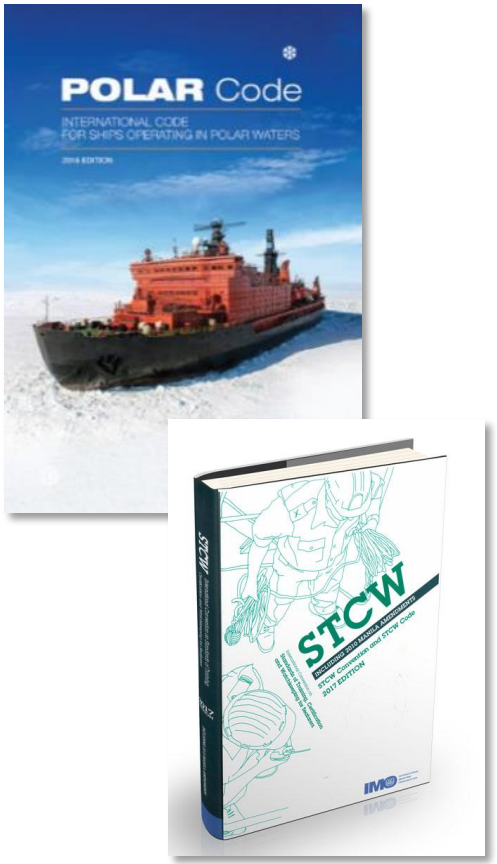
SPESIALIZED ISSUES STUDIED

- ✓ visible movement of luminaries and illumination in the Arctic
- ✓ ship's positioning at high latitudes
- ✓ locating in a quasi-geographic coordinate system
- ✓ specifics of ship's positioning near the geographic Pole
- ✓ determination of a compass error by navigational stars in the Arctic latitudes
- ✓ safety of navigation in specific conditions of the Polar waters

- Theoretical training of ship crews is carried out in accordance with the requirements of the International Polar code that entered into force on January 1, 2017, the amendments to the 1978 STCW Convention (from July 1, 2018) and taking into account the provisions of the Polar Code for the operation of ships in northern latitudes.

- In November 2016, the IMO Maritime Safety Committee adopted amendments to the 1978 STCW Convention to include requirements for the competence of the navigators of ships operating in polar waters. Amendments have been made to chapter V (Regulation V/4), as well as to sections A-I/11 and A-V/4 of the STCW Code and came into force on 1 July 2018.

- Companies must ensure that masters, chief mates and officers in charge of navigational watch on ships operating in polar waters, have been trained to acquire the appropriate skills for the job, and to assume duties and responsibilities, taking into account the provisions of the Convention and the amended STCW Code. Competencies' review – by the link



Training courses

- Basic training for ships operating in polar waters
- Advanced training for ships operating in polar waters
- Maneuvering and Ship Handling of the azimuth thruster (driven) vessel
- Crew members training for ships operating in polar waters

ADMIRAL MAKAROV SUMIS PARTICIPATION IN THE DEVELOPMENT OF IMO MODEL COURSES ON ICE NAVIGATION

Basic Training of Ships Operating in Polar Waters

Reg. 2 Chapter V/4,
Reg. 1 Section A-V/4 STCW Code
Model course 7/11 (2017 Edition)

Advanced Training for Chief Officers and Masters of Ships Operating in Polar Waters

Reg. 4 Chapter V/4,
Reg. 2 Section A-V/4 STCW Code
Model course 7/12 (2017 Edition)

Training Crew Members for Ships Operating in Polar Waters

Reg. 12.3.4 Chapter 12 Polar Code

NIPPON KAIJI KYOKAI Certificate No. 16-042-2

Certificate of Maritime Education & Training Registration

THIS IS TO CERTIFY that the below-mentioned course is found to comply with the NK Standard for Certification of Maritime Education & Training Programmes and the following applicable standards:

Course: Basic Training for Ships Operating in Polar Waters

Provider: Admiral Makarov State University of Maritime and Inland Shipping
Makarov Training Centre

Applicable Standards:

1) STCW Convention	Regulation V/H
2) STCW Code	Section A-V/H, Table A-V/H-1
3) STCW Code	Section B-V/H (Guidance regarding training of masters and officers for ships operating in polar waters)
4) IMO model course 7.13	Model course: Basic training for ships operating in polar waters, 2017

Date of Initial Registration : 2 October, 2017
Validity : 19 January, 2020
Issued at Tokyo on 2 October, 2017

NIPPON KAIJI KYOKAI

T. Kanjiri
Director of Assurance Operations Division

NIPPON KAIJI KYOKAI Certificate No. 16-042

Certificate of Maritime Education & Training Registration

THIS IS TO CERTIFY that the below-mentioned course is found to comply with the NK Standard for Certification of Maritime Education & Training Programmes and the following applicable standards:

Course: Advanced Training for Ships Operating in Polar Waters

Provider: Admiral Makarov State University of Maritime and Inland Shipping
Makarov Training Centre

Applicable Standards:

1) STCW Convention	Regulation V/H
2) STCW Code	Section A-V/H, Table A-V/H-2
3) STCW Code	Section B-V/H (Guidance regarding training of masters and officers for ships operating in polar waters)
4) IMO model course 7.13	Model course: Advanced training for ships operating in polar waters, 2017

Date of Initial Registration : 2 October, 2017
Validity : 19 January, 2020
Issued at Tokyo on 2 October, 2017

NIPPON KAIJI KYOKAI

T. Kanjiri
Director of Assurance Operations Division

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.

Rev. Oct/2015

MINISTRY OF TRANSPORT OF THE RUSSIAN FEDERATION

МИНИСТЕРСТВО ТРАНСПОРТА РОССИЙСКОЙ ФЕДЕРАЦИИ (МИНТРАНС РОССИИ)

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. № 123-16/2266 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:

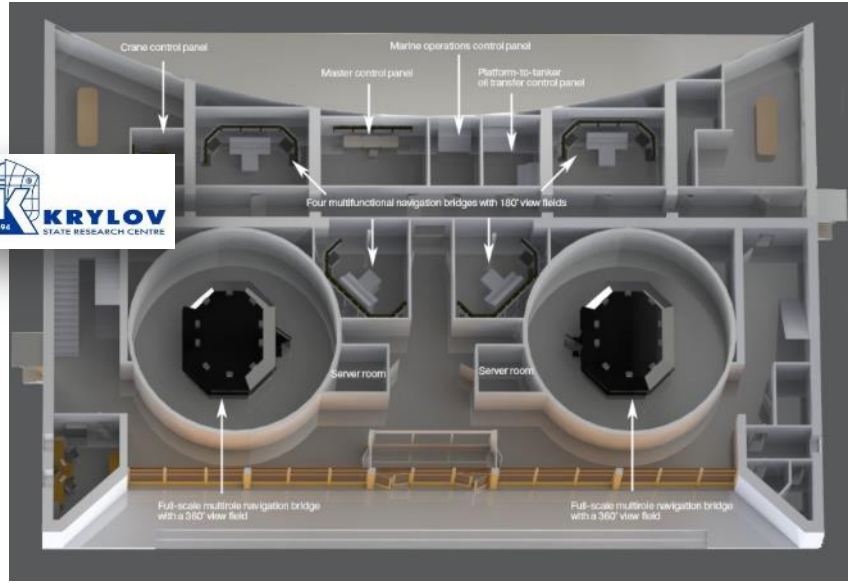
Подготовка по плаванию в полярных водах базового уровня;

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

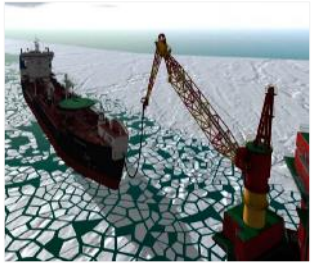
Гуляко Нина Андреевна
8 (499) 495 63 00 доб. (1756)

POLAR WATERS CREW TRAINING
AT MAKAROV TRAINING CENTRE

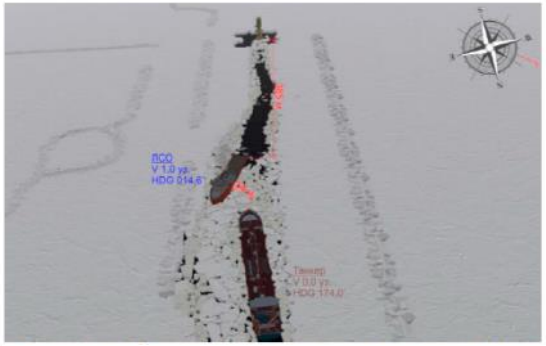


- Since 2015, simulator training has been conducted on the basis of the Krylov State Research Center on 6 navigation bridges.
  - 2 full-scale navigation bridges
  - 4 small navigation bridges
  - Oil transshipment post from platform to tanker
  - Crane equipment control station
  - Unique mathematical model of ice
  - Using all navigation bridges in one exercise
  - Ability to control vessels with a non-standard type of propeller-driven ship complex

- Carried out at the Marine Training Center since 2002 in close cooperation with the companies Atomflot, Rosmorport, Sovcomflot.
- Skills: maneuvering a ship in ice, moving in a caravan, using ship equipment and performing ship work, maintaining the health of the crew and environmental safety.
- The training programs are developed in accordance with the requirements of the Polar Code and STCW, MARPOL, SOLAS international conventions, have recognition of the Ministry of Transport of the Russian Federation and the Administration of the Marshall Islands, approved by ClassNK and accredited by The Nautical Institute.

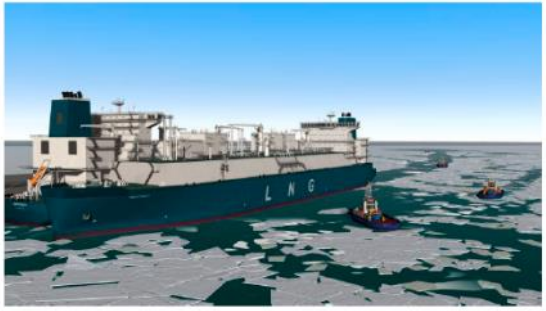


- Simulator training for navigators of icebreakers, gas carriers and tankers to cross the new Morskoy Canal of the Gulf of Ob.
- Simulator training for navigators of port icebreakers, ice tugs, gas carriers for mooring in Utrenny port.
- Practicing ice breaking tactics and techniques when LNG carriers and tankers follow astern.
- Ice pilot training program.



Interaction of ships in a packed channel

The movement of a convoy of ships behind an icebreaker



Towing and mooring of vessels in ice conditions

Ice management operations

POLAR WATERS CREW TRAINING
IN PHILIPPINES BRANCHES

IDESS

MOL
Mitsui O.S.K. Lines

- At MOL (Manila) and IDESS (Subic bay) centres in 2016-2018 more than 1,277 ratings underwent special arctic training in cold climate survival under Makarov TC umbrella.

Maneuvering vessels in ice

- Difficulties in applying theoretical knowledge when practicing skills on simulators

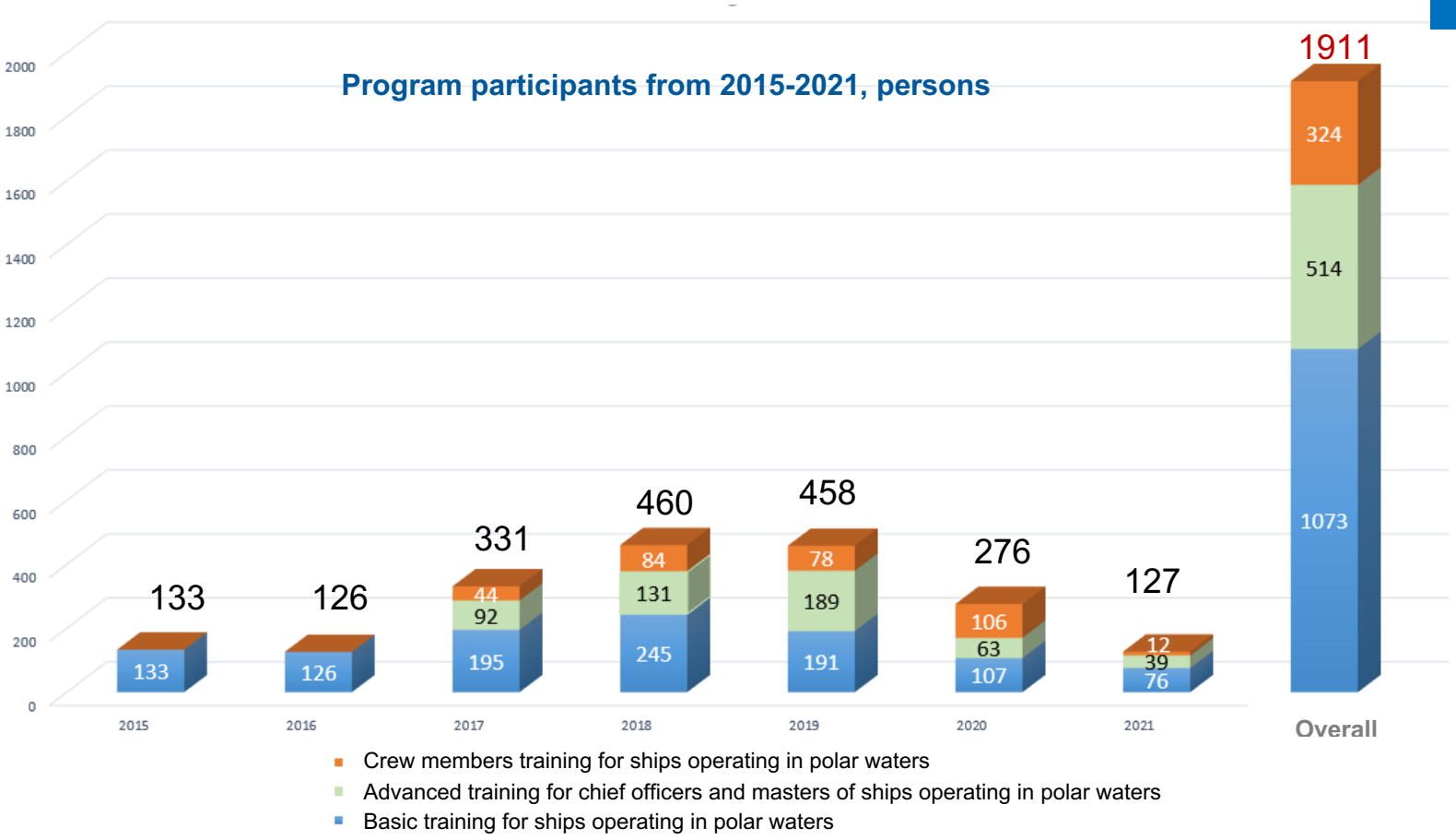
Sailing in a caravan under the guidance of an icebreaker-

- Difficulties in mastering leadership and coordination skills when sailing as part of an ice convoy

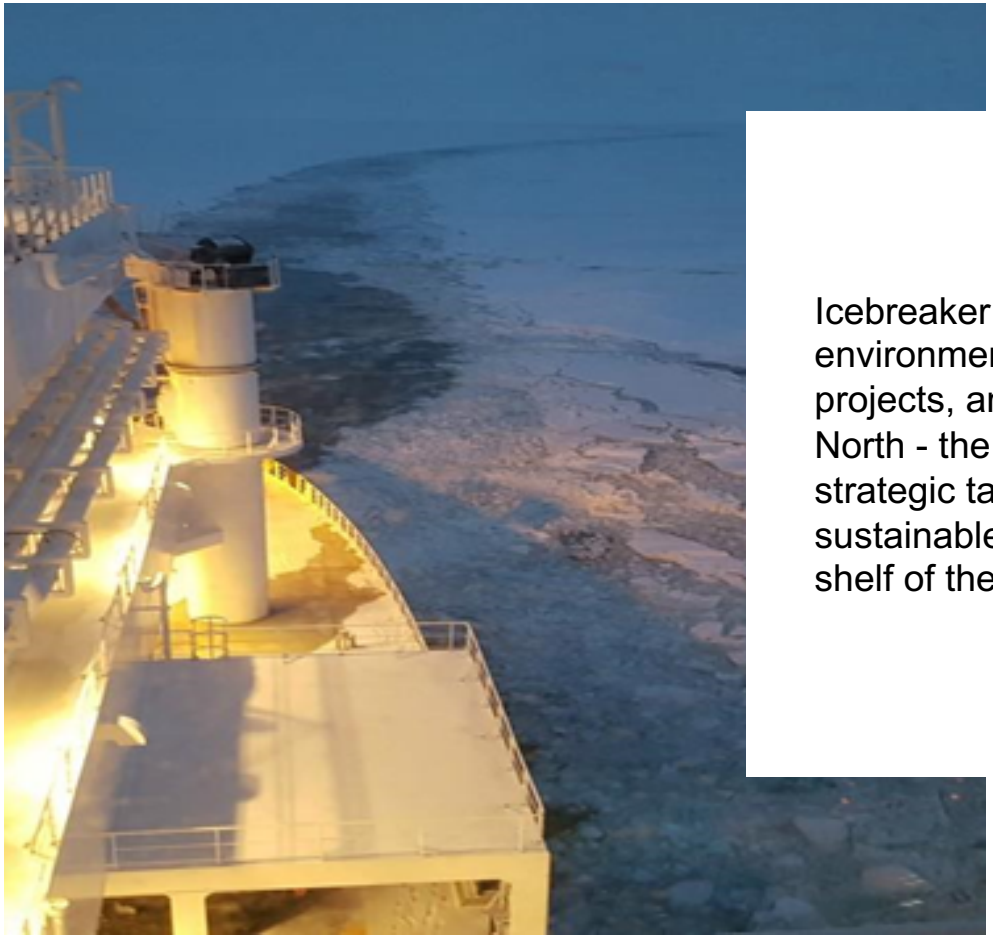
Formalized VHF communication

- The prevalence of informal communication despite the existence of approved procedures for the use of radiotelephone communication and regulatory phraseological standards

KEY AREAS OF IMPROVEMENT


Program participants from 2015-2021, persons
2000
1800
1600
1400
1200
1000
800
600
400
200
0
133
126
331
460
458
276
127
1911
133
126
44
92
195
84
131
245
78
189
191
106
63
107
12
39
76
324
514
1073
2015
2016
2017
2018
2019
2020
2021
Overall
Crew members training for ships operating in polar waters
Advanced training for chief officers and masters of ships operating in polar waters
Basic training for ships operating in polar waters

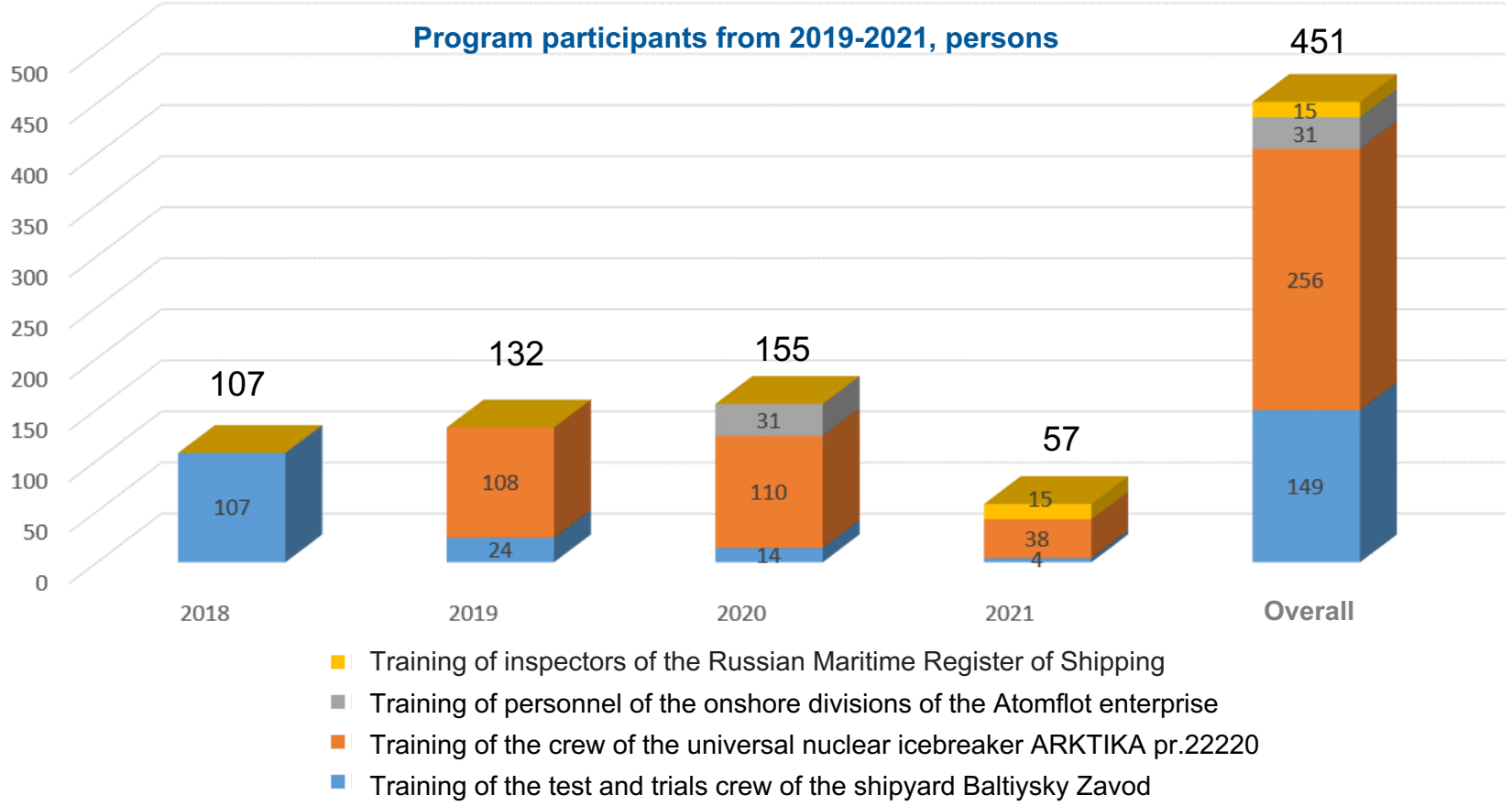
ICEBREAKER OPERATIONS DEVELOPMENT – THE KEY STRATEGIC GOAL



Icebreaker fleet is indispensable to work in the severe environment. The staffing of all components of the Arctic projects, among which the main highway of the Russian North - the Northern Sea Route stands out, is our strategic task and one of the key factors for the sustainable and safe development of the Arctic and the shelf of the Arctic seas.

TRAINING OF ENGINEERS AND ELECTRICAL ENGINEERS OF NUCLEAR ICEBREAKERS

- The Arctic Maritime Competence Centre was established with the support of Atomflot corporation in 2018.
- Since 2019, training has been provided for the 60 MWt icebreakers personnel.
- Since 2020, training has been provided for ashore personnel of the Atomflot corporation, involved in the operation, maintenance and repairs for the ARKTIKA nuclear icebreaker project.
- On January 29, 2021, the headquarters of the Arctic Maritime Competence Centre was opened in the educational premises of Admiral Makarov SUMIS on 5, Zanevsky prospect (St. Petersburg).


Program participants from 2019-2021, persons
500
450
400
350
300
250
200
150
100
50
0
107
132
155
57
451
107
108
24
31
110
14
15
38
4
15
31
256
149
2018
2019
2020
2021
Overall
Training of inspectors of the Russian Maritime Register of Shipping
Training of personnel of the onshore divisions of the Atomflot enterprise
Training of the crew of the universal nuclear icebreaker ARKTIKA pr.22220
Training of the test and trials crew of the shipyard Baltiysky Zavod

Hydrographic support of navigation at the Northern Sea Route

Intelligent technologies for laying the optimal routes for ships in ice conditions

Sea traffic flows in the sailing area of the Northern Sea Route

Port hydraulic engineering in arctic conditions

Research on the impact of shipping on the Arctic ecosystem

Navigational modeling of pilotage of large-tonnage vessels in ice conditions

Admiral Makarov SUMIS cooperates with universities and research institutes from Norway, Finland to study the issues of emergency preparedness and search and rescue operations in the Arctic.

ARCSAR

Ensuring security and organizing search and rescue operations in the Arctic

SIMREC

Simulators for improving cross-border oil spill response in extreme conditions

MAREC

International coordination of massive search and rescue operations in challenging environment

MARPART

Preparedness for emergencies at sea and the development of international cooperation in the High North


АТОМФЛОТ
РОСАТОМ
НЕФТЯНОЙ ТЕРМИНАЛ
CATERPILLAR
СКФ
Современный Коммерческий Флот
АДМИРАЛТЕЙСКИЕ ВЕРФИ
ЛУКОЙЛ
НЕФТЯНАЯ КОМПАНИЯ
ГАЗПРОМ
ГАЗФЛОТ
РОСМОРПОРТ
Северо - Западное пароходство
ГАЗПРОМ НЕФТЬ
ШЕЛЬФ
spliethoff
RUSSIA
aet
СМП
УСТЬ-ЛУГА
NAVIS ENGINEERING
БАЛТИЙСКИЙ ЗАВОД
inmarsat
ГАЗПРОМ НЕФТЬ
TRANSAS
WAGENBORG
LAPA
ВОЛГОБАЛТ
НОРНИКЕЛЬ
МУРМАНСКИЙ ТРАНСПОРТНЫЙ ФИЛИАЛ
Storm
ФЕДЕРАЛЬНАЯ СЛУЖБА ОХРАНЫ РФ
«РОСНЕФТЕФЛОТ»
marsat
MOL
Mitsui O.S.K. Lines
DYNAGAS LTD.
Stena Bulk
INNOVATION & PERFORMANCE
TEEKAY
Northern Marine Management
WÄRTSILÄ
MAERSK LINE
CASPIAN OFFSHORE CONSTRUCTION
Stena Drilling
CARE, INNOVATION & PERFORMANCE
TSAKOS Group
COLUMBIA SHIPMANAGEMENT LTD.
BSM
Bernhard Schulte Shipmanagement
THENAMARIS
ANGLO-EASTERN
NURLY TOLKUN TURKMENISTAN
лоцманская служба
АДМИНИСТРАЦИЯ МОРСКИХ ПОРТОВ ЗАПАДНОЙ АРКТИКИ
Федеральное государственное бюджетное учреждение
Союз рыбопромышленников Севера


LET'S BREAK THE ICE
OF IGNORANCE
AND PROMOTE
POLAR CODE
FOR THE SAFE ARCTIC
NAVIGATION!

Training of Personnel and Implementation of Research Projects for Arctic Shipping: Admiral Makarov University Perspective

ADMIRAL MAKAROV STATE UNIVERSITY OF MARITIME AND INLAND SHIPPING

Sergey Aysinov
Director, Professional Development Programmes Institute

SAysinov@mtc.spb.su

prof.gumrf.ru