ARCOP
Arctic Operational Platform

Legal and Administrative Issues

Workshop 1

Finland 2003

The European Commission
Community Research
Competitive and Sustainable Growth

Directorate General TREN

Arctic Operational Platform

The Fifth Framework Programme Project of the European Community

Legal and Administrative Issues

Workshop Report 1

Ministry of Trade and Industry

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CONTENTS

APPENDICES

1. INTRODUCTION

The ARCOP workshops are a continuing activity throughout the project to create the input, to follow the project and to conclude and disseminate the results. The workshops will also serve as an industrial scientific and political reference group.

Participants from industry will be invited to the workshops, governmental bodies and representatives of science and technology. The workshops will discuss and conclude objectives of the project, other relevant problem areas and make recommendations to the steering group to make changes in the project plan, if necessary.

A selected number of representatives from the target groups will be invited to the workshops. This will give them direct access to the planning and the results of ARCOP. On the other hand, in the workshop discussions the Steering Group will get direct contact with industry needs, government policies and possibilities of science in a larger context. The workshops are also serving as a discussion forum for European and Russian decision makers and members of the Arctic Council.

This is a report from the first series of workshops, held in Helsinki on 25-27 March 2003. Clear goals had been set up for all workshops. Generally, these first workshops aimed at describing the state-of-art in the different problem areas.

The first workshop dealing with Legal and Administrative Issues aimed at defining the differences in the interpretation of international law regarding the legal status of the Northern Sea Route. The idea was to create common understanding of the current interpretation of the limits of the Russian economic zone, territorial and national waters and discuss possible disagreements of these interpretations at different parts of the NSR. Within the issues of international trade, the goal was to clarify the influence of international agreements on the terms of commercial activities on the NSR. Regarding rules and regulations, the workshop aimed at defining the Russian national rules that foreign vessels have to obey when operating on the NSR. As for all workshops, a general goal was to define the work on legal issues within ARCOP.

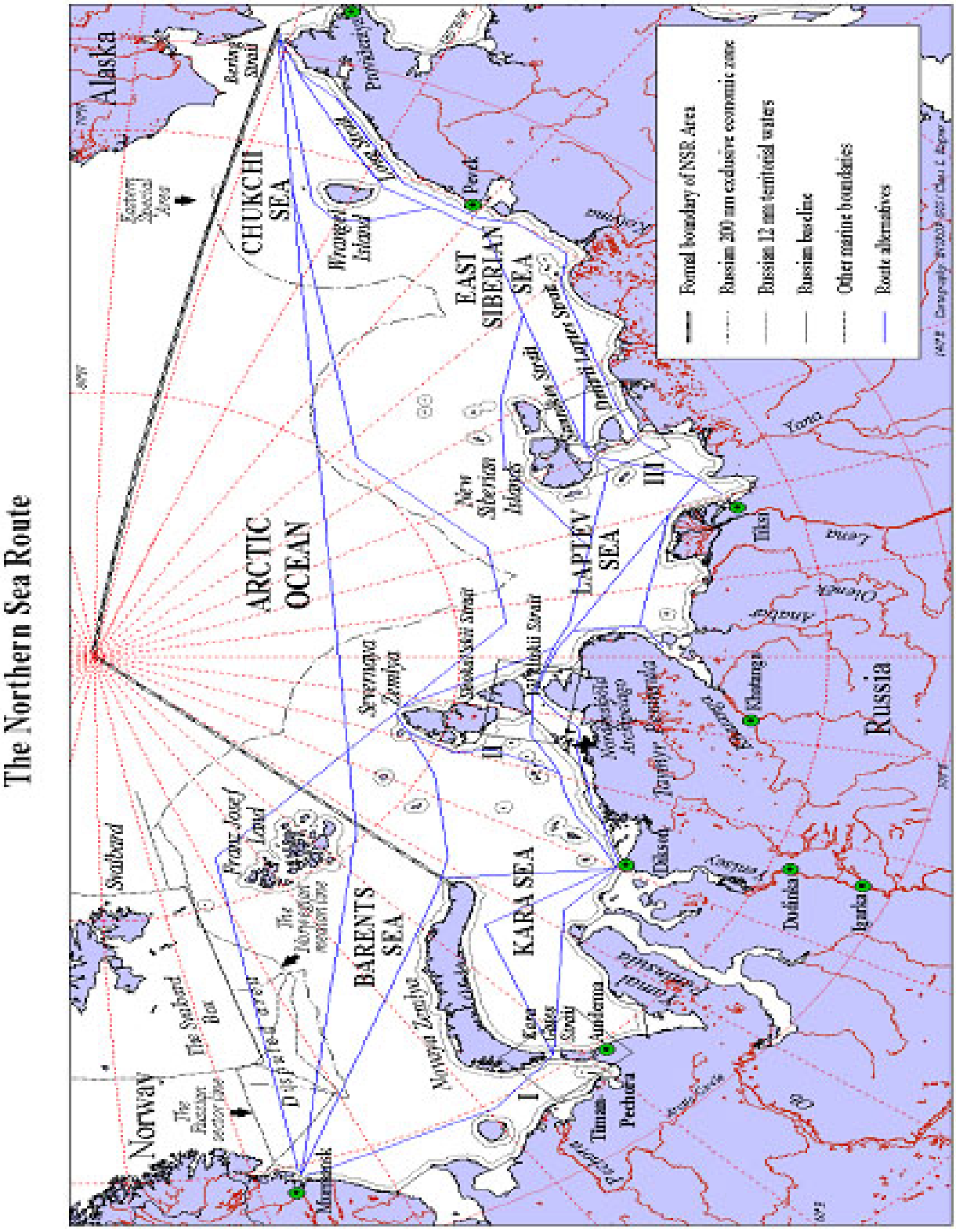
The second workshop in this series was dealing with Industry Needs. It aimed at defining the future transportation needs at the NSR. As marine transportation, in the case of oil and gas transport, has to compete with pipelines, the workshop intended to present the pros and cons of marine transportation compared to pipelines. It is clear that large investments are required for marine transportation from oil and gas fields along the NSR. The workshop aimed at giving an overview of the current marine operations on the NSR as well as of existing development plans. The ARCOP scenario, which is a basis for all activities in the project, was also presented and discussed.

The third workshop was dealing with Technology and Environment. It aimed at defining the integrated transport system and the elements that have influence on the economics. Other goals were related to the infrastructure involved in the transportation system - the ice information services and the traffic management and information system. The

workshop also aimed at presenting the state-of-art of other supporting services, such as the satellite communication services and also the possibilities in the future. The need for special crew training was also discussed. Regarding the environmental issues the workshop aimed at giving an understanding of the environmental impact and risk assessment procedures and an overview of the oil spill response readiness in Arctic areas. Industrial development in the Arctic will have a considerable impact on the life of the inhabitants. The workshop also aimed at giving an understanding of the social impact assessment in Arctic activities. As for all workshops, also the Technology and Environment workshop targeted at giving recommendations for the research and development work within ARCOP.

The series of workshops was opened by Finnish Minister of Transport and Communications Kimmo Sasi who pointed out the huge potential for commercial cooperation that the Arctic energy resources present to the European Union and Russia. He also stressed the importance of discussing the safety, reliability and economy issues of oil transport before the large-scale activity in the Arctic starts.

We wish to thank all the chairmen, speakers and commentators for their valuable input to a successful first series of workshops.



Map from R. Douglas Brubaker, *Environmental Protection of Arctic Waters – Specific Focus the Russian Northern Sea Route,* Stockholm University 2002

PROGRAM	
March 25th 2003	**Legal and administrative issues**
Chairman: Nikolay Matyushenko, Ministry of Transport of the Russian Federation	
Opening remarks	Minister Kimmo Sasi, Ministry of Transport and Communications
Legal status of the NSR	Central Marine Research and Design Institute, Irina N. Mikhina *Comment: The Fridtjof Nansen Institute*
International agreements regarding marine transportation	The Fridtjof Nansen Institute, Douglas Brubaker *Comment: Central Marine Research and Design Institute*
New ice rules of the Russian Maritime Register	Russian Maritime Register, Vladimir I. Evenko *Comment: Lloyds Register*
Insurance related questions for the NSR operations	The Fridtjof Nansen Institute, Douglas Brubaker *Comment: Central Marine Research and Design Institute*
Rules to be followed on the NSR	Northern Sea Route Administration, Anatoly G. Gorshkovsky *Comment: The Fridtjof Nansen Institute*
Discussion and conclusions	

2. LEGAL STATUS OF THE NSR

2.1 The legal regime of navigation in the Russian Arctic, Summary

Irina Mikhina, University of Moscow, Russian Federation

The legal status of the Arctic waters conforms to the universally recognised principles and norms of the international law of the sea, as confirmed by the 1982 UN Law of Sea Convention (UNCLOS). The legal status of the Russian Arctic waters has a number of specific features both as regards to territorial limits of the international legal regime and its very essence. The inaccessibility and vulnerability of these areas imposes on all states the responsibility for protecting the ecosystems and natural resources. These states should also possess several important legal advantages, as regards regulation of access by users and comprehensive control over all types of activities carried out here. Security considerations also play a role. Secondly, such specifics are characteristic of the Arctic due to the subordination of each specific water area to certain individual polar countries. States may realise their legal power not only according to international law, but also taking into consideration traditions founded in the process of developing territories and on the basis of domestic law.

There are areas in the Russian Arctic Seas that differ in terms of legal classification as determined by the provisions of UNCLOS. Several Russian laws also determine the regime of the areas adjacent to the coast of Russia and their limits. The USA has protested against Russian rights to the several straits either separating the mainland from the islands or separating these islands from one another. Otherwise, Russia's internal waters in the Arctic generally include the waters of all bays and gulfs, the entrance into which does not exceed 24 nautical miles. The status of the internal seawaters is fully determined by the sovereignty of the Russian Federation, which establishes rules regulating the access of foreign warships and naval vessels to these waters, the procedures of navigation and other aspects related to their presence in the internal seawaters of the Russian Federation.

The practices of other Arctic states, e.g. Norway, play an important role when considering the status of straits in the Russian Arctic. The status of straits is analogous with the legal regime of that country's internal waters. In other words, they all fall under its jurisdiction, although Norway does permit foreign merchant vessels and warships to navigate them, with the exception of restricted areas. The grounds for establishing the regime of internal waters in these straits are that they are separated from external sea areas by the lines from which the breadth of the territorial sea is measured. A similar arrangement is in force for the Northwest Passage. Foreign vessels are allowed to navigate the straits along it on the condition that they observe the Canadian legislation against sea pollution from vessels. The USA and the European Union have protested this, although the USA requires its commercial vessels to comply with the Canadian regime.

One of the specific features of the Arctic seawaters is the Arctic ice regime. According to recent thinking within the law of the sea, ice does not predetermine the spatial limits of

extending sovereignty, sovereign rights and jurisdiction of states whose coastal waters are ice-covered most of the year. But it affects human activities and is taken into consideration when formulating legal regime regulating such activities. Fast ice is considered a sort of continuation of the land territory of a coastal state and thus does not affect the position of baselines.

Artificially constructed ice berths affect the delimitation of the territorial sea if they can be considered as "permanent harbour works", in which case they would constitute an integral part of the harbour system. The freeze-built foundations for constructions of various sorts are not to possess island status; but in regard to the personnel and equipment, the exclusive jurisdiction of the coastal state shall be applied. The same is expected to apply with regard to polar stations.

The regime of ice-covered areas is determined by the regime of waters lying under them. Ice itself can demonstrate properties of a physical nature, and may have legal nature characteristic of dry land. The right of innocent passage through ice-covered areas is recognised in regard to vessels, but is not recognised if transit is performed over the surface of ice using other means of locomotion, such passages are regulated by Russian law.

Convoys of several ships are formed during heavy traffic in more severe ice conditions

The breadth of Russia's territorial sea and exclusive economic zone is measured from the baselines in compliance with the same universal system as in any parts of the world. UNCLOS does not contain provisions concerning the principles of delimitation of sea areas that would specifically apply to the Arctic region. The system of establishing baselines forms the basis of legislative acts of all Arctic states. Within the 12 nautical mile territorial zone, the Russian Federation is obliged to observe the right of innocent passage by foreign vessels, as confirmed in the Convention for Vessels of all States.

In 1998, Russia declared a 200-mile exclusive economic zone within which competent bodies have the right to institute special compulsory measures aimed at preventing marine pollution from vessels. This law may be more stringent than those adopted on the international level, not only in respect of discharges and navigation practices, but also concerning all other matters, including design, construction, manning and equipment of vessels.

It is on the basis of Article 234 that also the "Regulations for Navigation on the Seaways of the Northern Sea Route", effective since 1991, have been elaborated and applied. Under that document, access to the NSR is open to vessels of any nationality on a non-discriminatory basis. However, several conditions must be observed:

1. To navigate the NSR a vessel shall satisfy special technical and operational requirements, while the Master or the person that performs his duties shall be experienced in operating the vessel in ice. In other cases the Administration may assign a State Pilot to the vessel to assist in leading the vessel.

2. Each vessel is to have a certificate of due financial security with respect to the civil liability of the Owner for damage inflicted by polluting marine environment.

3. The Owner or Master of a vessel intending to navigate through the NSR seaways shall submit to the Administration a notification and request for leading. The submitter shall be informed of the possibility of leading and other circumstances to be taken into account. The requirements, while supported by Canadian Arctic practice, are not completely supported by US Arctic practice.

4. Entry is performed under the control of the Marine Operations Headquarters, which is subordinated to the NSR Administration. The requirements are linked with the regime of responsibility and compensation for pollution, provided for by the 1969 International Convention on Civil Liability for Damages inflicted by Oil Pollution and the 1971 International Convention on the Establishment of the Fund for the Compensation of Damages Inflicted by Oil Pollution. This regime of liability has been established even though the spatial scope of these Conventions is restricted by limits of the territorial sea.

A vessel that has been admitted for leading through the NSR is to follow the seaway assigned her keeping to the routes recommended by the Marine Operations Headquarters. The Master of the vessel must carry out orders from the Marine Operations Headquarters.

The Administration or the Marine Operations Headquarters may, when they find it necessary for environmental or safety reasons, suspend navigation of vessels on specific parts of the NSR for as long as such circumstances exist. A vessel violating the provisions of the Regulations may be ordered to leave the Route. The Administration and the Marine Operations Headquarters shall not be liable for damage inflicted on a vessel or on property located aboard her by leading in ice conditions, unless it is proved that they bear guilt for the damage inflicted.

In addition to the existing requirements concerning reports on pollution of the marine environment, the Master of a vessel navigating the Northern Sea Route is obliged to inform an Administration Representative promptly of any fact of pollutant discharge, as effected by that vessel or detected thereby.

2.2 Discussion

The discussion focused very much on the position of the straits between the Russian mainland and the islands north of the coast. The argumentation was around the position of the International Straits Regime, which is said to cover only the straits that are not ice covered. Most of the straits along the NSR are ice covered more than 6 months of the year. This would put them under national legislation.

Generally all the different rules governing operations along the NSR was discussed. It seamed clear, that the international (non-Russian) view is that the number of different laws governing the operations is large and difficult to overview. However, there are very

few inconsistencies between the Russian and the international view on the applicable international rules and regulations.

It also seemed clear that very much of the Russian interests in controlling the NSR traffic are based on the need to protect the sensitive Arctic environment. The 200-mile economical zone supports this need, as it gives Russia the rights to stipulate requirements for vessels operating in this area. There is still is question about equal treatment of foreign and domestic vessels vis-a-vis different requirements.

2.3 Conclusions and recommendations

Although there are outstanding issues in the discussion between Russia and the international community regarding the NSR, these open issues represent a clear minority. Approximately 85% of articles are well consistent, so there is a good basis for a final common understanding.

One area of disagreement is related to the position of the Straits between the Russian mainland and the large islands outside the northern coast. It is generally recognised that the position of the international Straits Regime is very strong, but the question of the areas covered by ice makes the position of the Straits still open. The Russian position is that the straits covered by ice more than 6 months per year are to be considered national territory, which is disputed by the USA, among others. The Russian viewpoint is strongly based on the issue of protection of the vulnerable Arctic environment, which should give the states with an arctic coast greater rights to control the traffic on the sea.

The position of similar areas in Norway (Indreleie) and Canada (Northwest Passage) must be considered when determining the legal position of the NSR. This supports the judgement of the NSR being a national route.

Generally, Russia considers the NSR as a national area and that only Russian domestic laws govern the activities along it. This is disputed by others.

Since the number of open issues has become limited, it is recommended that the still outstanding issues be settled within WP 2.1. before the next ARCOP workshop.

The legal implications of locating the export terminal within or outside the 12 nm limit should be checked.

The question raised in Workshop 3 (Environment & Technology) regarding the position of the indigenous peoples should be clarified (right to live on specific areas, position in the EIA process, etc.).

3. INTERNATIONAL AGREEMENTS REGARDING MARINE TRANSPORTATION

3.1. Overview - Implications of GATS/E.U. law for the Russian Northern Sea Route and Russian Barents Sea, Summary

Dr. R. Douglas Brubaker, Fridtjof Nansen Institute, Norway

WTO/GATS

Since Russia will presumably become a World Trade Organisation (WTO) Member in the near future, NSR transportation will hence fall under WTO jurisdiction. If States interested in the NSR take part in the shipping annex to General Agreement on Trade in Services (GATS), then all national legislation on participation that relates to ships transporting along the NSR are restricted by WTO provisions.

Under GATS any ship owner from a GATS Member has a right to provide services to consumers in any of the territories of other Members when operating in any of the Members countries. Maritime transport services are in principle covered by GATS, but will be fully incorporated as an Annex to the GATS when such is decided by Member States. From 1st January 1995 and until such decision is made, commitments scheduled by participants on maritime transport services will enter into force on a most-favoured nation basis.

It is presumed that every ship registered under the laws of a GATS Member enjoys the right of equal “conditions of competition” in the territory of any other GATS Member. It is the obligation of every Member to accord treatment-no-less-favourable “to services and service suppliers.” The intention of the GATS provisions is to make it possible for entities, companies, and other of a GATS Member to buy shipping services from a shipping firm of any Member.

National arrangements that apply only to transiting ships would no longer be valid. This would include special taxes and charges specified by GATS provisions on National Treatment.

All kinds of mandatory restrictions, regulations, taxes and public legislation are included, even such provisions that are not intended to discriminate against foreign services. Russian taxes for ships transiting the NSR, which do not represent due payment for harbour services, are contrary to these provisions.

Import fees must be proportional to the cost of services rendered. This means consular fees, customs fees and statistical fees. If the operation of shipping services is subject to internal national taxes, then such taxes may also be levied on foreign service suppliers if they use the same coastal auxiliary services or standby facilities, or at least if they are dependent upon the preparedness of coastal services or the services being on constant stand-by. The tax rate should be fixed in relation to the kind of services required and the length of time they are employed, and not in relation to the value of the service afforded.

If a tax is imposed because of the risk of oil pollution, then such a tax cannot be imposed on foreign transportation of merchandises other than oil.
New national legislation establishing, for instance, a charge for the administrative handling of foreign shipping transportation through the coastal waters of a Member must be published promptly in accordance with GATS requirements on transparency. Once informed, the other Members can respond quickly and challenge the new legislation before a WTO Panel.

Special requirements including that foreign shipping services must follow other routes than domestic shipping and call at certain checkpoints, cannot apply, as these measures bring about a disadvantage to foreign shipping industries.

Handling or processing fees for transportation services must be limited to an amount not exceeding the approximate cost of service rendered (means consular fees, customs fees and statistical fees). Different kinds of charges could not exceed the handling cost of the transportation in question, for example expenses for guiding ships through an ice-covered stretch of the NSR.

E.U. Safety and Competition Law

One of the issues to be studied within ARCOP is what are the safety requirements applicable to ships flying the flag of non-Member States when docking in an E.U. or European Economic Area (E.E.A.). Member State harbour. The main issue is to analyse whether Community law addresses Member States so as to unify domestic legislation in relation to third State ships, including substandard ships and those arriving from the NSR, when docking in an E.U. or E.E.A. harbour.
The main purpose is to investigate the Community port State legal situation, including legislation as well as enforcement, with special emphasis on classes of legal persons affected.

The Community environmental and safety legislation is not directed towards vessels when navigating the NSR. The importance of Community law is through the implementation governing all vessels when docking in an E.U. or E.E.A. harbour. E.U. or E.E.A. port States may, be made responsible for undertaking investigations and institute proceedings in respect of any discharge occurring on the NSR, in violation of applicable international rules and standards, from a vessel voluntarily within the port of the enforcing State. Community law applies circuitously to all third State vessels, including vessels navigating the NSR, and this includes the technical standard of ships, manning, the handling of goods, waste, equipment, and other the transportation requirements.

The underlying concept is that all vessels, ships of non treaty States as well, competing for charter parties to and from the “inner market” of European Community including along the NSR, must adhere at least to generally accepted rules and standards and in various instances to advanced, unilateral Community port State standards. All ships destined for any E.U. or E.E.A. harbour must fulfil the Community’s safety requirements.

Since the Community enjoys substantial legislative power over Member States as well as transiting and docking ships, advanced unilateral Community provision might be implemented, vis-à-vis foreign ships when docking in an E.U. or E.E.A. harbour.

Wider studies into law of the sea would be beneficial, especially related to the IMO and LOSC frameworks in relation to unilateral Community legislation and enforcement.

Russian Arctic Fees – An Example

Under LOSC Article 234 coastal States have the obligation to adopt and enforce non-discriminatory environmental provisions. The main thrust of the Russian provisions is based upon environmental protection and safety, thereby seemingly imp-lying that *all* vessels including Russian are encompassed. All vessels including State regardless of nationality are subject to and the implication of the supporting legislation is the same.

However concerning 'fees for services rendered', there may be questionable compliance with the requirement of non-discrimination. Article 8.4. requires vessels navigating the NSR to pay for services rendered by the Marine Operation Headquarters (MOH) and the Northern Sea Route Administration (NSRA) in accordance with the adopted rates. Apart from the question of non-discrimination the issue remains whether fees themselves fall outside the scope of 'due regard to navigation'. In application it seems improbable that the

Efficient ice breakers assist the traffic along the NSR

current Russian fee rate, of $3.33 to $73.02 ($15.02 for escorting tank ships) per ton depending upon cargo and size, is required of the Russian vessels. This raises the issue whether non-discrimination is meant only to be *among* foreign vessels of different nationalities, or also *between* foreign vessels and Russian vessels.

3.2 Discussion

One of the main issues of the WTO is equal treatment of all members. Along the NSR this may specifically be applicable to the technical requirements set on the vessels. As all services also should be open for service providers from all member states, it is of special interest to find out the possibility for international operators to provide icebreaking services along the NSR and how this fits into the obligatory requirements for icebreaker assistance for all vessels. Is a ship owner free to contract an ice breaking service provider for himself or will he have to stick to the services provided by Russia. This will also have implications to the fee structure, if icebreaking services are included in the basic NSR fee. If owners are free to contract their own ice breakers, then they should not be charged with an ice breaking fee included in the general NSR fee.

Some adjustments need to be done to the fee collecting procedures to follow the WTO rules. For instance have the tonnage dues been collected from the cargo owner, not the ship owner, as the WTO stipulates. A change in this procedure is under way.

3.3 Conclusions and recommendations

It is generally expected that Russia will join the WTO in the near future. The exact time is still open. The most optimistic estimates are that this will happen already this year.

One of the most central issues within the WTO is equal treatment of all parties. This issue seems to be problematic, when it comes to ships operating in Russian waters. Presently the fee structure indicates that there are different fees for domestic and foreign vessels, which is not allowed when Russia is a part of the WTO.

When Russia is a part of the WTO, all services should be open to parties of all countries. This raises a need to define which services are a part of the infrastructure and therefore not open to competition. If a certain user operates without certain infrastructure services, such as an icebreaker, it should be clear if he needs to pay for the service, as is the case in Finland where icebreaker services are a part of the basic fee, irrespective of if he uses the service or not.

Many issues are clear when Russia becomes a member of the WTO. This may, however, take a considerable amount of time. In the meantime, the international agreements to be applied should be clarified.

There are still some uncertainties regarding the fee structure on the NSR. It should be clear what the different fees cover, which services are included. This may also secure that Russian and foreign ships get equal treatment.

4. NEW ICE RULES OF THE RUSSIAN MARITIME REGISTER

4.1. New ice rules issued by the Russian Maritime Register of Shipping, Summary

Vladimir I. Evenko, Russian Maritime Register, Russian Federation

The Ice Rules'81 – 95 played a positive role in creation of Russian Arctic fleet. On the basis of the experience gained through operation during the eighties and the nineties, the following could be concluded:

(i) The extended season of navigation as well as the increased operating speed has increased the damages. Under these conditions it is practically impossible to totally exclude ice damage in the form of permanent plastic deformation.

(ii) With increased Arctic navigation, the risk for vessels being operated in too heavy ice conditions increases considerably. There is an obvious need for more precise descriptions of the maximum allowed operating conditions.

(iii) With the extended operating season, there is also a need for ice classes above the existing. Ships classified according to the highest existing ice class could not be safely operated year round in the Eastern Sector of the Northern Sea Route. On the other hand, there was also a clear need to reconcile more clearly the lower ice categories L4 – L1 with the ice classes of the Finish-Sweden Rules as the majority of the classification societies today use the FSR ice classes in their Rules. For the higher ice categories, also the requirements of the American Bureau of Shipping were to be taken into account when determining the ice strengthening requirements for the hull.

The Ice Rules'81-95 were based on a conventional approach to ice classification generation and ice strength regulation. The characteristics of the allowed operational conditions presented in the ice classification were of a very unspecific descriptive character and were not connected directly with the prescribed strength levels for the ice categories.

It has become clear, that there should be a direct function between the strength level of the ship structures and the allowed ice conditions. This can be summarized as follows:

(i) Ice category is considered as a guarantee for ship safety under the specified maximum ice conditions (the principle of safety guarantee).

(ii) The maximum ice conditions within each ice category are equal for all ships independently of their types and dimensions (the principle of the unified safety standard).
Using a comprehensive study with a wide range of ship sizes, the maximum speed in different ice thickness was determined for each ice class. Above this speed, hull damage occurs. The result is shown Figure 1.

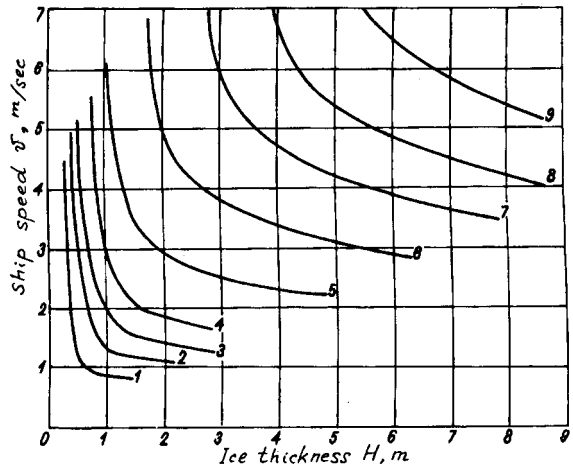


Figure 1. Dangerous service conditions as function of ice thickness for different ice classes 1 – LU1, 2 – LU2,..., 9 – LU9

The new rules have also included a guaranteed reserve for maximum operating conditions compared to the conditions where hull damage occurs. Plastic deformation has been introduced as an acceptable condition, increasing also the maximum operating conditions. The strength margin is approximately 80 – 100 %.

Applying this reserve, the maximum operating speed was determined for each ice class. The results are shown in Figure 2.

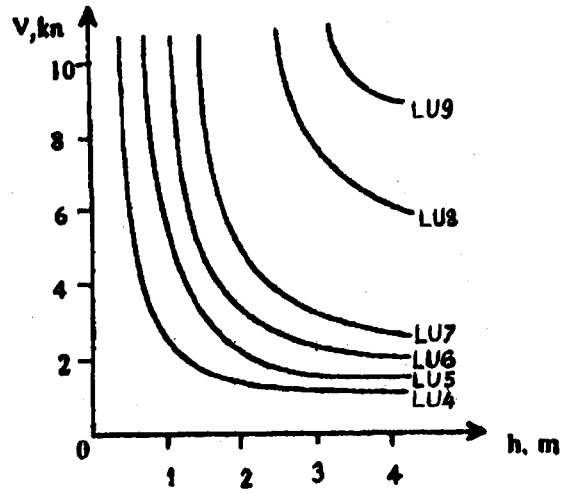


Figure 2.

In the Ice Rules'99 nine categories are introduced: LU1 – LU9. The higher number of ice classes is a response to the described need to introduce higher ice classes for the more severe conditions, presenting at the same time equal steps between the ice classes, which was not the case before. If a ship is an icebreaker, the category symbol is written as LL6, LL7, LL8 or LL9. Correspondence of the new categories to ones of the Ice Rules'81 – 95, as well as to the ABS and FSR classes is shown in Table 1.

Table 1. Equivalency of the Ice Rules'99 ice categories with the current ice classification

Ice Rules'99	Ice Rules'81-95	FSR	ABS Rules
Ice-going ships			
LU1	>L4	~IC	
LU2	>L3	~IB	
LU3	>L2	~IA	
LU4	>L1	IA Super	
LU5	>UL		<A2
LU6			~(A2-A3)
LU7	>ULA		~(A3-A4)
LU8			~A4
LU9			A5
Icebreakers			
LL6	LL4		A2
LL7	LL3		A3
LL8	LL2		A4
LL9	LL1		A5

Using the information of maximum safe operating speed, a further study was performed to determine the required ice class for different time of the year in different areas along the Northern Sea Route. Statistical data on ice conditions in these areas was used to separate both different seasons (winter-spring and summer-fall) as well as seasons of different severity. Four different severity classes were identified. In addition, two different operating modes were separated: independent operation and icebreaker assisted operation. As a final result of this study, a wide matrix of maximum conditions was produced.

Table 2. Permissible Service Areas for Ships of Arctic Ice Categories

Ice class	Manner of ice operation	Winter-spring navigation in seas					Summer-fall navigation in seas				
		Barents Sea	Kara Sea	Laptev Sea	East-Siberian Sea	Chukchi Sea	Barents Sea	Kara Sea	Laptev Sea	East-Siberian Sea	Chukchi Sea
		EHMEa	EHM Ea	EHMEa	EHMEa	EHMEa	EHMEa	EHMEa	EHMEa	EHMEa	EHMEa
LU4	IO	- - - +	- - - -	- - - -	- - - -	- - - -	+ + + +	- - + +	- - - +	- - - +	- - + +
	IP	- * + +	- - - +	- - - -	- - - -	- - - *	+ + + +	* + + +	- - + +	- * + +	- * + +
LU5	IO	- - + +	- - - +	- - - -	- - - -	- - - -	+ + + +	- + + +	- - + +	- - + +	- - + +
	IP	* + + +	- - * +	- - - +	- - - +	- - * +	+ + + +	* + + +	* + + +	* + + +	* + + +
LU6	IO	* + + +	- - - +	- - - +	- - - +	- - - +	+ + + +	+ + + +	- + + +	- + + +	- + + +
	IP	+ + + +	* * + +	- * * +	- * * +	- * + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +
LU7	IO	+ + + +	- - + +	- - - +	- - - +	- - + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +
	IP	+ + + +	+ + + +	* + + +	* + + +	* + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +
LU8	IO	+ + + +	+ + + +	- * + +	* + + +	* + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +
	IP	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +
LU9	IO	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +
	IP	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +

IO is independent operation
IP is icebreaker pilotage
+ – service is permissible
- – service is impermissible
* – service is connected with an increased risk to get damage
E – extreme navigation (with mean reoccurrence one time per 10 years)
H, M, Ea – heavy, medium, easy navigation (with mean reoccurrence one time per 3 years)

4.2 Discussion

Although the clear aim of the new rules has been to make the lower ice class regulations equivalent to the Finnish-Swedish rules, there are still conflicts. This is the case especially between the hull and the machinery regulations. Classes may be equivalent in the requirements for hull strengthening, but they may different in the requirements for machinery power and shaft line strength.

To be able to solve this issue of lacking equivalency, transparency is required to be able to assess the basics behind the rules. Since the number of parameters used in the calculations is large, the comparison of equivalency is difficult. Both the description of the prevailing conditions and the description of the vessels cause challenges.

Lloyds Register has decided to follow the Polar Rules to describe the requirements for the upper ice classes, instead of developing their own rules. The Polar Rules have one weakness, though, since they are based on the existence of multi-year ice. The ice classes that they describe can, however, be applied in areas without any multi year ice. The Pechora Sea is an example of this. The ice thickness leads to an ice class above the Finnish Swedish, while there is still no multi year ice in the region. The Polar Rules will in this case lead to excessively strong vessels.

The Rules of the different classification societies are meant to control the design of vessels for secure operations without hull or machinery failures. There is still a difference to what would be considered safe speed in different operational situations. This also varies within the safe ice class. The Russian ice passport is meant to deal with this challenge. Today there is no clear definition on the relationship between the classification rules and the ice passports. This is urgently needed.

4.3 Conclusions and recommendations

The new Rules of the RMRS have been a breakthrough in one sense, the introduction of the plastic deformation as an allowed final state of shell plating deformation under ice load. It has been noted that the plastic deformation in stiff structures, as ice strengthened hull structures, is rather limited and will not present any danger for ruptures.

Following the trend of harmonisation of the rules of different classification societies, the rules of the lower ice classes have been changed to agree with the Finnish-Swedish ice rules. This is especially the case for hull strengthening. However, there is still a need to further harmonise the rules to find clear equivalency between the rules of different societies.

The ice class rules do not yet determine the mode of safe operation in varying conditions. The rules are specifying the design for safe maximum conditions, while the operating modes need a separate definition. Presently, there are clear variations in safe speed for vessels of the same ice class.

The work to harmonise the rules of the different classification societies needs to be continued. A balance is needed for both the hull and machinery rules. The reasoning behind the Rules needs to be open to enable evaluation of equivalency.

The different rules for operating procedures and safe speeds, represented by ice passports in Russia, need to be put in relationship with the ice class rules. The different roles of passports and classification rules need to be clearly defined.

There should be different rules for areas with first year and multi year ice. The present system, with multi year ice taken into account in all areas leads to excessively strong and expensive solutions.

5. INSURANCE RELATED QUESTIONS FOR THE NSR OPERATIONS

5.1 Marine insurance related to the Russian Northern Sea Route and Russian Barents Sea, Summary

Dr. R. Douglas Brubaker, Fridtjof Nansen Institute, Norway

General Issues

In earlier analysis of requirements for marine insurance related to the Northern Sea Route (NSR) carried out under the International Northern Sea Route Programme (INSROP) eleven general questions were posed. These have relevance to the assessment of marine insurance requirements for vessels carrying export cargoes of oil and LNG from Northwest Russia through the Barents Sea to western markets and refineries.

The issue of these eleven questions can be summarised in two questions.

1. *What is the likelihood of regular navigational use of the Northern Sea Route in the foreseeable future?* At this stage it is too early to provide an answer to this question. However, the likelihood of "regular" use is probably still some years away and would require further significant research by the shipping industry in terms of economic and operational advantage, the suitability and re-positioning of vessels, cargo interests etc. However, it is also clear that priorities can change rapidly. Political or operational problems in the Panama Canal, another crisis in the Middle East affecting the Suez Canal, and problems in Russia affecting the Asian "land-bridge" railway connection, could all quickly make an alternative sea route more attractive. As already indicated, the development of Russian Arctic resources, which has already commenced, will also result in more shipping in the region.

Special coverage is required for damages caused by ice

2. *Would the international insurance market be willing and able to underwrite Northern Sea Route risks?* **The answer is a clear "yes".** Marine insurers are innovative and responsive to the demands and requirements of the shipping industry. In that respect NSR risks will be treated no differently, but will require further development of the database already assembled by INSROP. Marine insurers will require their own studies, which will respond to the specific needs and demands of underwriters and which will, at the same time, take account of the special risks involved in navigating Arctic waters. In other words, *if shipping wants to use the NSR, insurers will provide the necessary risk coverage.*

Issues related to Russia

Ship owners' P&I clubs have legal basis for their arrival and operation in Russia. Rich experience gained by western P&I clubs may be very helpful for Russian clubs given the fact that Russian insurance law is quite compatible with well-known principles and practice of the international insurance market.

Russian maritime law and marine insurance law in general appear to a large extent based on international conventions such as the Hague or the Hague Visby Rules with regard to cargo liability, the 1976 Limitation Convention regarding global limitation, and the Civil Liability Convention (CLC) regarding oil pollution from tankers, etc. For all of these Russia is either a participant or is clearly taking steps to include them in Russian legislation.

With regard to *time-charterer's liability*, under Russian law a master will be deemed to sign the bill of lading on behalf of the time-charterer. Under English law, a master will be deemed to be the servant of the owner (or bareboat/demise charterer). There appears to be unclarity concerning this difference between Russian and English law.
How P&I clubs constituting the International Group of P&I Clubs, which covers about 85 to 90 percent of the world's merchant fleet, are structured and operate needs addressing by Russian actors, since these will probably be utilised as models.

The P&I clubs constituting the International Group are mutual. They are incorporated, so that they have a separate legal status from their ship owner members. Only owners, charterers and operators of ships can become members of a P&I club.

As a corporation a P&I club has constitutional documents governing, the authority of the General Meeting, the Committee or the Executive Committee/Board of Directors. The ultimate control of a club rests in the ship owner members, who will be able to exercise their control by means of a vote taken at a General Meeting of the club and through the Committee and/or the Executive Committee/Board of Directors. The Committee/Board of Directors consisting of ship owners elected by the General Meeting will make decisions on all areas of importance for the operation of the club.

The day-to-day management of the club; is delegated to professional managers who work full time at the business of the club. In the case of the Scandinavian clubs, the managers are full-time employees. In contrast, independent management companies under contract to the clubs carry out the management of some of the English clubs.

The Rules of the club contain the terms and conditions of the contract of insurance between the club and the individual member, the ship owner. P&I insurance is a so-called "named risk" insurance. Only the type of liabilities and losses expressly mentioned in the Rules are covered. Only a risk that is regarded as a risk commonly born by ship owners will be accepted as a "mutual risk" and covered by the club under its standard terms of

entry. It is for this reason that cover for certain specialist operations has been excluded and, for example, that an additional voyage premium is levied to cover the oil pollution risk of trading to the U.S.

The principal purpose of the International Group of P&I clubs is to arrange for the sharing amongst the Group Clubs of risks born by each of them. The terms of this claims sharing are set out in the Pooling Agreement. The Pooling Agreement is therefore an extension of the mutual system with the pooling of claims on an "at cost" basis. The Pooling Agreement constitutes also the legal framework for the Group Clubs collective purchase of market reinsurance. If a claim should exceed the limit of the market reinsurance contract, the claim will be classified as a Catastrophe Claim, which triggers the operation of some special provisions both in the Club Rules and the Pooling Agreement. The individual ship owner's liability to contribute by way of payment of so-called Catastrophe Contribution is limited by reference to the individual ship's limitation fund for property damage claims under the 1976 Limitation Convention. There is no limit on the ship owner member's liability for ordinary Contributions. Thus, it is important to distinguish between ordinary Contributions and Catastrophe Contributions. The claims sharing arrangement and collective purchase of market reinsurance require discipline among the members of the International Group. The International Group Agreement 1985, and any subsequent replacement, ensures that the required discipline exists.

Conclusions

Very briefly Professor E. Gold the leader of the INSROP as well as the ARCOP marine insurance project notes rather succinctly,

> *"It should be stated that there will be a greater emphasis now on marine pollution, and that it will be essential to have more information on Russian insurance capacity."*

5.2 Discussion

The Erika and Prestige accidents quickly exhausted the international compensation funds. These accidents also showed weaknesses in the present system, which is too much depending on the flag state rather than international laws and regulations.

Similar to other areas, special provisions under the P&I clubs will be required for the NSR. This will create a basis for insuring vessels and cargoes to be taken to the NSR.

As a summary of the experiences from the INSROP project, one can conclude that the insurance market was not negative at all to the NSR. It seemed clear that if there is cargo there is also insurance. The challenge is to bring the insurance rate to an economically acceptable level. There is a clear need for more communication between the scientists and the Arctic operators on one hand and the insurance market on the other to share the experiences and the knowledge about the risk levels.

There seems to be a difference of opinion regarding the accident risk when operating in ice. The presented risks, relative to the risks in open water, vary from 300% to 10%. It seems clear that this needs a further discussion, where all relevant data is presented openly for others to assess. The stringent requirements set on vessel operating in ice and the icebreaker assistance were presented as reasons for the low numbers presented by the Russians.

The by far most challenging issue is related to the nuclear icebreakers. Insurance coverage for accidents involving a nuclear powered icebreaker is a special case, where the Russian government would be seen as a natural guarantee. However, there is a doubt that Russia could carry the financial implications of an accident.

Russia is preparing a law, similar to the OPA 90 law in the US. This law will define the maximum liability level in case of an oil spill. It is not clear if additional requirements will be included in this law (double hull, etc.). The preparation of this law has just started, induced by the Erika and Prestige accidents.

5.3 Conclusions and recommendations

There are different opinions regarding the risk related to operation in ice. Compared to open water, the risks are said to be anything between 3 times larger to only 10% of the risk. It is clear that this issue needs to be clarified and existing statistics analysed.

If the risk is 3 times larger, there need to be developed special risk coverage options for the NSR.
It is important that there is Russian underwriting capacity. Operations by Russian ships in Russian waters are most naturally covered by Russian underwriters.

The largest single risk is related to the operation of nuclear icebreakers. Coverage of risks related to nuclear accidents has to be provided by special programs. It is expected that this coverage is to be provided by Russians, but there is a doubt of the capacity of such a coverage program.

During the INSROP program, it became clear that the insurance market was not negative about the NSR. The position was that if there is business, there is insurance coverage.

International P&I clubs can act as an example when establishing clubs in the Russian market.

Existing data on accident rate at operations in ice, especially along the NRS, need to be brought forward to reduce the risk level. These results should then be clearly communicated to the insurance market, so that the correct numbers can be used in updated calculations of insurance rates. This communication can for instance take place within the framework of the next ARCOP workshops.

An international database on accidents in ice should be established. It should be open to the science community as well as to the insurance market. The database will enable efficient insurance fee determination as well as development of technical solutions to reduce the risk of damage.

The issue of accidents involving nuclear powered icebreakers needs further work. The role of the Russian state and its capability to cover any claims must also be clearly documented.

6. RULES TO BE FOLLOWED ON THE NSR

6.1 Rules to be followed on the Northern Sea Route, Summary

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In legal respect, the NSR, as defined by the Russian legislation, is a national transport route. Russia being interested in development of international shipping through the NSR takes care of high standards of maritime safety and environmental protection.

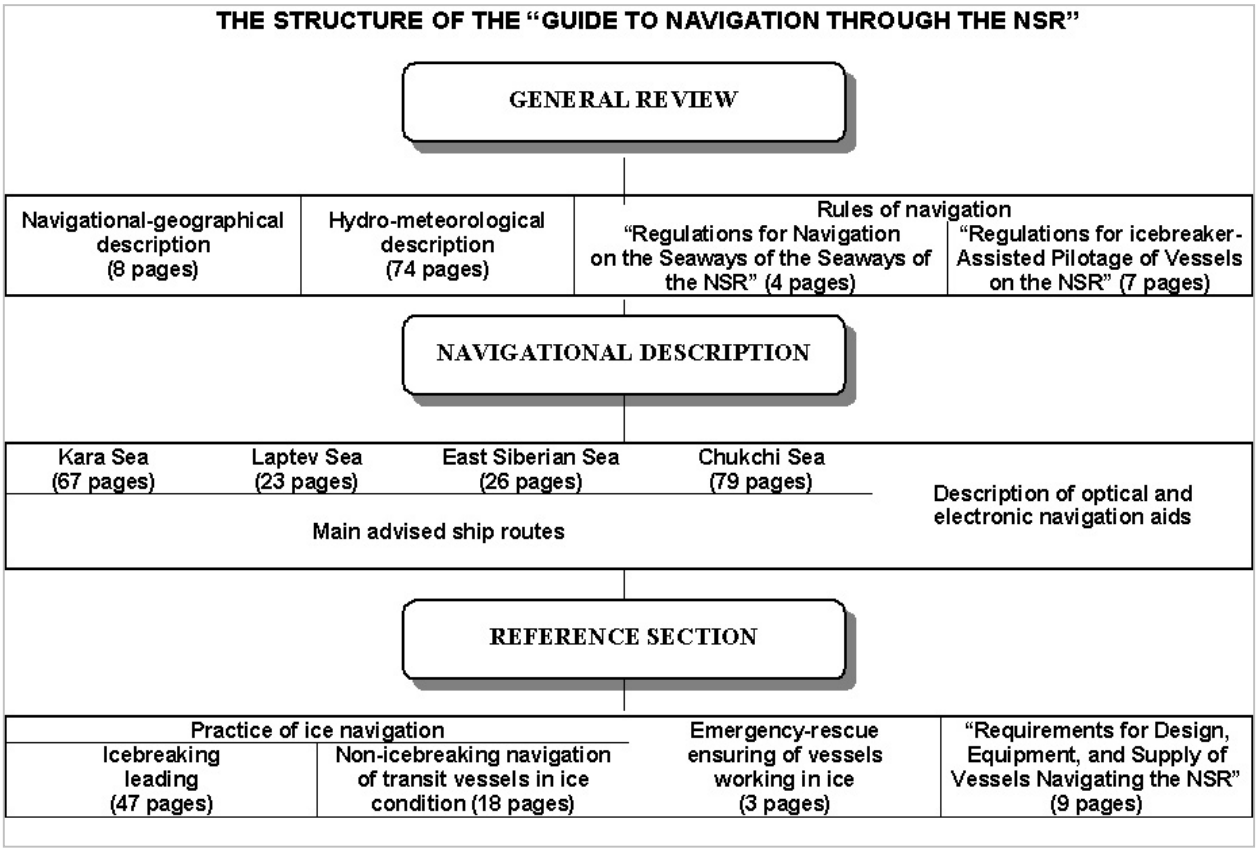
The Arctic is a very sensitive region and any accident at sea may cause serious consequences. Therefore, vessels are to navigate on the seaways of the NSR under reliable State control, being escorted by the Russian icebreakers.

The following Rules and Regulations are to be followed when operating in the NSR:

Guide of Navigation through the Northern Sea Route

The objectives of the "Guide" are to secure safety of navigation through the Northern Sea Route and to prevent pollution of the marine environment from ships.

The provisions of the "Guide" apply both to the NSR seaway itself (from the Novaya Zemlya to the Bering Strait) and to the Barents and Bering Sea areas covered by ice.



The guide includes restrictions of operation as well as navigational assistance (charts, etc.). Advice is given, that is based on the long experience gained from operating the NSR

Information is also given on the procedures of salvage along the NSR. The main salvage task is provided by the icebreakers. Helicopters are used for more urgent needs.

Regulations for Navigation on the Seaways of the Northern Sea Route

The Regulations shall, on the basis of non-discrimination for vessels of all States, regulate navigation through the Northern Sea Route for the purpose of ensuring safe navigation and preventing marine environment pollution from vessels.

The regulations define the procedure for notifying the NSR Administration of intended operations in the NSR as well as the required financial securities to be given for icebreaker services and liability coverage. The regulations also define the location of vessel inspection and the points where compulsory icebreaker assistance starts.

The Regulations define that the Administration and the Marine Operations Headquarters shall not be liable for damage inflicted on a vessel by leading in ice conditions unless it is proved that they bear guilt for the damage inflicted.

Regulations for Icebreaker-Assisted Pilotage of Vessels on the NSR

The Regulations define the procedure for submitting requests, organisation of the pilotage, obligations and responsibilities of the Master of the vessel, the Master of the icebreaker and the pilot on the waterways of the NSR.

When navigating through the NSR, each vessel is placed under control of the Marine Operations Headquarters in the western and eastern parts of the NSR. This does not, however, relieve the Master of the vessel from control over the safety of navigation of his vessel. For this purpose, the Master of every vessel shall have Russian nautical charts and guides to navigation.

Requirements for Design, Equipment and Supply of Vessels Navigating the NSR

The requirements aim at securing safety of navigation and at preventing marine environmental pollution from vessels. Particular requirements apply to the hull, machinery installations, systems and arrangements, stability and watertight integrity, navigational and communication facilities, supplies and emergency outfit, manning.

Guidelines for Ships Operating in Arctic Ice-Covered Waters

The Guidelines define special measures for safety of life and protection of natural environment of Arctic seas and Arctic Ocean. For this purpose, the “Guidelines” harmonise national requirements relating to the standards of the navigational and communication facilities, hull structure, equipment and manning of vessels. Recommendations are provided for unified ice classification of Arctic vessels.

6.2 Discussion

Presently the NSR is defined as extending from the Kara Gate to the Bering Strait, but the NSR Administration wants to extend it to cover also the Barents Sea. In their opinion, at least the Pechora Sea should be included. One reason is the icebreaker support that starts at the ice edge, which is located in the Barents Sea for a long period of time.

It was pointed out that if the NSR were extended to the whole Barents Sea, Norway would most probably dispute it, due to the disputed area in the border zone between Russia and Norway. It would be difficult to define the extent for only part of the Barents Sea, as the ice edge stretches out to the disputed area.

Ice passports are in use in Russia today and it is expected that some kind of a passport will be required for the NSR also. The relationship between ice passports and ice classes needs to be better defined.

As a part of its wish to protect the environment, Russia wants to control all vessels entering their ports in ice conditions. This is different from the Baltic, where ice class is required only to get icebreaker assistance.

There needs to be a clear permitting process for a large-scale regular traffic. Possibly will not all vessels need to be checked, only one representative for each class of vessels. The experiences from ARCDEV support this need.

To enhance economic development in the Arctic it is important to reduce the risk level associated with any of the business opportunities. The legal framework is an important part of the stability that reduces the risk, i.e. rules and regulations have to be predictable. Some indications are needed for the applicable rules and regulations already before large investments will be done. Especially important is that rules applied on a vessel are not changed in the middle of its lifetime.

6.3 Conclusions and recommendations

There is a significant amount of different rules to be applied when operating on the NSR, both related to the design and operation of the vessel. Separate rules also exist for the operation under icebreaker pilotage. There is, in some questions, still uncertainty what rules need to be followed and if the rules apply in the Barents Sea, more specifically in the Pechora Sea.

A new law, equivalent to the Oil Pollution Act of the US, is underway in Russia. It will determine the upper limit of liability. If structured similarly to the OPA 90, it will also have on impact on the technical design of vessels operating along the NSR.

The role of the Pechora Sea and other areas in the Barents Sea in respect to the NSR need to be clarified. Both rules and fees need to be clearly defined.

A process for permitting of ships in a regular traffic needs to be set up. A procedure comparable to the present vetting system for in use should be developed.

7. CONCLUSIONS AND RECOMMENDATIONS OF THE WORKSHOP

Although the success of the Northern Sea Route will be judged based on the economic feasibility of marine transportation along it, many other issues will influence the final investment decisions in addition to the project-related issues. The legal framework will play an important role. Stability and predictability were two keywords, as well as equal treatment of all WTO members. The workshop made it clear that positive steps have been taken towards these goals, but showed at the same time that work still needs to be done.

The workshops also acted as a good starting point for the project, where scientists from very different areas met and discussed subjects of relevance for the total project even if they might have been outside the key interest of separate individuals.

This first workshop was very broad in its nature, dealing with a magnitude of different topics. To be able to achieve practical results, it seems clear that the future workshops have to be more focussed in nature. By bringing in more specialists on a narrower topic there is a greater chance that concrete actions and decisions can be taken.

THE LEGAL REGIME OF NAVIGATION IN THE RUSSIAN ARCTIC

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The legal status of the Arctic water expanses conforms to the universally recognized principles and norms of the international law of the sea, as confirmed by the 1982 UN Law of Sea Convention (UNCLOS) which entered into force in 1994. As of 28 February 2003 142 states are party to UNCLOS.

All categories of sea areas are present in the Arctic region: internal sea waters, territorial sea, contiguous zone, exclusive economic zones, fishing zones, continental shelf, sea bottom areas situated beyond the limits of the continental shelf, and high seas. But legal status of the Arctic seawaters has a number of specific features both as regards territorial limits of the international legal regime, and its very essence. Some specifics are due to the inaccessibility and vulnerability of these areas, and are typical of all expanses north of the polar circle, regardless of which state they belong to. This imposes on all states the responsibility for protecting the ecosystems and natural resources. At the same time these states should possess several important legal advantages, as regards regulation of access by users, including foreigners, and also as regards all-embracing control over all types of activities carried out here. Security considerations also play a role. Secondly, such specifics are characteristic of the Arctic due to the subordination of each specific water area to certain individual polar countries. States may realize their legal power not only according to international law, but also taking into consideration traditions fonued in the process of developing territories, and on the basis of domestic law.

In considering the legal status of the sea areas adjacent to the Arctic coast of Russia, it should be noted, firstly, that the Arctic seas washing Russia include the Barents Sea, Kara Sea, Laptev Sea, East Siberian Sea, Chukchi Sea. Second, there are areas here that differ in terms of legal classification as determined by the provisions of UNCLOS, ratified by Russia on 12 March 1997.

Third, the regime of the areas adjacent to the coast of Russia areas and their limits is also determined by the Law "On the State Border of the Russian Federation" of 1 April 1993; the Law "On the Continental Shelf of the Russian Federation of 7 December 1995", and the "List of Geographical Coordinates of the Points Determining the Baselines Position for Measuring the Breadth of the Territorial Waters, Economic Zone and Continental Shelf of the USSR" adopted by the Decree of the USSR Council of Ministers on 7 February 1984 and 15 January 1985, the Law "On the Internal Sea Waters, Territorial Sea and Contiguous Zone", of 31 July 1998, and the Law "On the Exclusive Economic Zone of the Russian Federation" of 17 December 1998.

Russia's internal waters adjacent to its northern coast, include the waters of the White Sea, Cheshskaya and Baidaratskaya bays, as well as the waters of straits either separating the mainland from the islands Novaya Zemlya, Kolguev, Vaygach, Severnya Zemlya, Anzhu, Liakhovskiye and smaller islands, or separating these islands (lands or archipelagos) from one another. The USA has protested against Russian rights to the straits. Otherwise, Russia's internal waters in the Arctic generally include the waters of all bays and gulfs, the entrance into which does not exceed 24 nautical miles. The status of the internal seawaters is fully determined by the sovereignty of the Russian Federation which establishes rules regulating the access of foreign warships and naval vessels to these waters, the procedures of navigation and other aspects related to their presence in the internal seawaters of the Russian Federation.

The practices of other Arctic states, e.g. Norway, play an important role when considering the status of straits in the Russian Arctic. The status of straits, including the navigable way Indreleie, is analogous with the legal regime of that country's internal waters. In other words, they all fall under its jurisdiction, although Norway does permit foreign merchant vessels and warships to navigate them, with the exception of restricted areas. The grounds for establishing the regime of internal waters in these straits is that they are separated from external sea expanses by the lines -from which the breadth of the territorial sea is measured of. The Northwest Passage runs along the straits, of the Canadian Arctic archipelago and connects the Baffin and Beaufort Seas. It is overlapped by straight baselines and lies within Canadian internal waters. Since 1 January 1986 Canada has introduced the regime of internal waters for the straits forming the Northwest Passage, by establishing, through a special legislative act, baselines embracing the entire Canadian Archipelago around its perimeter and measuring off the Canadian territorial sea and exclusive economic zone. Foreign vessels are allowed to navigate these straits on the condition that they observe the Canadian legislation against sea pollution from vessels. The USA and the European Union have protested this, although the USA requires its commercial vessels to comply with the Canadian regime.

One of the specific features of the Arctic seawaters is the Arctic ice regime. According to recent thinking within the law of the sea, the solid state of water -ice -does not predetermine the spatial limits of extending sovereignty, sovereign rights and jurisdiction of states whose coastal waters are ice-covered most of the year. But it affects human activities and is taken into consideration when formulating legal regime regulating such activities. Fast ice -immobile ice infringing the coasts of freezing seas -is considered a sort of continuation of the land territory of a coastal state and thus does not affect the position of baselines. Zemlya Bunge (Bunge Land), which is a glacier, with Russian base point number 349 established on ice, is not without controversy, however. This represents the northern end of the baseline enclosing the eastern side of the Sannikov Strait.

Contemporary law of the sea does not answer the question of whether the presence of artificially constructed ice berths affect the delimitation of the territorial sea. It all depends on whether they can be considered as "permanent harbour works", in which case they would constitute an integral part of the harbour system and would fall under Article 11 of the UN Convention. The freeze-built foundations for constructions of various sorts do fall under the definition of "artificial islands, structures". They are not to possess island status; but in regard to the personnel and equipment, the exclusive jurisdiction of the coastal state shall be applied. The same is expected to apply with regard to polar stations.

The regime of ice-covered areas is determined by the regime of waters lying under them. Ice itself can demonstrate properties of a physical nature, and may have legal nature characteristic of dry land. The right of innocent passage through ice-covered areas is recognized in regard to vessels, but is not recognized if transit is performed over the surface of ice using other means of locomotion. In the latter case, the procedure of passage is regulated by Russian law -the Law on the State Border of the Russian Federation of 1993 and several other normative acts. Issues relating to safety of navigation in ice are specifically regulated by the provisions of the 1993 "General Rules of Navigation and Anchorage of Vessels at Sea Ports of the Russian Federation and on Approaches to Them", and also by the 1991 "Regulations for Navigation on the Seaways of the Northern Sea Route".

The breadth of Russia's territorial sea and exclusive economic zone is measured from the baselines in compliance with the 1982 Convention, as well as with the pieces of legislative mentioned above, and other nomative acts. This system of baselines is universal and applicable in equal degree in any part of the World Ocean. UNCLOS does not contain provisions concerning the principles of delimitation of sea areas which would specifically apply to the Arctic

region. The system of establishing baselines forms the basis of legislative acts of all Arctic states.

The breadth of Russia's territorial sea is 12 nautical miles. The Russian Federation is obiged to observe the right of innocent passage by foreign vessels, as confirmed in the Convention for Vessels of all States.

The Law "On the Exclusive Economic Zone of the Russian Federation" of 1998 announced the establishment of a 200-mile zone, within which competent bodies have the right to institute, concerning areas within the purview of Article 234 of the Convention, special compulsory measures aimed at preventing marine pollution from vessels. Article 234 endows coastal states with jurisdiction for the purpose of protecting and preserving the marine environment from pollution in the exclusive economic zone: "Coastal States have the right to adopt and enforce non-discriminatory laws and regulations for the prevention, reduction and control of marine pollution from vessels in ice-covered areas within the limits of the exclusive economic zone, where particularly severe climatic conditions and the presence of ice covering such areas for most of the year create obstructions or exceptional hazards to navigation, and pollution of the marine environment could cause major harm to or irreversible disturbance of the ecological balance."

In other words, such laws, adopted in respect of specific areas, may be more stringent than those adopted on the international level -not only in respect of discharges and navigation practices, but also concerning all other matters, including design, construction, manning and equipment of vessels.

It is on the basis of Article 234 that the "Regulations for Navigation on the Seaways of the Northern Sea Route", effective since 1991, have been elaborated and applied.

At present access to the NSR is regulated by the "Regulations for Navigation on the Seaways of the Northern Sea Route " adopted by the USSR Ministry of Merchant Marine on 14 September 1990 and effective as of 1 July 1991. A second version of the Regulations is currently being prepared, for adoption on a high level by the Government of Russia.

Under that document, access to the NSR is open to vessels of any nationality on a non-discriminatory basis. However, several conditions must be observed:

1. To navigate the NSR a vessel shall satisfy special technical and operational requirements, while the Master or the person that performs his duties shall be experienced in operating the vessel in ice. In case where those persons have no such experience, the Administration may assign a State Pilot to the vessel to assist in leading the vessel.

2. One of the requirements for admitting a vessel to navigate the NSR is the availability aboard her of a certificate of due financial security with respect to the civil liability of the Owner for damage inflicted by polluting marine environment.

3. The Owner or Master of a vessel intending to navigate through the NSR seaways shall submit to the Administration a notification and request for leading in compliance with the form and time stated in the: Guide to Navigation through the Northern Sea Route. These documents considered, the submitter shall be informed of the possibility of leading and other circumstances to be taken into account. These requirements, while supported by Canadian Arctic practice, are not completely supported by US Arctic practice that hardly might be approved from the legal point of view.

4. Entry is performed under the control of the special Russian navigational services - the Marine Operations Headquarters acting of the basis of the Murmansk and Far East Shipping Companies and subordinately connected with the NSR Administration.

These requirements are linked with the regime of responsibility and compensation for pollution, provided for by the 1969 International Convention on Civil Liability for Damages inflicted by Oil Pollution and the 1971 International Convention on the Establishment of the Fund for the Compensation of Damages Inflicted by Oil Pollution (Russia is a party to both Conventions). This regime of liability has been established even though the spatial scope of these Conventions is restricted by limits of the territorial sea.

The leading of vessels through the NSR is performed during the navigational period, the beginning of which is determined by the Administration and Marine Operations Headquarters with due consideration for forecast and existing ice, navigational, weather and other conditions. A vessel that has been admitted for leading is to follow the seaway assigned her, keeping to the routes recommended by the Marine Operations Headquarters. The Master of the vessel must carry out orders from the Marine Operations Headquarters.

In cases where an obvious necessity of environmental protection or of safe navigation so dictates, the Administration or Marine Operations Headquarters may suspend navigation of vessels on specific parts of the NSR, for as long as such circumstances exist. A vessel violating the provisions of the Regulations may be ordered to leave the Route.

The Administration and the Marine Operations Headquarters shall not be liable for damage inflicted on a vessel or on property located aboard her by leading in ice conditions, unless it is proved that they bear guilt for the damage inflicted.

In addition to the existing requirements concerning reports on pollution of the marine environment, the Master of a vessel navigating the Northern Sea Route is obliged to inform an Administration Representative promptly of any fact of pollutant discharge, as effected by that vessel or detected thereby.

OVERVIEW - IMPLICATIONS OF GATS/E.U. LAW FOR THE RUSSIAN NORTHERN SEA ROUTE AND RUSSIAN BARENTS SEA

Presented to the ARCOP Workshop
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1. WTO/GATS[1]

Since Russia will presumably become a World Trade Organisation (WTO) Member in the near future, NSR transportation will hence fall under WTO jurisdiction. If States interested in the NSR take part in the shipping annex to General Agreement on Trade in Services (GATS), then all national legislation on participation that relates to ships transporting along the NSR are restricted by WTO provisions.[2] Most NSR shipments between Europe and all points east in Russia will then be included. The presupposition is that Russia, E.U., Norway and other shipping nationals become members of GATS and that Members do not disqualify National Treatment from their scheduled commitments.[3]

Under GATS any shipowner from a GATS Member has a right to provide services to consumers in any of the territories of other Members when operating in any of the Members countries. This includes all manner of transportation from regular steamship liners to spot-market operated or chartered vessels. The NSR transportation provisions must be given close attention in view of the harsh weather conditions and ice-covered waters. One crucial task will be to prevent shipping companies from resorting to sub-standard ships in order to counterbalance any unequal participation rights along the NSR.

Maritime transport services are in principle covered by GATS, but will be fully incorporated as an Annex to the GATS when such is decided by Member States, according to a draft prepared by the Negotiation Group on Maritime Transport Services (NGMTS). From 1st January 1995 and until such decision is made, commitments scheduled by participants on maritime transport services will enter into force on a most-favoured nation basis. The object of GATS is to limit "measures by

[1] The following is obtained from P. Ørebech, *The Participation Rights under the World Trade Organization General Agreement on Trade in Services (GATS): The Case of International Northern Sea Route Shipping Transportation Services*, (Oslo, INSROP Working Paper No. 67, 1996) particularly pp. i-vi, unless noted otherwise.

[2] The exact status and substance of this Annex needs ascertained, since P. Ørebech addressed these issues approximately 6 years ago.

[3] GATS Article XVII:1.

Members affecting trade in services".[4] The focus is on trade in services, not the services as such, in other words, the execution of services. What is protected is the equal right to offer, ask for, negotiate and conclude service contracts. Private international service contracts and public service procurement are included, and there is no limitation on private contracts.

The provision of shipping services is a mixture of several components. The transportation service is comprised of persons, including a broker, owner, charterer, operator, contracting parties, crew, and pilots; of technical equipment, including a ship, gear, and auxiliary components; and of external elements including navigation support from the shore, ports, and ports facilities. Shipping transportation sales is comprised of an offer of a "total package" that includes all service components. Consequently, the service of another Member is defined by the vessels register of that other Member, which includes all vessels flying the flag of that Member or owned by a person residing in that other Member. The notion "other Member" refers to another Member than that establishing the measures affecting the trade. This other Member is the subject of the legal protection provided by the GATS provisions. The following implications are evident.

National arrangements that apply only to transiting ships as is the case with Russia, would no longer be valid. This would include special taxes and charges specified by GATS provisions on National Treatment.[5]

The right to conduct trade in services under GATS means to supply a service when situated in one Member State from the territory of that or of any other Member State into the territory of a third Member State or to supply a service in the territory of one Member State to the benefit of consumers in any other Member State. It is presumed that every ship registered under the laws of a GATS Member enjoys the right of equal "conditions of competition" in the territory of any other GATS Member.

GATS "Members" are States or International Organisations.[6] The Member entitled to protection under the GATS provisions depends upon which private legal subjects are offended. Are service suppliers and service consumers among the legal subjects that fall under the legal rights provided by GATS? Whether service-consuming Members are entitled to GATS protection is a question of the origin of the service at issue. In other words, which Member does the phrase "service…of any other Member" refer to?[7] The text focuses on the service as such, which indicates that a contract is involved. Since trade in services relates to contracts and since contracts represent an *inter partes* relationship, service providers and purchasers must be included. Thus, beneficiary Members are service-supplying or service-consuming Members, or both, depending on which Member is restricting the trade in shipping services. If the importing Member is the Member making restrictions, then the consumer does not enjoy any GATS legal protection.

In some cases, however, persons who are not parties to the service contract do enjoy GATS protection. For example, a shipowner having a third person operating the ship and therefore not being part of the charter-party affected, might invoke GATS protection if the reason for the

[4] GATS Article I:1.

[5] See Section 3 below.

[6] See WTO Agreement Article XI:1 concerning the status of the European Communities according to GATT 1947.

[7] GATS Articles II and XVII.

Member's restrictions is related to the flag of the vessel and has nothing to do with the operator's status or nationality. Flying that particular flag represents a particular disadvantage, which invokes that Member's competence under GATS.

Flying the flag or having membership of a society qualifies the "another Member" status according to GATS legislation.[8] The service delivered by such a ship or such a person has the origin of that Member. A Member may deny the benefits of this Agreement in the case of maritime transport service if it establishes the service either is supplied by a vessel registered under the laws of a non-Member or of a Member to which the denying Member does not apply the WTO Agreement, or by a person which operates and/or uses the vessel in whole or in part but which is of a non-Member or of a Member to which the denying Member does not apply the WTO Agreement.[9] This reservation says a Member, even though the ship is flying the flag of another Member, can deny that Member the benefits under GATS if a ship of that Member is operated and/or used in whole or in part by a person who is a habitant of a non-Member. The same applies if the ship is flying the flag of a non-Member, even though the operator or user is the habitant of another Member.

What is the implication of enjoying legal protection under GATS? To answer this, the benefits which GATS Members acquire must be examined, with special regard to shipping service and treatment-no-less-favourable to the like service and service suppliers. The question is which kind of service is protected under Most-Favoured-Nation (MFN) Treatment and National Treatment?[10] The obligation is to accord treatment-no-less-favourable "to services and service suppliers." The intention of the GATS provisions is to make it possible for entities, companies, and other of a GATS Member to buy shipping services from a shipping firm of any Member. National legislation which provides special credit facilities to some categories of service suppliers for the purchase of domestic shipping service might be inconsistent with the obligations of that Member under these provisions.

The implementation of GATS means that a specific charter-party is accorded treatment-no-less-favourable. A Member cannot offset unfavourable treatment in one area by more favourable elements of treatment elsewhere. The provision must be oriented towards the product, in other words, the trade in services, for instance a charter-party. All kinds of mandatory restrictions, regulations, taxes and public legislation are included, even such provisions which are not intended to discriminate against foreign services. Russian Special Russian taxes for ships transiting the NSR, which do not represent due payment for harbour services, are contrary to these provisions.

If a bilateral arrangement establishes domestic measures in favour of a special shipping service conducted by one of the bilateral contracting parties (party A) within the other's (party B) domestic market, it might be argued that such a commitment is an indication of an intent by party B to favour imports from party A. This is only the case if there is evidence of companies from other countries being prevented from establishing themselves in the market of party B on the same terms as party A.

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[8] See the notion of "by a person of that other Member".

[9] GATS Article XXVII(b).

[10] Respectively GATS Articles II and XVII.

Import fees must be proportional to the cost of services rendered. According to the drafting history and subsequent practise, the notion "service rendered" means consular fees, customs fees and statistical fees.[11] As consular fees are related to immigration or work permits, such consular service is not provided for trade in shipping services because crews are not considered as immigrants. If the transport service is passenger transportation, the cost of passenger customs processing must not be taken into account when evaluating the cost of shipping transportation as such. Neither is that Member entitled to include passenger customs costs when evaluating the cost of service rendered for handling goods through customs.

If the operation of shipping services is subject to internal national taxes, because of various kinds of services provided by port authorities, then such taxes may also be levied on foreign service suppliers if they use the same coastal auxiliary services, or at least if they are dependent upon the preparedness of coastal services (the *de minimis* costs).[12] The tax rate should be fixed in relation to the kind of services required and the length of time they are employed, and not in relation to the value of the service afforded.

When do charges imposed on the internal handling of shipping transportation have to be subsumed as internal taxes? Such taxation measures must be justified.[13] The distinguishing factor is whether the charge imposed on such services is *collected internally*. Collection of charges at the border by customs authorities, port authorities or other might be justified under the National Treatment provision. If the charge affects the internal sale of the shipping , then the charge is to be subsumed under the National Treatment standard regardless of its point of collection.[14] Charges collected during transportation or when in harbour are internal and are consequently subject to justification under the National Treatment clause.

If the operation of shipping services is subject to internal national taxes because of standby facilities such as an ice-breaker escort, weather forecast or navigational aids from port authorities, then such taxes may also be levied on foreign service suppliers if they use the same coastal auxiliary services, or at least if they are dependent upon coastal services being on constant standby.

How should fees be calculated? The tax rate should be fixed in relation to the kind of services required and the length of time they are employed, and not in relation to the value of the service afforded. For instance, if in the case of pure transit operations, no port of call is part of the service offered according to the charter-party, then no handling by a Port Authority is required and consequently no Port Authority taxes should be imposed on the services in action.

If a tax is imposed on shipping services because of the risk of oil pollution, due to for example a substandard hull, then such a tax cannot be imposed on foreign transportation of merchandises other than oil, or if a cargo of oil is carried in a high standard ship with a double hull.

New national legislation establishing, for instance, a charge for the administrative handling of foreign shipping transportation through the coastal waters of a Member must be published

[11] GATS Article II:2(c) and Article VIII:1(a).

[12] The Member is competent to impose internal national taxes under GATS Article VI.

[13] GATS Article VII.

[14] GATS Article XVII.

promptly in accordance with GATS requirements on transparency.[15] Once informed, the other Members can respond quickly and challenge the new legislation before a WTO Panel.

A quantitative restriction applied should, according to the MFN principle, not discriminate against shipping services proved by certain, and not other, Members. As regards the National Treatment principle, detailed rules apply.[16]

Special requirements including that foreign shipping services must follow other routes than domestic shipping and call at certain checkpoints, cannot apply, as these measures bring about a disadvantage to foreign shipping industries. The grounds for such unequal treatment are of no significance. It may be maintained, for example, an independent source of records was necessary because the authorities did not have access to the out-of-State producers' shipping records with which to verify information provided by in-State agents on the transportation at issue.

In general, any measure must be justified under the treatment-no-less favourable clause. A quantitative or other restriction applied should therefore not discriminate against shipping services provided by certain, and not other, Members.

The treatment-no-less-favourable obligation relates to those services suppliers and services known as "like services". In the case of shipping, only shipping services qualify as "like services". If everything applicable to "like products" is considered also applicable to "like service and service suppliers", with particular emphasis on shipping services, then the methods of transportation in question must be more or less the same kind of transport service. The merchandise being transported must also be of the same kind. For instance, a shipment of oil and transportation of cars are not "like services". Cargo shipping and bulk transportation of a chemical or liquid are by no means "like services". The problem, therefore, is whether the services qualify as "like" services without regard to the transportation method involved, for example general goods transportation or container transportation.

One important factor of interpretation could be Member practice. Panels have laid emphasis on products that are to be regarded as "like" among all Members. Member practice with respect to the classification of services, for instance in relation to fees, charges or taxes, may be an important variable. Another vital factor is the properties of the transportation, for example, freight transport by special refrigerator vessels and not by ordinary bulk-carriers or cargo ships. A third factor is interchangeability, the possibility of choosing alternative transportation. Since different kinds of transportation can be easily substituted, they ought all to be regarded as "like services".

On this point, justification may be difficult. By analogy to "like products" practices, even more methods of transportation might qualify as "like services"; tramp-ships and passenger ferries that are also transporting goods might be considered a "like service" as regards the goods transportation. Another possible variable is whether the ship is operating on the spot-market or fixed routes as a regular steamship liner. As long as the merchandise transported is the same kind of goods, slight differences in transportation method may be of minor significance with respect to "like services" classification.

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[15] GATS Article III.

[16] GATS Article XVI.

On the other hand, an identical type of ship or technical shipping equipment is not sufficient reason to be classified a "like service" and thereby bring the principle of treatment-no-less-favourable into consideration. The "product" under consideration is the trade in shipping service, not the ship as such.

To see the more specific implications for NSR transportation, various illustrations of real situations would be appropriate. The transportation is presumed to come under GATS jurisdiction if transportation is made by a vessel flying the flag of any of the GATS Members, or by a person of any GATS Member which supplies the service through the operation of a vessel and/or its use in whole or in part. For example, if the shipowner is Norwegian and the ship is flying the Cypriot flag, chartered by a firm in New York, operated from Gdansk, and the provider is a chemical industry in Leyden and the receiver is a wholesaler in Archangel, then it may be asked which Member enjoys GATS protection? Is it the Member of the beneficiary, or the Member of the provider of a service? The limits and implications will be illustrated by using examples.

Since charges of any kind qualify as "measures" under the GATS, handling or processing fees for transportation services must be limited to an amount not exceeding the approximate cost of service rendered. According to the drafting history and subsequent practice, the notion "service rendered" means consular fees, customs fees and statistical fees.
The notion is purely legal and has nothing to do with service in an economic sense. Domestic "service" imposed on imported merchandise or service has to be of at least one of the kinds of aforementioned fees.

Different kinds of charges could, by analogy to General Agreement on Tariffs and Trade (GATT),[17] not exceed the handling cost of the transportation in question, for example expenses for guiding ships through an ice-covered stretch of the NSR. If the foreign service suppler transports along a short stretch of the entire NSR, then the taxes imposed must be balanced in relation to the service supplier's use of the NSR. The charge should not be related to the value of the service, but to the value of the auxiliary coastal services involved in the shipping–trade services, as defined by the charter-party.

Turning to the question of which Member is competent to invoke GATS provision, the situation differs from case to case. If the Leyden chemical industry is transporting on its own keel along the NSR to Archangel, and the vessel is registered under E.U.ROS (European Register of Ships) or the Dutch register, then the Leyden industry is the supplier of the transport service. If Russia make restrictions affecting that trade, then the European Community or the Netherlands qualify, under the status of service supplier, as "another Member" and may consequently bring the case before the WTO for conciliation.

If the Leyden industry buys the transportation services, due to a Cost Insurance Freight (CIF) Contract between Leyden and Archangel, from a U.S. charterer, then the United States is the service-supplying Member, whose status becomes that of "another Member" in relation to the Norwegian or Russian measures restricting the Dutch chemical industry's access to the NSR. If the Gdansk operator is in charge, then Poland is the Member that enjoys the legal interest.

[17] GATT Article VIII:1(a).

A third case relates to transportation by regular steamship lines. The Leyden industry buys freight, the CIF situation again, and not time-chartered vessels. The contracting parties are, for instance, an American broker who has bought loading capacity from a Polish operator, and the producer of the chemicals. The Russian restrictions affect the service of the American broker, a situation which renders the United Sates a beneficiary under the GATS. The Polish operator is not part of the charter-party but, since that operator is running a regular steamship line, the restrictions affect the Polish enterprise capabilities in such a way as to invoke Polish competence under the GATS.

If the regulation affects this particular shipping service because the vessel is flying the Cypriot flag, then the Cypriot registry is at a particular disadvantage, which invokes Cypriot competency under the GATS.

2. E.U. Safety and Competition Law[18]

The European Community or European Union (E.U.), is ambitiously pursuing the goal of bringing substandard ships out of business, including through the "Action Programme" which is promoting such efforts.[19] The emerging Common Community Policy on Safe Seas reflects what is at stake, vitalising the efforts to eliminate substandard ships. This rather strong position on safety is promoting equal rights within shipping industries, and transportation along the southern and northern sea routes.

The issues include what are the safety requirements applicable to ships flying the flag of non-Member States when docking in an E.U. or European Economic Area (E.E.A.)[20] Member State harbour. The main issue is to analyse whether Community law addresses Member States so as to unify domestic legislation in relation to third State ships, including substandard ships and those arriving from the NSR, when docking in an E.U. or E.E.A. harbour. In which way does Community law, by unifying port State legislation, contribute to the elimination of "ports of convenience"? Is Community law the "light at the end of the tunnel", the only possible instrument capable of preventing substandard ships from taking charter-parties to and from any of the E.U. or E.E.A. harbours, including ships sailing along the NSR?

The main purpose is to investigate the Community port State legal situation, including legislation as well as enforcement, with special emphasis on classes of legal persons affected. Of course other provisions, domestic and international law, are relevant as well, but will be dealt with only peripherally here.

As seen WTO/GATS and E.U. competition law are relevant in relation to equal participation rights and NSR transport. The connection between competition and safety is unmistakable, since unequal technical and safety requirements create unequal conditions of competition. According to

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[18] The following is obtained from P. Ørebech, *The Northern Sea Route. Conditions for Sailing according to European Community Legislation – with Special Emphasis on Port State Jurisdiction*, (Oslo, INSROP Working Paper No. 20, 1995) particularly pp. iii-v, unless noted otherwise.

[19] See Communication from the Commission – A Common Policy on Safe Seas. February 1993.

[20] E.E.A. Agreement of 2nd May 1992.

WTO/GATS and E.U. competition law, equal rights are offered to treaty Member States complying with basic legal claims.

The Community environmental and safety legislation is not directed towards vessels when navigating the NSR. The importance of Community law is through the implementation governing all vessels when docking in an E.U. or E.E.A. harbour, including ships arriving from the NSR. E.U. or E.E.A. port States may, under the 1982 Law of the Sea Convention (LOSC) Article 218(1), according to Community Law, be made responsible for undertaking investigations and institute proceedings in respect of any discharge occurring on the NSR, in violation of applicable international rules and standards, from a vessel voluntarily within the port of the enforcing State. The Community is free to direct member States in any aspect within this framework legislation including surveillance and enforcement. Thus, Community law applies circuitously to all third State vessels, including vessels navigating the NSR, and this includes the technical standard of ships, manning, the handling of goods, waste, equipment, and other the transportation requirements. By this reason and because of its very huge geographical area, which include most waters from the Dardanelles strait to the Norwegian –Russian border, the Community port State position is a strong one.

The underlying concept is that all vessels, ships of non treaty States as well, competing for charter parties to and from the "inner market" of European Community including along the NSR, must adhere at least to generally accepted rules and standards and in various instances to advanced, unilateral Community port State standards. The unique Community position is made possible by this large geographical scope, and by the potential of making compulsory approximate or harmonised legal solutions in all member States in order to avoid "ports of convenience". All ships, sub-standard ships as well, destined for any E.U. or E.E.A. harbour must fulfil the Community's safety requirements.

Since the Community enjoys substantial legislative power over Member States as well as transiting and docking ships with regard to standards including equipment, manning, handling and technical requirements, and limitations under LOSC Article 21(2) are related to ships under innocent passage, advanced unilateral Community provision might, in strict legal terms, be implemented, vis-à-vis foreign ships when docking in an E.U. or E.E.A. harbour. LOSC Article 21(2), prohibits the ports State to regulate the "design, construction, manning or equipment of foreign ships unless they comply with generally accepted international rules or standards". Similar restrictions are stipulated by the IMO conventions, including chiefly MARPOL73/78 and SOLAS. These provisions however may give rise to ambiguity. "Generally accepted international rules or standards" under Article 21(2) may relate to an extra-legal or non-binding technology-based consensus. Therefore IMO resolutions, codes, recommended practice and guidelines, although not legally binding, may entitle the coastal State to regulate standards related to the hull, technical equipment, engine and other of foreign vessels, when it is in transit enjoying the right of innocent passage.

As regards enforcement competence, Community law does not make any explicit requirements, which means Community Member port States have enforcement and surveillance competence existing within the LOSC framework only. The extent of enforcement is a legal

question. Viewing the potential related to Community law, the law of the sea framework should be analysed.

Wider studies into law of the sea would be beneficial, especially related to the IMO and LOSC frameworks in relation to unilateral Community legislation and enforcement. Having made this more clear, the Community might evaluate different options, either the IMO tradition of implementing generally accepted international rules and standards only, or a more U.S. approach, which establishes unilateral requirements exceeding the average of IMO standards. In ARCOPS these issues are carried out rather peripherally but to the extent possible due to the scope indicated.

3. Russian Arctic Fees – An Example

With the relevant WTO/GATS and EU provisions outlined, a summary of the issue of NSR navigation fees in the Russian Arctic will be briefly addressed as an example. Note that these probably do not govern Russian waters in the Barents Sea.

Under LOSC Article 234 coastal States have the obligation to adopt and enforce non discriminatory environmental provisions. The main thrust of the Russian provisions is based upon environmental protection and safety, thereby seemingly implying that *all* vessels including Russian are encompassed. The principles are Stated under Article 2 of the 1990 Rules[21] to be to regulate navigation free from discrimination for navigational safety and to prevent, reduce and control marine pollution caused by the presence of ice. All vessels including State regardless of nationality are subject under Articles 1.4. and 2, and the implication of the supporting legislation is the same.

However concerning 'fees for services rendered', set forth in Article 8.4. of the 1990 Rules, there may be questionable compliance with the requirement of non discrimination. Article 8.4. requires vessels navigating the NSR to pay for services rendered by the Marine Operation Headquarters (MOH) and the Northern Sea Route Administration (NSRA) in accordance with the adopted rates. Apart from the question of non discrimination the issue remains whether fees themselves fall outside the scope of 'due regard to navigation' under Article 234. In application it seems improbable that the current Russian fee rate, of $4 to $12 per ton depending upon size, is required of the Russian vessels.[22]

This raises the issue whether non discrimination is meant only to be *among* foreign vessels of different nationalities, or also *between* foreign vessels and Russian vessels. The better view appears to be upon analysis that related to Article 234, both Russian and foreign vessels are probably encompassed, especially since that is what seems stated explicitly in the 1990 Rules.[23]

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[21] 'Regulations for Navigation on the Seaways of the Northern Sea Route', in accordance with the U.S.S.R. Council of Ministers Decision No. 565 of 1 June 1990 and approved by the U.S.S.R. Minister of Merchant Marine, 14 September 1990 (1990 Rules). Russian text published in *Izveshcheniya Moreplavatelyam* (Notices to Mariners), No. 29, 18 June 1991; English translation published in *Guide to Navigating Through the Northern Sea Route* (St. Petersburg: Head Department of Navigation and Oceanography, Russian Ministry of Defence, 1996), pp. 81–4.

[22] This is substantiated by T. Ramsland, 'Interview', 20 May 1996. T. Ramsland was the Norwegian co-ordinator for International Northern Sea Route Programme (INSROP) Sub-programme III, Economic Aspects, and was Lt. Cmdr. in the Norwegian Navy and Research Fellow at the Norwegian School of Business and Sociology, Bergen.

[23] See R. D. Brubaker, *Environmental Protection of Arctic Waters – Specific Focus the Russian Northern Sea Route*, (forthcoming, Kluwer Law International, Series - International Straits of the World, The Hague), pp. 69 and 121, 124.

Thus, the fees, if justified under Article 234, must apply to all vessels, and the probable Russian practice on this point is contrary.

It is difficult to examine specific Arctic State practice on this issue which may be contrary, since it is only Russia which appears to have a blanket fee structure. Passage rights under both the Canadian and the U.S. legislation are not dependent upon the payment of fees.[24] The Russian authorities indicate a possible relaxation under Articles 8.1.–.3. of the 1990 Rules of initial 'control of navigation', if the vessels and captains are familiar, however the issue of fees has not been mentioned.[25]

4. Conclusions

Related to the WTO/GATS and EU provisions noted, there is obvious harmonisation required of the Russian NSR navigation fees under the principles of treatment-no-less favourable and national treatment. Further, mandatory restrictions, regulations, taxes, fees and public legislation are required harmonised under the principles noted. As part of this they must be published promptly in accordance with GATS requirements on transparency. Otherwise, once informed, other Members may respond quickly and challenge Russian measures before a WTO Panel. The same may be maintained as related to any unequal technical and safety requirements which create unequal conditions of competition. Harmonisation must be affected towards Community norms relating to the technical standard of ships, manning, the handling of goods, waste, equipment, and other the transportation requirements, in ports.

From the above it is thus necessary that any mandatory restrictions, regulations, taxes, fees and public legislation related to access to the Russian Barents Sea and the NSR be made known. This applies as well to Russian norms related to the technical standard of ships, manning, the handling of goods, waste, equipment, and other the transportation requirements, related to Community ports.

[24] See Y. Ivanov, A. Ushakov and A. Yakovlev, 'Russian Administration of the Northern Sea Route – Central or Regional?', *INSROP Working Paper* No. 106, (1998), IV.2.5.', 19-20.

[25] A. Ushakov, 'Interview', 24 February 1994, Moscow. A. Ushakov is Deputy Director of the NSRA. Flag State was not indicated to play any role.

NEW ICE RULES ISSUED BY THE RUSSIAN MARITIME REGISTER OF SHIPPING

Vladimir I. Evenko, Russian Maritime Register

АННОТАЦИЯ

Рассматриваются концептуальные положения новых Ледовых Правил Российского Регистра. Описывается положенный в их основу единый методологический подход к построению ледовой классификации и требований к ледовой прочности. Обосновываются критерии и методы оценки прочности конструкций ледовых усилений, учитывающие резервы пластического деформирования материала. Рассматриваются процедура регламентации уровней прочности ледовых категорий и способ количественного описания допустимых условий плавания судов во льдах на основе систем базовых и допустимых режимов движения судов во льдах. Представляются соотношения эквивалентности между новой классификацией и существующими классификационными системами.

ABSTRACT

Conceptual aspects of the new Ice Rules of Russian Register are considered. A unified basic methodological approach to generation of the ice classification and the requirements to the ice strength is described. Criteria and methods for assessing the ice strengthening structure strength with allowance for material plastic deforming reserves are validated. A procedure for regulating the ice category strength levels and a method for quantitative description of the permissible conditions for ship ice operation are considered in terms of the systems of base and permissible service conditions in ice. Relationships of equivalency between the new classification and the existing classification systems are presented.

1. INTRODUCTION

The Rules of the Russian Maritime Register of Shipping (RMPS) issued in 1999 [1] (Rules'99), contain the new ice classification, the remade completely requirements to the ice strengthening structures of ice-going ships and icebreakers, as well as the refined requirements to the minimal power of ice-going ships. In the aggregate the set of the enumerated issues of the Rules'99 will be further called as the Ice Rules'99.

The Ice Rules'99 have replaced the previous edition of the Ice Rules, first included in the Rules RMRS issued in 1981, and later with some modifications included in the Rules issued in 1985, 1990 and 1995 [2].

The main statements of the Ice Rules'99 are considered below.

2. MAIN DIRECTIONS FOR ICE RULES DEVELOPMENT

The Ice Rules'81 – 95 played a positive role in creation of Russian Arctic fleet. However, generalization of the experience of ice-going ships and icebreakers service for eighties-nineties have permitted to conclude the following:

(i) Transfer to the extended, up to all-the-year-round navigation in Arctic, as well as increase of speeds of ship pilotage by more powerful modern icebreakers were accompanied by essential (by 2 – 3 times) increase of the damage level. Under such conditions the requirements to exclude completely ice damage in the form of permanent plastic deformations are practically

unrealizable even for icebreakers of the higher categories. Therefore, prescription of an adequate strength level for the damaged hull areas, redistribution, but not uniform “smearing”, of the material between different elements of the ice strengthening structures is possible only basing on approaches which take into account the reserves of material plastic deforming and actual shapes of ice damage at the level of analytic models and strength criteria. However, the Rules’81 – 95 were based on criteria and methods considering material work only in the elastic area.

(ii) When the Arctic navigation is extended, the probability of ship falling under above-standard (impermissible) ice conditions increases largely. Therefore, provision with the information on permissible operation areas, navigation period and service conditions in ice for the stage of selection of the required ice category for a designed ship is very important. However, the Rules’81-95 contain only approximate qualitative description of the permissible service conditions for the only summer-fall period.

(iii) Extending the periods and areas of Russian Arctic fleet operation has resulted in the necessity to develop the ice classification upward since as the strength level for ice category ULA, the highest one in the Rules’81-95, did not ensure the safe service in the East sector of the Northern Sea Route under extended navigation. On the other hand, the expediency to reconcile more clearly the lower ice categories L4 – L1 with the ice classes of the Finish-Sweden Rules [3] (FSR hereinafter) arises since as the majority of the classification societies, members of IACS, have adopted the FSR ice classes in their Rules. At last, the level of the requirements to the medium ice categories, presented by one category UL in the Rules’81-95, should be refined in view of the needs of the extended navigation in Arctic.

The stated conclusions have determined the following main tasks for Ice Rules perfection.

(i) Transfer to the criteria and methods for strength assessment with allowance for the material plastic deforming reserves for the ice strengthening structures and the actual ice damage forms.

(ii) Inclusion in the ice classification of quantitative information on permissible ice service conditions ensuring the possibility of the validated selection of the required ice category for the early stage of ship design.

(iii) Extension of the list and refinement of the ice category levels in compliance with the increased needs of the Arctic operation under extended navigation conditions, as well as in view of the experience accumulated in the Rules of the leading classification societies.

3. THE CONCEPT OF THE ICE RULES’99

The Ice Rules’81-95 were grounded on a conventional approach to ice classification generation and ice strength regulation. The characteristic of the permissible operational conditions presented in the ice classification was of a very unspecific descriptive character and was not connected directly with the prescribed strength levels for the ice categories.

The formulated in section 2 directions for Ice Rules perfection have predetermined the necessity of developing a new concept utilizing a unified methodological approach to ice classification generation and ice strength levels regulation [4]. Since as the new ice classification should incorporate quantitative description of the permissible ice service conditions for the ice categories declared in it, the hull ice strength level should ensure a possibility of safe operation for the ship under the specified conditions. Therefore, a direct quantitative function should exist between the strength level for the ice strengthening structures required for a certain ice category and the permissible ice service conditions. The basic principles of the new Ice Rules concept follow from the above mentioned requirement:

(i) Ice category is considered as a guarantee for ship safety under the specified permissible ice service conditions (the principle of safety guarantee).

(ii) The permissible ice service conditions within each ice category are equal for all ships independently of their types and dimensions (the principle of the unified safety standard).
Naturally that when the Ice Rules are generated basing on these principles, the responsibilities of the accepted standardized solutions increase, and the transfer from some conventional models to more validated analytic models is required.

4. CRITERIA AND METHODS FOR ASSESSMENT OF ICE STRENGTHENING STRUCTURE STRENGTH

4.1. The analysis of the ice damage data performed in [5, 6] has permitted to conclude the following:

(i) Strength reserves for the ice strengthening structures should provide absence of global damage and mass damage: vast areas with shell plating corrugation, long indents propagating more than in 6-8 main framing spaces. Occurrence of single damage up to 3-4 spaces long with a realization probability (i.e. the ratio of the damaged structural element number to their total number for the standard lifetime) about 7% should be considered as normal service practice.

(ii) The level of the Ice Rules'81-95 requirements to the ice strengthening structure strength satisfies the formulated above statement on average. Considerable (in comparison with the cited value 7%) decrease of the realization probability for single damage is due to unjustified hull charging [5].

(iii) The requirement to remove mass and global damage in the ice strengthening structures governs consideration of their realization as the main refusal type. Since as this damage propagating over large areas is on average characterized by relatively small permanent sets, the structure dangerous state directly preceding the beginning of deflection plastic components intensive growth, corresponds to the refusal connected to this damage. For relatively stiff ice strengthening structures the described within the ultimate balance theory (UBT) structure transition into the ultimate state corresponds to this dangerous state quite soundly. The ultimate load value resulting in the structure ultimate state is an integral characteristic of its strength.

iv) The analysis of load reoccurrence and permanent plastic set accumulation influence has shown that ice damage occurrence should be considered as a result of a single action of a load exceeding the ultimate one [5].

4.2. The stated considerations permit to accept the ultimate state in the ice strengthening structures under single loading as a dangerous state.

Then the ultimate strength criterion corresponding to this dangerous state can be formulated as follows: the design ice load should not exceed the structure ultimate load.

Traditionally the design ice load in the Ice Rules is characterized by the following two parameters:

p = the ice load intensity (pressure) in the contact area with the ice;
b = the load distribution height.

Then the mathematical formulation of the ultimate strength criterion will be written as follows:

$$p < p_o(b; \tilde{E}), \qquad (1)$$

where $\tilde{E}$ = the vector of the ice strengthening structure dimensions;
p_o = the ultimate load intensity defined by UBT methods.

Practical use of (1) supposes development of methods providing for solution of the inverse problem, i.e. designing ice strengthening structures for the specified design load by the ultimate strength criterion

$$\tilde{E} = \tilde{E}(p_o; b) \qquad (2)$$

In the UBT invariance of the structure shape up to its transformation into the plastic mechanism is postulated. Satisfaction of this postulate is connected with the necessity to provide certain strength margins for compressed structure elements. In this connection system (2), regulating the requirements to the strength is complemented by corresponding requirements to structure stability

$$\tilde{E} = \tilde{E}^*(p_o; b) \qquad (3)$$

where $\tilde{E}^*$ = the vector of ice strengthening structure dimensions regulated by the stability requirements.

The methods for generating the solutions of (1)-(3), explained in details in [6,7], should consider the following features of ice strengthening structure work.

The increased stiffness of the structure frame elements and the load locality require to take into account the shear forces influence resulting in nonlinearity of the interaction diagrams in plastic hinges when the ultimate state is described. The bending-shear character of the frame ultimate state determines description of the cross section ultimate balance in view of the finite stiffness of the powerful attached flange as an independent problem. Along with this, is required the generation of analytic models describing bracket joints ultimate state, as well as the frame ultimate state under profile tripping and joint web plate local crushing and bending.

When the shell plating ultimate strength is assessed, consideration of the load localization over the plate field results in the necessity to decline the traditionally used model of beam-strip for a plate with the finite aspect ratio. In the analytic models describing the ultimate state of plate structures adjacent to the shell plating (deck and platform plating, transverse bulkhead plating, etc.) the plate structure supporting influence factor created by the stiff enough shell plating plate or by main frames crossing the plate structure cannot be ignored.

In the Ice Rules'99 analytic relationships for member scantlings definition are proposed in view of all the mentioned above structure features. The validation of the majority of models serving as a basis for the relationships in the Ice Rules'99 is corroborated by FEA in the geometrically and physically nonlinear statement. In comparison with the requirements contained in the Ice Rules'81-95, these relationships give some increase of the frame structures strength in comparison with the shell plating strength that in general promotes decrease of the ice damage amount.

5. DEFINITION OF THE ICE CATEGORY STRENGTH LEVELS AS APPLIED TO THE NEW ICE CLASSIFICATION

The strength levels of the ice categories in the Ice Rules'99 were prescribed basing on the following complex analytic analysis explained in details in [4].

5.1. The standardizing-quantitative base of the new ice classification is established on the ground of the following statements:

(i) The Ice Rules'81-95 reflect the accumulated for the moment experience in designing and service of the Russian Arctic fleet. In general the strength level regulated by them is satisfactory and can be taken as a basis for developing the new Ice Rules.

(ii) The FSR requirements for non-Arctic seas are used by the majority of the classification societies. Therefore, the level of the ice strengthening structure strength of the lower ice categories should be reconciled with the FSR ice classes.

(iii) The Rules of the American Bureau of Shipping (ABS) [8] and of RMRS both are based on the hydrodynamic model of the ship impact against the ice [9], but ABS use a unified classification for ice-going ships and icebreaker. Therefore, their requirements should be taken into account when the ice strengthening structure strength is regulated for the higher ice categories.

5.2. The ice strength design parameters are specified within the principle of the ice strength deterministic increase with ice category growth, as well as of account of ice thickness and strength dependence on its age [10].

5.3. Specially developed software, consisting of the following programs, constitutes the methodological foundation for the ice classification generation:

(i) Programs for ice strengthening structure design basing on the requirements contained in the Rules of the leading classification societies.

(ii) Programs for ice strengthening structure strength analysis permitting to generate ultimate strength curves being a function $p_o(b)$ of ultimate pressure p_o versus the load distribution height b.

(iii) Programs for generation of dangerous ship service conditions in ice $v_o(H)$ (where v_o is the dangerous operation speed, H is ice thickness) by the specified design ice strength parameters and the ultimate strength curve characterizing the hull strength level (in compliance with the algorithm presented in [10]).

5.4. Ice classification generation was carried out on the basis of the numerical analysis, which included the following stages:

(i) A representative ship grid with length variation within limits of 50 – 300 m (icebreaker series is for icebreakers) is formed.

(ii) Ice strengthening structures are designed for ice categories and classes of the considered Rules as applied to the formed ship grid.

(iii) A procedure for account of ice strengthening structure wear and corrosion, unified for all the requirements of different Rules is regulated; structure dimensions ignoring the wear allowances are established.

(iv) Calculations of the ultimate strength curves are executed for all the ship grid, and the bank of the ultimate strength curves is formed for all the examined Rules of the classification societies

$$p_{ki}^{oj} = p_{ki}^{oj}(b) \qquad (4)$$

where j = the index of a classification society by requirements of which the ice strengthening structures are designed (j = 1 – RMRS Rules, j = 2 ABS Rules, j = 3 – Finnish-Sweden Rules);

i = the ice class (category) index in the ice classification of the j-th classification society;

k = is the ship number in the grid (k = 1 at L = 50 m, k = 9 at L = 300 m).

(v) Analysis of the dangerous service conditions as applied to the ship grid for the bank of the ultimate strength curves (4).

For ice-going ships the dangerous service conditions are generated for the case of hull direct impact against an ice floe. For icebreakers a possibility of realization of the reflected impact by the opposite side against the adjacent ice field right after the direct impact is taken into account. The account of such a possibility reflects a specificity of icebreaker work in ice.
In the result the bank of the dangerous service condition curves is formed

$$v_{ki}^{j} = v_{ki}^{j}(H) \qquad (5)$$

(vi) the bank of the dangerous service condition curves is classified by the ice categories and ice classes. Within a selected ice category (ice class) spread in the dangerous service condition curves takes place for ships of different length. The spread justifies on a certain imperfection of the requirements of a corresponding Rules since as within the frame of a category (class) the identity in the service conditions in ice is not provided for ships with different length, displacements, hull lines, etc.;
(vii) a procedure for the dangerous service condition curves averaging is carried out within each category or class to which the categories of the Ice Rules'99 should correspond. In the result the base dangerous service condition curves (hereinafter base conditions) are determined (see Fig. 1):

$$v_l = v_l(H) \qquad (6)$$

where l = the index of the Ice Rules'99 ice category.

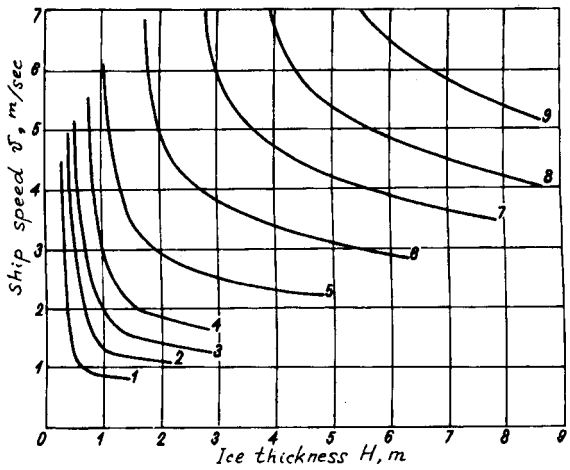

Fig.1. The system of base dangerous service conditions in ice
1 – LU1, 2 – LU2,…, 9 – LU9

Each base condition (6) is an integral characteristic of the Ice Rules'99 ice category. The system of the base conditions prescribes the averaged ice service conditions for ships of all categories, exceeding of which is connected with a possibility to be damaged. New ice classification generation on the basis of the base conditions corresponds to the principles formulated in section 3 because it provides the following:

- regulation within each ice category of similar for all the ships ice service conditions independently of the dimensions and hull lines of a specific ship;
- prescription of the stable guaranteed reserve of permissible ship service conditions regarding the dangerous ones resulting in hull ice damage.

In the Ice Rules'99 nine categories are introduced: LU1 – LU9; at the same time, the greater number corresponds to more severe conditions of operation in ice. If a ship is an icebreaker, the

category symbol is written as LL6, LL7, LL8 or LL9. Correspondence of the new categories to ones of the Ice Rules'81 – 95, as well as to the ABS and FSR classes is shown in Table 1.

Table 1. Equivalency of the Ice Rules'99 ice categories with the current ice classification

Ice Rules'99	Ice Rules'81-95	FSR	ABS Rules
Ice-going ships			
LU1	>L4	~IC	
LU2	>L3	~IB	
LU3	>L2	~IA	
LU4	>L1	IA Super	
LU5	>UL		<A2
LU6			~(A2-A3)
LU7	>ULA		~(A3-A4)
LU8			~A4
LU9			A5
Icebreakers			
LL6	LL4		A2
LL7	LL3		A3
LL8	LL2		A4
LL9	LL1		A5

It can be seen from Table 1 that low Arctic ice categories LU1, LU2, LU3, LU4 are reconciled with FSR classes IC, IB, IA, IA Super.

Since as class IA Super occupied an intermediate position between L1 and UL regarding the Rules'81-95 ice categories, satisfaction of the equivalency between IA Super and LU4 resulted automatically in some increase of the strength level for the new categories LU1, LU2, LU3, LU4, LU5, LU7 relatively their old analogs L4, L3, L2, L1, UL, ULA. The fact that the categories of the Ice Rules'81, 85 are at a disadvantage in relation to the Ice Rules'91, 95 categories in terms of strength should be taken into account since as the Ice Rules were modified evolutionary in 1991.

Category LU4 of the new edition is intermediate between non-Arctic and Arctic ones, i.e. permits service in both freezing non-Arctic seas and NSR (the Northern Sea Route). Ships of LU5 and higher categories of the new edition are destined for operation in Arctic seas.

For ships of categories LU5, LU7 of the new edition the correspondence (with the mentioned above reserve) is provided to categories UL, ULA by the base conditions. Category LU6 is introduced as an intermediate one between LU5 and LU7 since as unsound large range takes place between categories UL and ULA; along with this, approximate correspondence is provided by the base conditions for categories LU5, LU6, LU7 with classes A2, A3, A4 of the ABS Rules. Ships of categories LU8, LU9 of the new edition correspond to classes A4, A5 of the ABS Rules. Icebreakers of categories LL6, LL7, LL8, LL9 of the new edition correspond by the base conditions to categories LL4, LL3, L2, LL1 of the Ice Rules'81-95 and ice classes A2, A3, A4, A5 of the ABS Rules.

6. DEFINITION OF THE DESIGN ICE LOADS

The system of the base service conditions together with the standard values for ice condition parameters, prescribed when the system was established, form the full set of the initial data for ice loads calculation for the Ice Rules'99 ice categories. In compliance with the hydrodynamic model of ship impact against the ice and methods following from it for solution of the direct and inverse problems [9, 10], the ice load parameters for an optional point (v_{lm}, H_{lm}) of the base condition (6) of the ice category l are determined from the following relationships:

$$p_{lk} = p_{lk}\left(v_{lm}, H_{lm}, \tilde{\sigma}_l^{ice}, \tilde{S}_k\right)$$
$$b_{lk} = b_{lk}\left(v_{lm}, H_{lm}, \tilde{\sigma}_l^{ice}, \tilde{S}_k\right) \qquad (7)$$

where k = the ship index;

$\tilde{\sigma}_l^{ice}$ = the vector of the standard ice strength parameters for the l-th ice category;

$\tilde{S}_k$ = the vector of the ship parameters.

Processing the results of the mass calculations by relationships (7) has permit to obtain approximation relationships definition of the design ice loads in the Ice Rules'99.

The mass calculation analysis has shown that there is a considerable difference in the character of ice load effects on the bow area parts adjacent to the stem and adjacent to the midbody area correspondingly. For more correct account of this factor, compulsory separation of the ice strengthening intermediate area is provided for ships of Arctic ice categories (including the intermediate category LU4).

Ice loads regulation basing on the base conditions for a direct impact against the ice under straight course is possible as applied to the bow fineness area. The midbody area is undergone to ice load action under impacts by ice fragments, in circulation, as well as under ice compression. Presently there is no rigorous and well-approved theory on these load types. On the other hand, the extensive experience in Russian Arctic service shows that the midbody area strength is adequate for ice-going ships even if in the cases when ships operated under conditions more severe than those permissible by their categories, the midbody area damage-ability was relatively small. Therefore, the structure of the analytic relationships for definition of the design ice loads on the midbody area is accepted in the form similar to that accepted for definition of the bow area ice loads.

The nature of the loads on the stern area for ships of the lower ice categories is similar to that of midbody area. Therefore, for these categories the ice load distribution height can be accepted equal to 80% of the distribution height for the midbody area, and the intensity can be accepted in the portion of the midbody area intensity since as due to waterline inclination to the centerline plane, the stern area loads can be slightly decreased in comparison with the midbody area loads.

For the higher ice categories the stern loads are connected with stern direct impacts against the ice field in reverse, maneuvering in a canal, etc. Therefore, for them the ice load distribution height can be accepted similar to that of the bow area, and the intensity can be accepted in the portion of the bow area load intensity.

As applied to icebreakers, transfer to the Ice Rules'99 is connected only with modification of the principles for ice load regulation since as the service experience for Russian icebreakers is the most representative one and corroborate the balanced character of the requirements to the ice breaker ice strength. The following can be listed among the progressive features of the Ice Rules'99 regarding the icebreaker ice loads regulation: unification of the formulae for loads on the ship and icebreaker bow area, account in the direct form of design ice pressure function versus the icebreaker power, as well as regulation of the midbody area loads basing on the reflected impact analysis.

7. DESCRIPTION OF THE PERMISSIBLE ICE SERVICE CONDITIONS

The requirements contained in the Rules of the classification societies are first of all aimed to provide safe operation of the ships designed on their basis. When the problem of description of the permissible ice service conditions in the Ice Rules'99 is solved, the idea on ship safety in ice was formed on the basis of the following statements.

(i) When a ship is under permissible ice conditions, the hull-ice interaction with the ice should not be accompanied with structure strength exhaust and result in occurrence of ice damage dangerous for the further ship service.

(ii) The required ship safety level in ice during various maneuvers and operations (ship scabling by an icebreaker, being in ice captivity and following drifting in the ice, etc.) is provided by the requirements to the minimal power of the powerplant.

Therefore, description of the permissible ice conditions is carried out from the positions of ensuring ice strength under compulsory satisfaction of the requirements to the minimal power. It should be noted that the question, if a ship being under the permissible ice conditions, is capable to operate in the specified route in order to accomplish the stated task (cargo transportation, etc.), is not considered since as this question concerns ship service capabilities and is not connected directly with the safety problem regulated by the Ice Rules.

The conditions under which a ship gets registered ice damage are described by the base conditions system (7) (Fig.1), prescribing the ship operation parameters for each ship under which hull-ice interaction is accompanied with structure transition into the ultimate state.

By the analog with the base conditions, can be considered a system of the permissible ice service conditions under which the ship is guaranteed to operate without hull damage; i.e. the ice strengthening structures under ice loads work in the elastic area and do not get permanent plastic strains. Naturally, the permissible service conditions should have guaranteed reserves in term of base ones to provide for satisfaction of the guaranteed safety principle. The analysis of the positive service experience of Arctic fleet has permitted to establish the following standard relationship between the parameters of the base (dangerous) and permissible conditions

$$q_p^{(l)} = \frac{q_{ul}^{(l)}}{k}, \qquad (8)$$

where $q_p^{(l)}$, $q_{ul}^{(l)}$ = ship hull loads under operation in the permissible and dangerous conditions correspondingly;

$k \approx 1.8 \div 2.0$ = ultimate strength margin factor.

Therefore, when a ship operates under the permissible conditions, the ice strengthening structures have a guaranteed strength reserve in terms of the loads capable to induce registered ice damage.

Basing on (8), the system of the permissible service conditions (Fig.2) for the new ice categories is defined:

$$v_p^{(l)} = v_p^{(l)}(H), \qquad l = 1,...,9 \qquad (9)$$

When description of the permissible ship ice service conditions is generated basing on system (9), different approaches can be used. The approach [11], selected for Ice Rules'99 development, corresponded to the formulated above in item 3 principles of the safety guarantees and the unified safety standard. Within this approach two data sets concerning different permissible service conditions are presented for the Arctic categories.

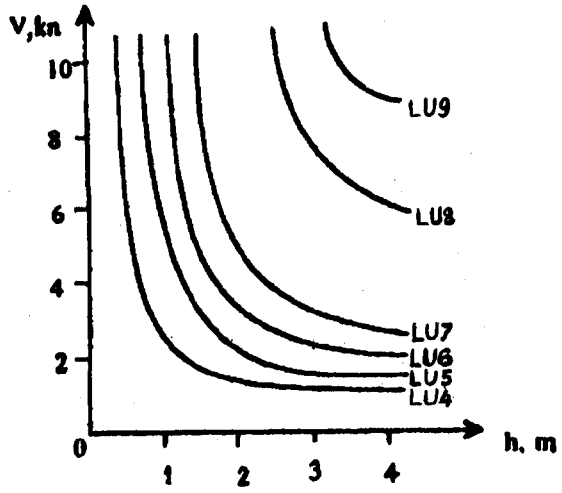

Fig.2. The system for the permissible ship ice service conditions

I. The permissible operation areas for the Arctic ice categories.

When the permissible operation areas are defined, are used the system of the permissible service conditions (9) and the statistic data on the ice condition parameters, including the following:

- the probability distribution patterns for ice thickness for five Russian Arctic seas for the winter-spring and summer-fall Arctic navigation periods;
- the data on the ice strength parameters approximated in the form of the unified functions $\sigma_{ice} = \sigma_{ice}(H)$

Basing on the mentioned statistic data, were introduced four types of ice navigation differentiated by the ice condition severity: easy**,** medium**,** heavy (with reoccurrence one time per three years) and extreme (with reoccurrence one time per ten years). The ice condition parameter, ice thickness H_{ijk}, was assigned to each navigation type, where i is the area index (the Barents, the Kara, Laptev, the East-Siberian and the Chukchi Seas), j is the period index winter-spring and summer-fall), k is the navigation type index.

The permissible operation areas were established for the two options of ice operation: independent and under icebreaker pilotage. If operation was independent, it was supposed that in certain situations (when ice isthmuses are overcome), if necessary, a ship can use its inertial properties for ice failure by speed increase. Therefore, in ice of H_{ijk} thickness the hull ice strength level should ensure absence of damage in the ice strengthening structures under speed up to $[v_1]$ = 6 knots, permitting to use ship inertial properties for ice failure. If operation is under icebreaker pilotage, it was adopted that in ice of H_{ijk} thickness the ice strength should be provided for speeds $[v_2]$ = 3 knots corresponding to the lower boundary of the ship operation in a canal in the term of the maneuverability.

In view of the stated above, the criterion for establishing the permissible by the safety conditions operation areas was prescribed as follows:

$$v_l(H_{ijk}) \begin{cases} \geq [v_n] - \text{service is permitted} \\ \leq [v_n] - 1 - \text{service is prohibited} \end{cases} \quad (10)$$

where n = 1 = independent operation;
n = 2 = pilotage by an icebreaker;
H_{ijk} = the ice designed thickness for the i-th area, j-th period and k-th navigation type;
$v_l(H_{ijk})$ = a point on the permissible condition curve for the l-th ice categories, knots.

The speed range ([v_n], [v_n] – 1) was classified as an intermediate one corresponding to the increased risk to get damage.

It should be noted that in compliance with the above note, a question, if a ship is capable to operate in ice H_{ijk} in terms of ice-going capability, was not considered.

The permissible operation areas established basing on the stated approach are prescribed with the help of Table 2 in the Ice Rules'99.

II The permissible ship service conditions.

The permissible conditions are prescribed directly basing on the system of the permissible service condition curves (9) and,

- for operation of Arctic category ships under icebreaker pilotage are specified ultimate types and thickness of the ice in which a ship can operate with a small speed typical for each category without damage under interaction with the canal edge (see Table 3);
- for independent operation of the Arctic ice category ships are specified the ice concentration level, types and thickness in which a ship can move by maneuvering in fractures between ice floes or ice fields and overcoming single ice isthmuses without damage at interaction with the ice (see Table 4).

The permissible conditions for ships of the non-Arctic categories are specified as applied to independent operation in the ice cake (speed 5 knots) and operation in a canal after an icebreaker (speed 3 knots) (see Table 5).

Table 2. Permissible Service Areas for Ships of Arctic Ice Categories

Category of ice strengthe-nings	Manner of ice opera-tion	Winter-spring navigation in seas					Summer-fall navigation in seas				
		Barents Sea	Kara Sea	Laptev Sea	East-Siberian Sea	Chukchi Sea	Barents Sea	Kara Sea	Laptev Sea	East-Siberian Sea	Chukchi Sea
		EHMEa	EHMEa	EHMEa	EHMEa	EHMEa	EHMEa	EHMEa	EHMEa	EHMEa	EHMEa
LU4	IO	- - - +	- - - -	- - - -	- - - -	- - - -	+ + + +	- - + +	- - - +	- - - +	- - + +
	IP	- * + +	- - - +	- - - -	- - - -	- - - *	+ + + +	* + + +	- - + +	- * + +	- * + +
LU5	IO	- - + +	- - - +	- - - -	- - - -	- - - -	+ + + +	- + + +	- - + +	- - + +	- - + +
	IP	* + + +	- - * +	- - - +	- - - +	- - * +	+ + + +	* + + +	* + + +	* + + +	* + + +
LU6	IO	* + + +	- - - +	- - - +	- - - +	- - - +	+ + + +	+ + + +	- + + +	- + + +	- + + +
	IP	+ + + +	* * + +	- * * +	- * * +	- * + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +
LU7	IO	+ + + +	- - + +	- - - +	- - - +	- - + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +
	IP	+ + + +	+ + + +	* + + +	* + + +	* + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +
LU8	IO	+ + + +	+ + + +	- * + +	* + + +	* + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +
	IP	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +
LU9	IO	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +
	IP	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +	+ + + +

IO is independent operation
IP is icebreaker pilotage
+ – service is permissible
- – service is impermissible
* – service is connected with an increased risk to get damage
E – extreme navigation (with mean reoccurrence one time per 10 years)
H, M, Ea – heavy, medium, easy navigation (with mean reoccurrence one time per 3 years)

Table 3. Ultimate Ice Conditions under Operation in a Canal after an Icebreaker with the Typical Speed

Ship category	Ship's speed in the canal, knots	Permissible ice type and thickness	
		Winter-spring navigation	Summer-fall navigation
LU4	3	Thin First-year	Medium First-year up to 1.0 m
LU5	4	Medium First-year up to 0.9 m	Medium First-year
LU6	4	Medium First-year	Thick First-year up to 1.7 m
LU7	4	Thick First-year up to 2.0 m	Second-year up to 3.2 m
LU8	5	Second-year up to 3.4 m	Multi-year
LU9	6	Multi-year	Multi-year

Notes: Ice classification is accepted in compliance with the "Sea Ice Nomenclature" of the World Meteorological Organization (WMO):

Ice type	**Thickness range**
Multi-year	> 3.0 m
Second-year	> 2.0 m
Thick First-year	> 1.2 m
Medium First-year	0.7 – 1.2 m
Thin First-year	< 0.7 m

Table 4. Parameters of the Permissible Ice Conditions under Independent Operation with the Typical Mean Speed

Ship category	Typical speed, knots	Ice concentration and type	Permissible ice thickness, m		Ways for ice isthmus breaking through
			Winter-spring navigation	Summer-fall navigation	
LU4	6-8	Open drift first-year ice	0.6	0.8	Breaking through ice isthmus by contiguous move
LU5		Open drift first-year ice	0.8	1.0	
LU6		Open drift first-year ice	1.1	1.3	
LU7		Close pack first-year ice	1.4	1.7	Breaking through ice isthmus under episodic ramming
LU8	10	Close pack first-year and second-year ice	2.1	3.1	Breaking through ice isthmus under regular ramming
LU9	12	Close pack, very close pack and compact multi-year ice	3.5	4.0	Breaking through ice isthmus and, episodically, areas of compact ice under ramming

Table 5. Parameters of the Permissible Ice Conditions for Non-Arctic Ice Categories

Ship category	Permissible ice thickness, m		Service type
	Independent operation in open drift ice cake *)	Operation in a canal after an icebreaker in the very close pack and compact ice **)	
LU1	0.40	0.35	Episodically
LU2	0.55	0.50	Regularly
LU3	0.70	0.65	Regularly
*) Speed of 5 knots, typical for the independent operation conditions, is considered **) Speed of 3 knots, minimal for operation in the canal, is considered			

8. CONCLUSION

The stated information permits to conclude that the Ice Rules'99 are based on the progressive methodology in which:

(i) The new concept of ice classification on the base conditions of ship operation in the ice is realized; the concept provides for the following:

- regulation within each ice category of the permissible ice service conditions equal for all the ships independently of their dimensions and hull lines;

- prescription of the stable guaranteed reserve for the permissible ice service conditions regarding the dangerous ones resulting in hull ice damage;

- realization of the unified approach to regulation of the ship and icebreaker ice strength.

(ii) The transfer to the physically validated criteria and methods for assessing the ice strengthening structure strength in view of the material plastic deforming reserves and actual shapes of ice damage, has been accomplished.

(iii) The quantitative conditions for the justified selection of the required ship ice category have been formulated.

(iv) The requirements to the lower ice categories (LU1, LU2, LU3, LU4) are unified with the requirements to the ice classes ((IC, IB, IA, IASuper) of the Finnish-Sweden Rules for the Baltic basing on the reconciliation of the base service conditions.

Application of the Ice Rules'99 will provide the increase of the effectiveness and service reliability for ice-going ships and icebreakers.

MARINE INSURANCE RELATED TO THE RUSSIAN NORTHERN SEA ROUTE AND RUSSIAN BARENTS SEA

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1. GENERAL ISSUES[1]

In earlier analysis of requirements for marine insurance related to the Northern Sea Route (NSR) carried out under the International Northern Sea Route Programme (INSROP) eleven general questions were posed. The answers follow, although the responses may not, in every case, be totally satisfactory. These have relevance to the assessment of marine insurance requirements for vessels carrying export cargoes of oil and LNG from Northwest Russia through the Barents Sea to western markets and refineries.

i.) *Would shipowners be willing to risk high-value vessels, such as large, new-generation container vessels, on the route?* The answer is "not yet". At this stage, there is little indication that shipping companies are considering NSR use, particularly for high-value vessels. Such vessels are generally not constructed for navigation in ice. Furthermore, the shipping industry has yet to carry out its own economic analyses of the actual economic advantages of the route.

ii.) *Would operations be year-round or would vessels have to be re-positioned during the year?* The answer follows on from the response in i.) above. Although limited low-value, bulk cargo operations may be considered, it is unlikely that even such operations would take place on a year-round basis. For container vessels, one of the main objections appears to be the need to re-position vessels at least twice during the year. One of the suggested alternatives is a feeder-vessel system for the NSR. However, this would require transhipment facilities at either end.

iii.) *Would a whole new generation of ice-strengthened vessels have to be purpose-built for the route?* The answer depends on how much the route would be used. If the route were only utilised during the relatively ice-free summer season, ice-strengthening may not be a requirement. However, for longer seasonal use, purpose-built vessels would be required. It is also likely that marine insurers may require ice-strengthening for navigating the NSR at any time. Much would depend on how much ice-strengthening is required. Many vessels today already are classed for some ice navigation.

[1] This is obtained from E. Gold, J. Cantello and P. Wright, *Shipping and Marine Insurance on the Northern Sea Route: Conclusions 1993-1998*, (Oslo, INSROP Working Paper No. 124, 1999) particularly pp. 19-24, unless noted otherwise.

iv.) *Would the Northern Sea Route saving in passage time over the Panama/Suez Canal routes be sufficient economic inducement?* The answer is not yet known. Although the actual time saved can easily be transposed into economic advantage, the hidden costs require further research by the shipping industry. Costs of ice-breakers, ice-pilots, possible delays, cargo damage due to temperature variations, possible ice-damage, higher hull and machinery and liability insurance costs, etc. must be set off against the passage time saved.

v.) *Is the present Russian ice-strengthened merchant fleet capable of meeting initial chartering requirements and, if so, are these vessels capable, in terms of operational quality to meet the highest international requirements?* The answer is "yes, in the short term". Russia has a significant ice-strengthened fleet, crewed by competent personnel with long Arctic navigational experience. However, in general, these ships are today on average 12-15 years old and, due to the general difficulties in Russia, deteriorating rapidly. Many vessels have been idle for some time and maintenance has been minimal at best. Some Arctic resource operations, such as the Finnish Neste project is, in fact chartering Russian vessels at this stage. Furthermore, INSROP's experimental voyage utilised a Russian vessel with very positive results.

vi.) *Would single-hull tankers and bulk carriers be able to operate along the route and in and out of Russian resource export ports?* The answer is again: "Yes, in the short term". Russian single-hull tankers and bulk carriers are presently operating in the region. However, it is like that new IMO requirements will curtail such operations in the future. It is also likely that marine insurers will have some input into such decisions. Furthermore, increasingly strong Russian environmental regulations may also require vessels with double hulls and other new safety innovations in order for vessels to operate on the NSR.

vii.) *Can the assistance of Russian ice-breaker support be guaranteed and, if so, at reasonable cost?* Russia has one of the best ice-breaker fleets in the world ranging from the most powerful nuclear-powered vessels to small river vessels. This fleet would be quite capable of guaranteeing adequate support for all foreseeable NSR navigation for some years to come. On the other hand, the second part of the question cannot be answered at this stage. The Russian ice-breaker fleet presently receives only very minimal government support and is, accordingly, required to look for "cost-recovery". What this actually means is, at least at this stage, not clear. Full cost recovery for some of these very expensive vessels would make NSR operations very uneconomic. This requires clear government policy responses which have not been forthcoming at this stage.

viii.) *Would ship operations in close proximity to ice-breakers, including nuclear-powered vessels, require special navigational skills?* The answer is clearly "yes". Most mariners are not trained in this area and would require special training and/or utilise Russian ice-pilots whilst navigating the NSR.

ix.) *Is there sufficient interest by cargo exporting and importing interests in Japan and Europe in the use of the route and its commensurate advantages?* At this stage the answer is "no". As indicated elsewhere in this paper, cargo interests at this time have little awareness of the NSR. In general, such interests are mainly concerned in having their goods delivered as quickly as possible. Accordingly, should shipowners decide to use the route and, thus, deliver cargoes more quickly it would be supported by cargo interests. On the other hand, if there are additional cargo insurance costs, this interest may be lessened. For example, the Russian transcontinental railway "land-bridge", which started with significant promise and considerable support from cargo interests has, in the recent past experienced cargo theft on a grand scale raising cargo insurance premiums significantly.

x.) *Is there sufficient interest by European and Japanese energy and other resource importers in the development of Russian resources areas - including the ports and terminals?* There is limited interest by European interests as shown by the Finnish operations and the ArcDev project, partially funded by the European Union. On the other hand, there is as yet no discernible interest in this development by Japanese or other Asian interests. This is despite the fact that significant energy and other resources have been clearly identified in the Russian Arctic. It is felt that this lack of interest may only be a reflection of the general Asian economic difficulties, a plentiful supply of resources elsewhere, the uncertainty of the Russian political system, and the significant investment costs required.

xi.) *Is there further discernible commitment by the Russian government, Northern Sea Route ports and municipalities and other interests, in providing reliable services in the region, i.e. pilotage, towage, salvage, repair facilities, communications systems, etc.?* The answer is "yes, probably." However, as already indicated elsewhere in this paper, this is also an area where further clarification is required. The Russian system generally and the Arctic regions specifically, are very much affected by the general disarray that pervades Russia at this time. This leads to confusion amongst jurisdictions, overlapping or non-existing responsibilities and, almost everywhere, a chronic shortage of funds. For NSR navigation this is a critical area, as shipowners and their marine insurers will demand reliable, predictable services along the route before regular navigation can take place.

The overall conclusions lead to two final questions.

What is the likelihood of regular navigational use of the Northern Sea Route in the foreseeable future? The analysis explored this question at some length in various parts of the world with most of the major shipping interests. At this stage it is too early to provide an answer to this question. However, the likelihood of "regular" use is probably still some years away and would require further significant research by the shipping industry in terms of economic and operational advantage, the suitability and re-positioning of vessels, cargo interests etc. However, it is also clear that priorities can change rapidly. Political or operational problems in the Panama Canal after its reversion to the Republic of Panama at the end of 1999, another crisis in the Middle East affecting the Suez Canal, and problems in Russia affecting the Asian "land-bridge" railway connection, could all quickly make an alternative sea route more attractive. This has also recently been recognised with the revival of the Kra Canal proposal across the narrowest part of Thailand that would reduce the distance between the Gulf and East Asia by some 2,000 miles but would cost at least USD 20 billion. As already indicated, the development of Russian Arctic resources, which has already commenced, will also result in more shipping in the region. The full development of these resources, however, depends on global energy prices, the willingness to invest in the Russian Arctic region, and the overall stability of Russia in the coming years.

The final question takes us back to the basic issue *Would the international insurance market be willing and able to underwrite Northern Sea Route risks?* **The answer is a clear "yes."** As indicated throughout the sub-project's research output, marine insurers are innovative and responsive to the demands and requirements of the shipping industry. In that respect NSR risks will be treated no differently, but will require further development of the data base already assembled by INSROP. Marine insurers will require their own studies, undertaken by the Salvage Association, and instructed by the Joint Hull Committee of the Institute of London Underwriters, which will respond to the specific needs and demands of underwriters and which will, at the same time, take account of the special risks involved in navigating Arctic waters. In other words, *if shipping wants to use the NSR, insurers will provide the necessary risk coverage.* Although the traditional, alternative sea routes through the Suez and Panama Canals and new routes, such as the Russian land-bridge, are presently still available, political and other

problems may encourage shipping to seek a new navigational frontier - the Northern Sea Route - in the new millennium.

2. ISSUES RELATED TO RUSSIA[2]

A general overview of legal status of shipowner's mutual insurance organisations in the light of Russian civil and maritime law currently in force (and also with due consideration to the Merchant Shipping Code of the Russian Federation) indicates that shipowners' P&I[3] clubs have legal basis for their arrival and operation in Russia. Rich experience gained by western P&I clubs during their long term development may be very helpful for Russian clubs given the fact that Russian insurance law is quite compatible with well-known principles and practice of the international insurance market.

At the same time various issues arise. Russian maritime law and marine insurance law in general appear to a large extent based on international conventions such as the Hague or the Hague Visby Rules with regard to cargo liability, the 1976 Limitation Convention regarding global limitation, and the Civil Liability Convention (CLC) regarding oil pollution from tankers etc.[4] *Are these international recognised liability regimes ratified by Russia and directly incorporated into Russian law?*

V. Muslin notes that Russia as a successor of the USSR is a participant to the CLC, but in relation to the Hague-Visby Rules Russia is not presently participant. Nevertheless both relevant norms of the USSR Merchant Shipping Code 1968 (which is now effective in Russia) and those of the draft Merchant Shipping Code of the Russian Federation, soon to be ratified, are very similar to Hague-Visby Rules. The Russian Parliament approved the Federal Law on ratification of the Russian Federation to the Protocol on Amendment of Hague-Visby Rules. The things left were to have the Federal Law signed by the President of the Russian Federation and then officially published. Thus the Hague-Visby Rules likely became an integral part of Russian maritime law recently, but this would have to be checked. Russia is not presently participant to the 1976 Limitation Convention, but there is a clear trend in Russian maritime law to increase the limit of shipowner's liability. At the end of December 1998 the Russian Parliament approved the Federal Law on ratification of the Russian Federation to the Protocol 1996 on Amendment of 1976 Limitation Convention. Thus similar to the Hague-Visby Rules, the 1976 Limitation Convention and amendments likely became an integral part of Russian maritime law, however this would have to be checked.

With regard to *time-charterer's liability*, under Russian law a master will be deemed to sign the bill of lading on behalf of the time-charterer. Under English law, a master will be deemed to be the servant of the owner (or bareboat/demise charterer). The master's signature on the bill of lading will commit the owner as opposed to the charterer save insofar as it is expressly stated in the bill of lading that the charterer shall be deemed to be the carrier. There appears to be unclarity concerning this difference between Russian and English law.

How P&I clubs constituting the International Group of P&I Clubs, which covers about 85 to 90 percent of the world's merchant fleet, are structured and operate needs addressing by Russian actors, since these will probably be utilised as models.

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[2] The following is obtained from V. Muslin, *Organisational Forms of Shipowner Lialbiyt Insurance fo the Northern sEa Route with sSpecific Reference to the Perspective of P&I Clubs in Russia*, (Oslo, INSROP Working Paper No. 124, 1999) particularly pp. 20 and Appendix.

[3] This stands for protection and indemnity.

[4] This was a letter of review written by K. Eivindstad, Assuranceforeining Gard, (Mutual Protection and Indemnity Insurance), P.O. Box 1563 Myrene, 4801 Arendal, Norway. appearing in ibid. Appendix.

Briefly, an overview is as follows. The P&I clubs constituting the International Group are mutual. The majority of them operate or are managed out of London whilst there are three Scandinavian, (Gard, Skuld and a Swedish club), one in Japan and one in the United States. They are incorporated, so that they have a separate legal status from their shipowner members. Only owners, charterers and operators of ships can become members of a P&I club.

As a corporation a P&I club has constitutional documents such as by-laws or statutes governing, inter alia, the authority of the General Meeting, the Committee or the Executive Committee/Board of Directors. The ultimate control of a club rests in the shipowner members, who will be able to exercise their control by means of a vote taken at a General Meeting of the club and through the Committee and/or the Executive Committee/Board of Directors consisting of shipowners elected by the membership at the General Meeting. The Committee/Board of Directors consisting of shipowners elected by the General Meeting will make decisions on all areas of importance for the operation of the club including, determining the Rules, i.e. the terms of the contract of insurance/scope of cover; determining the general principles for administration of the club's fund; determining any general variation in the premium rating; levying of contribution and release contribution; and closing of policy years.

The day-to-day management of the club; i.e. handling of claims, entering into contract of insurance and management of the funds, is delegated to professional managers who work full time at the business of the club. In the case of the Scandinavian clubs, the managers, comprising the Managing Director and his staff, are full-time employees. In contrast, the management of some of the English clubs is carried out by independent management companies under contract to the clubs.

The Rules of the club contain the terms and conditions of the contract of insurance between the club and the individual member, the shipowner. P&I insurance is a so-called "named risk" insurance. Only the type of liabilities and losses expressly mentioned in the Rules are covered. Only a risk which is regarded as a risk commonly born by shipowners will be accepted as a "mutual risk" and covered by the club under its standard terms of entry. It is for this reason that cover for certain specialist operations has been excluded and, for example, that an additional voyage premium is levied to cover the oil pollution risk of trading to the U.S.

The principal purpose of the International Group of P&I clubs is to arrange for the sharing amongst the Group Clubs of risks born by each of them. The terms of this claims sharing are set out in the Pooling Agreement. The Pooling Agreement is therefore an extension of the mutual system with the pooling of claims on an "at cost" basis. In the current policy year the Pooling Agreement covers liabilities in the layer between USD 5 million and USD 30 million of each claim. The Pooling Agreement constitutes also the legal framework for the Group Clubs collective purchase of market reinsurance. In the 1998 policy year the Group Clubs have bought market reinsurance covering USD 2,000 million in excess of USD 30 million (i.e. the top of the Pool layer) for owner's entries. If a claim should exceed the limit of the market reinsurance contract, the claim will be classified as a Catastrophe Claim which triggers the operation of some special provisions both in the Club Rules and the Pooling Agreement. The individual shipowner's liability to contribute by way of payment of so-called Catastrophe Contribution is limited by reference to the individual ship's limitation fund for property damage claims under the 1976 Limitation Convention. There is no limit on the shipowner member's liability for ordinary Contributions. Thus, it is important to distinguish between ordinary Contributions and Catastrophe Contributions. The claims sharing arrangement and collective purchase of market reinsurance require discipline among the members of the International Group. The International Group Agreement 1985, and any subsequent replacement, ensures that the required discipline exists.

V. Muslin notes a co-operation between the International Group and Russian P&I clubs (or their Association) is possible as concerns reinsurance arrangements.

3. CONCLUSIONS

Very briefly Professor E. Gold the leader of the INSROP as well as the ARCOPS marine insurance project notes rather succinctly,

> *"It should be stated that there will be a greater emphasis now on marine pollution, and that it will be essential to have more information on Russian insurance capacity."*[5]

[5] E-mail to author, 4 March 2003.

RULES TO BE FOLLOWED ON THE NORTHERN SEA ROUTE.

Presentation by
A.G.Gorshkovsky
Chief of the Administration
of the NSR

Review of the "Guide of Navigation through the Northern Sea Route"

The "Guide for Navigation through the Northern Sea Route" has been developed by the Russian Party under the "International Northern Sea Programme" **–** INSROP, 1993-1998) and was published in Russian (1995) and in English (1996).

The international legal basis for the "Guide" were provisions of the UNO Law of the Sea Convention, 1982 (Clause 234 "Ice-covered areas").

In this connection, the objectives of the "Guide" were to secure safety of navigation through the Northern Sea Route and to prevent pollution of the marine environment from ships.

The provisions of the "Guide" apply both to the NSR seaway itself (from the Novaya Zemlya to the Bering Strait) and to the Barents and Bering Sea areas covered by ice.

The Decree of the RF Government permits the foreign vessels to enter in 2003 and 2004 the Arctic ports and points , in particular, Amderma, Varandey, Vitino, Kolguyev, Dikson, Khatanga, Tiksi, etc.(40 ports and points, in all). For the purpose of entering ports and points, vessels are provided with sea pilots as well as charts and sailing directions.

The structure of the "Guide" is given in Figure 1.

The general review outlines that during navigational period, all vessels navigating on the seaway of the NSR are operational subordinate to the Marine Operations Headquarters of the Western (Murmansk) and Eastern (Pevek) Arctic Districts.

The information on securing safety is transmitted within the network of the International Automatic Satellite Communication Service SafetyNET of INMARSAT system.

In the conclusion of the general review of the "Guide, the "Regulations for Navigation on the Seaways of the Northern Sea Route" and "Regulations for Icebreaker-Assisted Pilotage of Vessels on the NSR" are given.

Navigational description set forth in the "Guide" is supplemented by nautical charts and sailing instructions for general use published for all Arctic seas. Production of the electronic nautical charts is nearing completion. Shore control - correction stations of the global navigation satellite systems: Russian- GLONASS and American – NAVSTAR began to be deployed along the entire waterway of the NSR. Integrated use of the navigation satellite systems and electronic charts make it possible to render ship handling automatic to an accuracy of 10 meters.

The reference section of the “Guide” includes practice of ice navigation, salvage support to vessels operating in ice and the “Requirements for Design, Equipment and Supply of Vessels Navigating the NSR”.

Practice of ice navigation is set forth on the basis of the generalized extensive experience gained by the Russian polar seafarers and the results of the long-term investigations The experience gained in nuclear icebreaker escorting of vessels is of particular value.
Improvement in the ice navigation tactics coupled with large displacement, hull strength, power of the main machinery of the nuclear icebreakers of the new generation the design of which is initiated by Russia will make it possible to escort the transport vessels through the entire Northern Sea Route all the year round.

Salvage support to vessels operating in ice is provided by the icebreakers, as well as by the special salvage tugs and sea-going diving ships and boats. For fast delivery of rescue equipment and personnel to the average ships use is made of helicopters.

General guidance of the salvage operations on the NSR is exercised by the Marine Operations Headquarters.

Seventy-year experience of the salvage support to the NSR suggests that the Arctic sea transport system created in Russia and including nuclear fleet which is the most powerful in the world and vessels with the Arctic ice category operates reliably. The likelihood of the vessel losses on the waterways of the NSR does not exceed 0.4% what is by 10 times lower than the likelihood of vessel losses in the World Ocean waters. The average likelihood of the vessel sustaining heavy ice damages which require shop repair does not exceed 2%. For comparison purposes, the likelihood that vessel will collide in coastal areas of the World Ocean is at the same level.

Generally, the “Guide’ terminates in the “Requirements for Design, Equipment and Supply of Ships Navigating the NSR”.

Review of Russian regulations to be followed on the NSR.

The review incorporates the following regulations which are in force on the NSR (Fig.2):

“Regulations for Navigation on the Seaways of the Northern Sea Route”;
“Regulations for Icebreaker-Assisted Pilotage of Vessels on the NSR”; Fig.2
“Requirements for Design, Equipment and Supply of Vessels Navigating the NSR”.

“Regulations for Navigation on the Seaways of the Northern Sea Route” were approved by the USSR Minister of Merchant Marine in 1990. The Regulations shall, on the basis of non-discrimination for vessels of all States, regulate navigation through the Northern Sea Route for the purpose of ensuring safe navigation and preventing marine environment pollution from vessels.

The Owner or Master of a vessel intending to navigate through the Northern Sea Route shall submit to the Administration (Marine Operations Headquarters) a notification and request for leading through the Northern Sea Route as well as the information on guarantee of payment of the icebreaking dues.

The inspection of the vessels shall be carried out at any place at the Owner’s request and at his expense. Vessels that have not aboard a certificate of due financial security with respect to the civil liability of the Owner for damage inflicted by polluting marine environment should not be permitted to navigate the Northern Sea Route.

A vessel that has been admitted for leading through the Northern Sea Route shall navigate it following the seaway that has been assigned her and adhering to the routes recommended by the Marine Operations Headquarters.

Compulsory icebreaker-assisted pilotage is established in the Vil'kitskogo Strait, Shokal'skogo Strait, Dmitriya Lapteva Strait and Sannikova Strait.

If a vessel navigating the Northern Sea Route violates the provisions of these Regulations, it may be ordered to leave the Route.

The Administration and the Marine Operations Headquarters shall not be liable for damage inflicted on a vessel by leading in ice conditions unless it is proved that they bear guilt for the damage inflicted.

In accordance with the Federal Law "On Inner Sea Waters, Territorial Sea and Adjacent Zone of the Russian Federation", 1998, (Clause 14), the "Regulations" are to be approved by the Government of the Russian Federation. In this connection, new draft of Regulations has been developed.

The new draft of Regulations has properly accounted for the recent Russian and international legal acts and the experience in regulation of shipping on the NSR, as well as on the world seaways, through straits and canals.

Approval of the "Regulations" by the Government of the Russian Federation will result in rise of the legal status of the "Regulations", and, thereby, a maritime safety assurance will be given at the governmental level to vessels of all States.

"Regulations for Icebreaker-Assisted Pilotage of Vessels on the NSR" define the procedure for submitting requests, organization of the pilotage, obligations and responsibilities of the Master of the vessel, the Master of the icebreaker and the pilot on the waterways of the NSR.

Since the navigation of a vessel through the NSR has been started, the vessel is placed under control of the Marine Operations Headquarters in the western and eastern parts of the NSR, which fully settle all matters associated with icebreaker support and regime of navigation.

Navigation behind the icebreaker does not relieve the Master of the vessel from control over the safety of navigation of his vessel. For this purpose, the Master of every vessel shall have Russian nautical charts and guides to navigation.

At present, a new draft of the "Regulations" has been developed. This new draft will account for the experience gained in the icebreaker-assisted pilotage and, in accordance with the "Merchant Sipping Code", 1999, the obligations and responsibilities of the Master of the vessel, the Master of the icebreaker and the pilot will be updated as well.

"Requirements for Design, Equipment and Supply of Vessels Navigating the NSR" account for the particularly complicated and dangerous navigational conditions on the NSR and aim at securing safety of navigation and at preventing marine environmental pollution from vessels.

Particular requirements apply to the hull, machinery installations, systems and arrangements, stability and watertight integrity, navigational and communication facilities, supplies and emergency outfit, manning.

At present, considering large amount of liquid hydrocarbons which began to be transported by tankers from the Arctic fields, a new draft of the “Requirements” has been developed. This draft reflects the provisions of:

“Merchant Shipping Code of the Russian Federation”, 1999;
“Rules for the Classification and Construction of Sea-Going Ships of the Russian Maritime Register of Shipping”, 1999;
Rules of the “International Association of Classification Societies”;
“International Convention on Civil Liability for Oil Pollution Damage”, 1992;
International “Guidelines for Ships Navigating in Arctic Ice-Covered Waters”, 2002.

International regulations to be followed in Arctic ice-covered waters.

Development of the International Safety Code for vessels in polar waters began in 1993 within the framework of IMO at the meeting in Helsinki. It was anticipated that the International Code will cover polar water of the Arctic and Antarctic. As a result of prolonged discussions within IMO in December, 2002 ,the Guidelines superseded the Code. The sphere of validity of the Guidelines covers the Arctic waters only.

“Guidelines for Ships Operating in Arctic Ice-Covered Waters” define special measures for safety of life and protection of natural environment of Arctic seas and Arctic Ocean. For this purpose, the Guidelines” harmonize national requirements relating to the standards of the navigational and communication facilities, hull structure, equipment and manning of vessels. Recommendations are provided for unified ice classification of Arctic vessels.

Since the national requirements agreed with Clause 234 of the UNO Law of Sea Convention, 1982 apply to the majority of the Arctic coastal waters (exclusive economic zones), the fulfilment of the “Guidelines” requirements by the Arctic States will provide full coverage of all matters concerning safety of Arctic shipping.

CONCLUSION

In legal respect, the NSR, as defined by the Russian legislation, is a national transportational line. Russia being interested in development of international shipping through the NSR takes care of high standards of maritime safety and environmental protection.

Arctic is a very sensitive region and any accident at sea may cause serious consequences. Therefore, vessels are to navigate on the seaways of the NSR under reliable State control, being escorted by the Russian icebreakers.

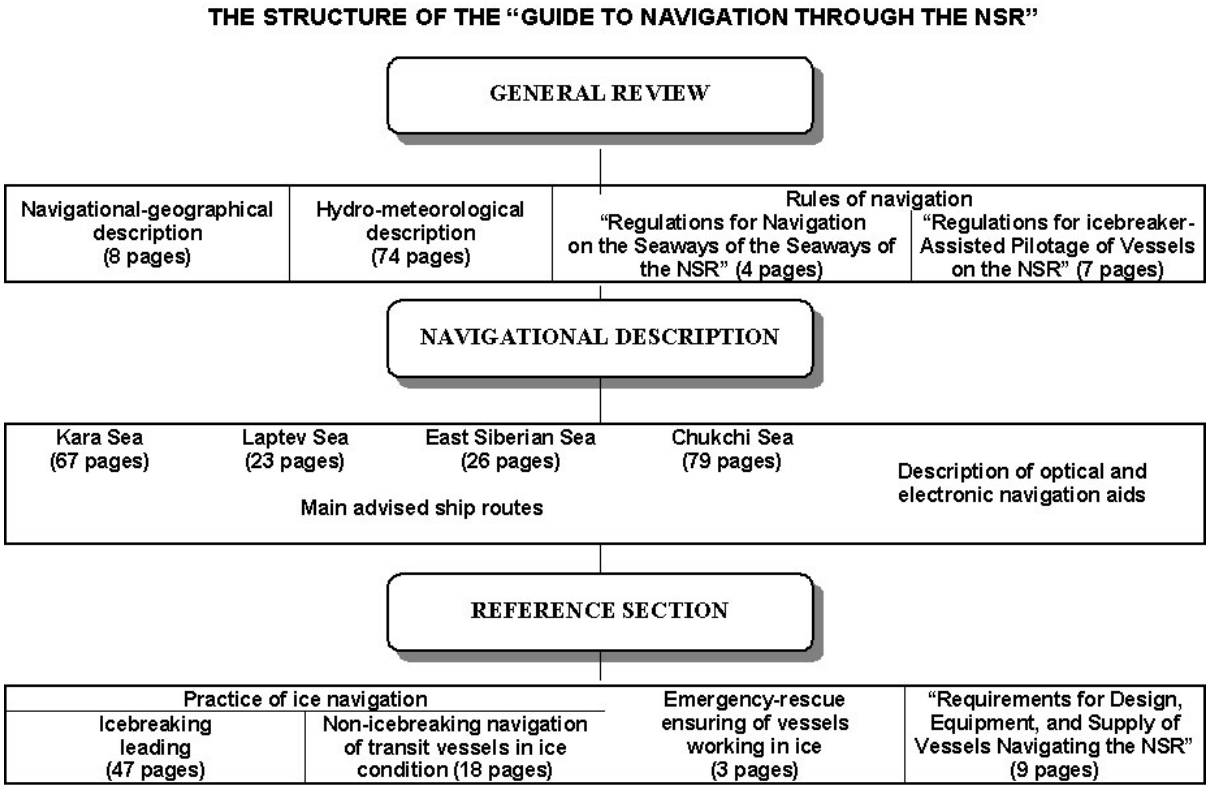

Figure 1.

Russian regulations to be followed on the NSR

- "Guide to Navigation through the Northern Sea Route", 1996
- "Regulations for Navigation on the Seaways of the Northern Sea Route", 1991
- "Regulations for Icebreaker-Assisted Pilotage of Vessels on the NSR", 1996
- "Requerments for Design, Equipment, and Supply of Vessels Navigating the NSR",1996

International regulations to be followed in Arctic ice-covered waters

- "Guidelines for Ships Operating in Arctic Ice-Covered Waters", 2002.

Figure 2.