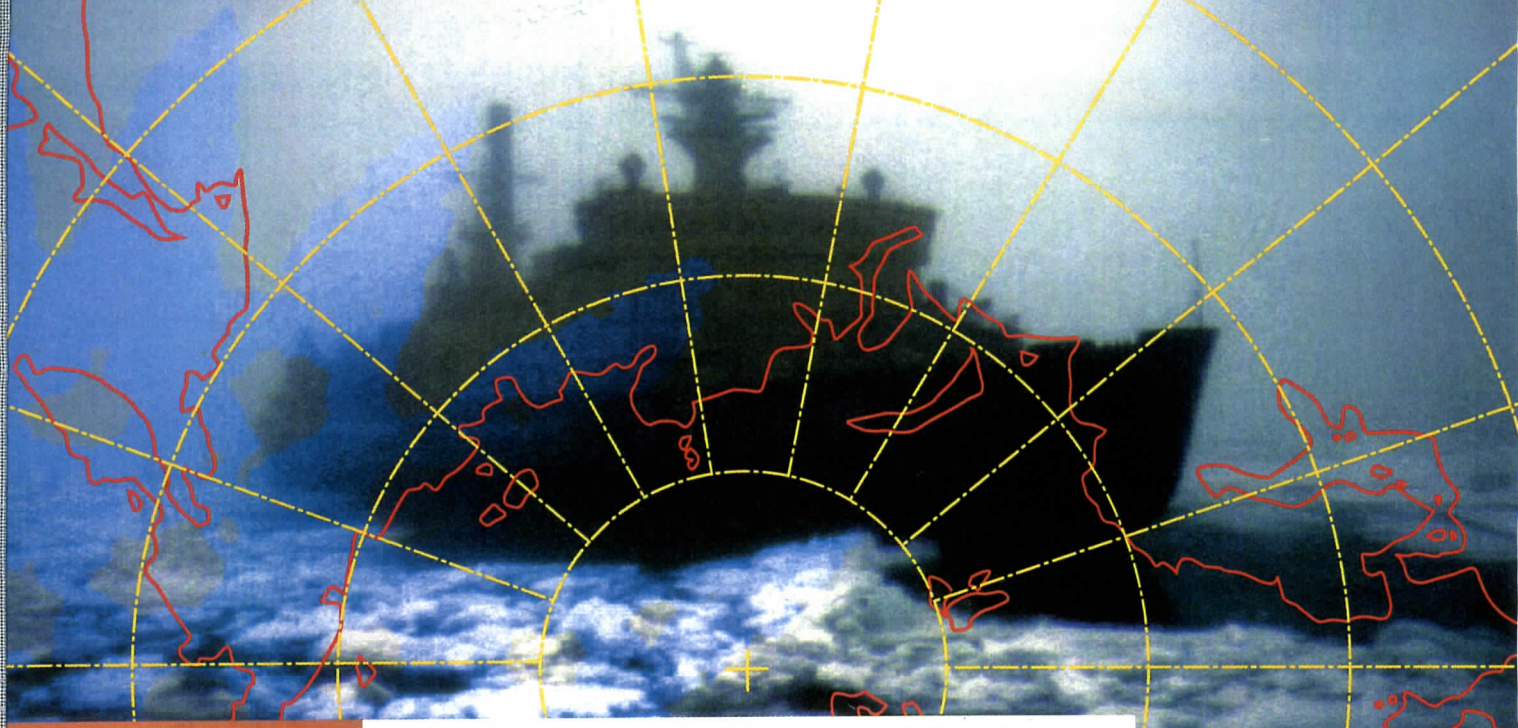

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Financing the NSR: Regional Aspects

By Valery Kryukov, Arild Moe and Vladimir Shmat

INSROP International Northern Sea Route Programme

Central Marine Research & Design Institute, Russia

The Fridtjof Nansen Institute, Norway

Ship and Ocean Foundation, Japan

International Northern Sea Route Programme (INSROP)

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Supervisor:	Arild Moe, FNI
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Authors:	**Valery Kryukov (1), Arild Moe (2) and Vladimir Shmat (1)**
Addresses:	(1): Institute of Economics and Industrial Engineering, Siberian Division of the Russian Academy of Sciences, 17 Ac. Lavrentiev Av., Novosibirsk 630090, RUSSIA. (2): The Fridtjof Nansen Institute (FNI), P.O.Box 326, 1326 Lysaker, NORWAY.
Date:	31 March 1999
Reviewed by:	Professor Robert N. North, Department of Geography, University of British Columbia, CANADA.

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FOREWORD - INSROP WORKING PAPER

INSROP is a five-year multidisciplinary and multilateral research programme, the main phase of which commenced in June 1993. The three principal cooperating partners are **Central Marine Research & Design Institute (CNIIMF)**, St. Petersburg, Russia; **Ship and Ocean Foundation (SOF)**, Tokyo, Japan; and **Fridtjof Nansen Institute (FNI)**, Lysaker, Norway. The INSROP Secretariat is shared between CNIIMF and FNI and is located at FNI.

INSROP is split into four main projects: 1) Natural Conditions and Ice Navigation; 2) Environmental Factors; 3) Trade and Commercial Shipping Aspects of the NSR; and 4) Political, Legal and Strategic Factors. The aim of INSROP is to build up a knowledge base adequate to provide a foundation for long-term planning and decision-making by state agencies as well as private companies etc., for purposes of promoting rational decisionmaking concerning the use of the Northern Sea Route for transit and regional development.

INSROP is a direct result of the normalization of the international situation and the Murmansk initiatives of the former Soviet Union in 1987, when the readiness of the USSR to open the NSR for international shipping was officially declared. The Murmansk Initiatives enabled the continuation, expansion and intensification of traditional collaboration between the states in the Arctic, including safety and efficiency of shipping. Russia, being the successor state to the USSR, supports the Murmansk Initiatives. The initiatives stimulated contact and cooperation between CNIIMF and FNI in 1988 and resulted in a pilot study of the NSR in 1991. In 1992 SOF entered INSROP as a third partner on an equal basis with CNIIMF and FNI.

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PROGRAMME COORDINATORS

- **Yuri Ivanov, CNIIMF**
Kavalergardskaya Str.6
St. Petersburg 193015, Russia
Tel: 7 812 271 5633
Fax: 7 812 274 3864
E-mail: cniimf@neva.spb.ru

- **Willy Østreng, FNI**
P.O. Box 326
N-1326 Lysaker, Norway
Tel: 47 67 11 19 00
Fax: 47 67 11 19 10
E-mail: sentralbord@fni.no

- **Hiroyasu Kawai, SOF**
Nippon Zaidan Building
15-16 Toranomon 1-chome
Minato-ku, Tokyo 105-0001, Japan
Tel: 81 3 3502 2371
Fax: 81 3 3502 2033
E-mail: sofkawa@blue.ocn.ne.jp

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Introduction

The purpose of the present study is to discuss key economic issues in the development of the NSR, with special emphasis on the role of the regional level, and put forward ideas which can help solve the current economic problems facing the NSR, focusing on the crucial role played by the tariff system A sub-goal of the project has been to identify policies on the regional level with regard to the NSR, and the perception of the sea route as well as plans for its use and ideas for its role within the regional economies.

Division of responsibilities in the development of the Northern Sea Route.

Regional aspects within the framework of the old system

Within the framework of the centralised planning system the northern regions played a very passive role with regard to the NSR. The northern regions and territories along the Northern Sea Route were objects of state policy to solve various economic or military-strategic problems. Economic development in these areas was not in itself high on the agenda of the central authorities. But for this reason also all costs to operate the northern sea route were covered by the union budget.

Amongst the main costs were:

- Upkeep of the system of meteorological stations, ice monitoring, navigation systems and hydrographical complexes (such as the bases in Dikson, Tiksi, Pevek and others);
- Maintenance of ships – both specialised ships such as icebreakers and general vessels including ice class ships custom built to operate in ice;
- Maintenance and development of terminals, harbours, warehouses and other facilities for loading and discharging goods;

Over the years a vast amount of experience in transportation operations was gathered. In the areas where bases and facilities for the NSR were located, settlements grew up towns were also covered by the union budget.

Changing roles and responsibilities since 1991.

The changes in the economic system of Russia from centralised planning to a system where market forces play an important role have also had a dramatic impact on the regions along the NSR: Important changes have taken place in the approach to financing the principal elements of the NSR and appurtenant infrastructure, and the role of the regions has changed significantly with regard to socio-economic developments on their own territories.

The federal level

In the system emerging after 1991 the federal level has in principle taken care of the financing of such activities as.

- Securing navigation along the NSR (meteorological services, ice monitoring and the hydrographical situation);
- Maintenance of the nuclear icebreaker fleet;
- Partial financing of work for the upkeep of transportation corridors on the rivers connected to the NSR.

In addition to this the federal level has continued to be owners or co-owners of shipping companies carrying out traffic on the NSR as well as participants in companies created to exploit the infrastructure, such as harbours and terminals. This participation has sometimes been 100 per cent, sometimes as part owner.

The federal authorities also have allocated money in the form of subsidies, but also as credits, to solve the social problems in the regions where the income basis has proved inadequate for covering the social costs. The central authorities have also provided means, mainly in the form of credits for shipment of necessary material supplies to the northern regions, especially fuel and foodstuffs.

The regional level:

The responsibility for all basic financing of social infrastructure was transferred to this level. The regions also had to take part in financing the maintenance of infrastructure on the inland waterways connected to the NSR. Furthermore they started to take part as owners in shipping companies, both in old enterprises which were transformed into joint stock companies, and new ones. They also became owners or co-owners of companies operating ports and terminals. The regional authorities have also had to organise shipments of supplies to the population in the Northern territories as well as financing social infrastructure there. Thus over the last years, the regions have become indispensable actors in securing essential services and infrastructure for the NSR. They have become involved in financing wholly or partly almost everything except the core technical infrastructure for the operation of the NSR.

Commercial actors

Commercial actors have also become a central part of NSR related activities. The shipping companies are now independent commercial units, with private, mixed or state ownership. They are responsible for operating the ships on a commercial basis, or at least striving towards this end. Commercial companies are also the primary actors in mining and industrial projects along the NSR.

Three new shipping companies stand out. *Arctic Shipping Company* owned 49% by Murmansk Shipping Company, 34% by Nemarc (a joint venture between Neste and Kværner Masa-Yards) and 17 % by other Russian investors was established in 1993 mainly focusing on tankers. [1] *Lukoil Arctic Tanker* was established in 1994 by three founders: Lukoil, 40 %, Murmansk Shipping Company 40 %, and Yakutnefteprodukt (the oil supply company in Sakha), 20%.[2] One of its goals is to supply oil to remote regions in the Arctic. It has been estimated that appr. 40 small tankers are needed to carry out this task. The starting point for these voyages are ports on the White Sea. Gazprom has established its own shipping company - *Gazflot* - to carry out shipping services, mainly in the Arctic.

A painful process

The changes have not been carried out smoothly or in an 'orderly' manner. They are the result of changes in the general economic framework as well as political decisions. The impact on the Arctic regions being so highly dependent on the priorities of the old political and economic system has been harsh. Under the new price system, many of the settlements created to service NSR as well as the mining industry have become too costly to maintain on a commercial basis. At the same time it is clear that the financial potential of local municipalities, the regions, or the federal budget is not sufficient to subsidise the settlements.

At present, budgets on all levels in the Russian Federation are under-financed. And the financial capacity is very often insufficient to cover costs which the given budget is supposed to cover. For instance, the federal authorities that control the hydrographical base in Tiksi are unable to finance its operations to the degree necessary. Many polar stations have been closed and thus the Tiksi hydrometeorological service has lost access to reliable data, which in turn reduces the quality of forecasts from Tiksi. And due to lack of finances the Tiksi Centre of Hydrometeorology and ice monitoring has not been able to monitor the ice situation.[3] Funds

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1 Biznes Moskovskie Novosti, No. 20, 1995.

2 *Biznes Moskovskie Novosti*, 27 March, 1996.

3 *Kyym*, (Yakutsk), 24 March 1998

to finance polar hydrographic along the NSR costing approximately 4.1 million roubles (appr. USD 600,000) failed to be transferred in 1998. [4]

In 1998 five nuclear icebreakers out of seven were lying idle in the navigation period due to lack of work. This problem is increasing because Norilsk Nikel has gone over to season-wise shipment of nickel and other metals – Norilsk being the main source of goods transported along the NSR - avoiding periods when ice-breaker assistance is required. The nuclear icebreakers are state property. The Murmansk Shipping Company is using them according to an agreement with the government signed in 1993. The state took upon itself to finance all running costs for the nuclear icebreaker fleet. However, starting in 1996 the transfers began to fall radically. In 1998, 200 million roubles (appr. USD 6 mill.) were promised to the Murmansk Shipping Company, but it received only 43.[5] In fact the shipping companies Murmansk, Arctic, and Far East which are only supposed to operate the nuclear icebreaker fleet have had to use their own money to maintain it, altogether the equivalent of some 50 million dollars or 270 million roubles. Murmansk Shipping Company alone spent more than 40 million dollars for these purposes in 1998. [6]

Severny Zavoz - 'Northern Supplies' is not a commercial proposition and the volume of such supplies is also declining, due both to the economic problems and to the build down of settlements in the north. However, another important factor is the fact that supplies are being channelled over other routes, i.e. from the south along the Siberian rivers. It thus seems quite clear that *Severny Zavoz* cannot be regarded as a cargo generating activity which could provide some sort of stable basis for operations on the whole Northern Sea Route.

The old system for shipping supplies to the northern areas has been destroyed, but a new one has not been created. One of the main problems in recent years is uncoordinated operations among different operators in delivering goods, thus making it difficult to utilise adequately the short navigation season. These operational difficulties are another reason for the fall in

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[4] *Novaya Gazeta*, 30 September 1998

[5] *Novaya Izvestiya*, 24 September 1998

[6] *Novaya Gazeta*, 30 September 1998

supplies. In 1998 the supply of fuel to the northern regions was 2 million tons less than in 1997 and the coverage varies between 12 and 13 percent of actual needs.[7]

Tariffs and taxes

To cover the costs of maintaining the nuclear icebreakers the so-called ice tax - *ledovy sbor* was established. This worked until 1992. Ships using the NSR were obliged to pay this tax. The size of the tax depended on the sort of cargo. During Soviet times this tax was 28 roubles per ton. This amounted to e.g. approx. 40% of total costs of shipping timber to western Europe. The remainder was made up by shipping costs. Today the average rate is 22.5 *dollars* per ton of cargo. But this is far from enough to maintain the ice-breakers. At this rate the upkeep of the nuclear icebreaker fleet can be covered only provided the amount of transported cargo exceeds 3.2 million tons. In 1987, 6.7 million tons of goods were transported along the NSR, whereas in 1997 this figure was only 1.87 million tons.[8]

The shipping companies operating the ice-breakers agree that the present tax is too high, and they promise to reduce it by 15 to 20 percent for each million ton of goods in excess of the 'break even' level. On 3 June 1998 a decision was made to reduce the ice tax to approx. 3 dollars for the shipping companies operating on the Yenisei. These companies have categorically resisted paying the existing tax since timber is being shipped out during the ice free season and the cargo vessels thus require no icebreaker assistance. The counter-argument is that icebreakers are patrolling the route also in the summertime. This dispute has been going on since 1991. With a sevenfold decrease in the tax, some of the timber should return from the railways to the sea route, but this will not solve the problems of the NSR.[9].

For the commercial companies, which are also in a situation characterised by lack of funds, the situation has led to a drastic curtailment of operations on the Northern Sea Route and in adjacent areas. In order to solve the basic financial problems the companies raised prices for

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7 *Rabochaya Tribuna*, 30 September 1998

8 *Finansovaya Rossiya*, No. 25, July 1998

9 Ibid.

their services, especially in the period 1994 to 1996. The companies have also sought to influence and pressure both regional and federal authorities with the objective of receiving preferential taxation etc.

The response of the regional level

At the regional level, the lack of financial resources has meant that questions and problems related to the Northern Sea Route, both current and future potential, have received an extremely low priority and are practically outside the political agenda. Instead the main attention is devoted to solving social problems and securing a minimum standard of living in the northern cities and settlements averting a catastrophic development in these areas. But even if some generalisation is warranted it should be stressed that the various regions have different starting points and interests with regard to the NSR.

The NSR runs along the coast of 5 Russian regions: Yamal-Nenets autonomous *okrug* in Tyumen *oblast,* Taymyr autonomous okrug in Krasnoyarsk *kray,* The Republic of Sakha (Yakutiya), Magadan *oblast,* Chukotka autonomus *okrug.*

The regions mentioned do not have equal status, neither formally nor in reality. Whereas both Yamal-Nenets and Taymyr are districts within a larger administrative area, Tyumen oblast and Krasnoyarsk kray respectively, Yamal-Nenets in reality enjoys an independent status vs. the *oblast,*[10] whereas Taymyr does not have a similar status with regard to the *kray*. Thus the relevant administrative levels to investigate are Yamal-Nenets autonomous okrug and Krasnoyarsk kray. Krasnoyarsk earns its relevance also from the role of Yenisey which connects the southern parts of the kray, as well as the Evenk autonomous okrug within the kray, with the NSR. The Republic of Sakha (Yakutiya) enjoys the highest formal status as republic, signifying more leeway in defining its own policies than other federation subjects of a lower order have. Altogether, Yamal-Nenets, Krasnoyarsk and Sakha cover about 3/4 of the

[10] R. Castberg, A. Moe and A. Berteig: 'Economic Development in Northern Siberia and the Russian Far East: Implications for the Northern Sea Route' INSROP Working Paper No. 117 - 1998.

territory along the NSR and the empirical discussion below is primarily focused on these three entities.

Yamal-Nenets autonomous okrug

The NSR has played an import part in the development of this region in relatively recent times. The development of the huge facilities for the gas industry in Yamal-Nenets required extensive usage of the NSR. Equipment and supplies were brought in by sea. Such deliveries amounted to as much as 500 000 tons per season in the 1980s.[11] Large deliveries of pipe were landed at Novy Port on the Yamal peninsula for reloading onto river barges which brought the cargo to its final destination - the gas fields and pipelines. Significant port facilities were established in Nadym (total length of quays 1800 m), Novy Urengoy (500 m) and Yamburg. Equipment was also transported upwards on Ob and Irtysh to the petrochemical complex at Tobolsk and to refineries in Omsk and Tomsk.

As this happened in the 1980s, the supplies were an integrated part of centrally defined development projects, and the question of profitability of the shipping route was not really relevant. But it is interesting to note that nevertheless a scheme was organised whereby the same ships that delivered supplies to Yamal went to Igarka to take on board timber for transportation out of the region.[12]

But even though the NSR had proven useful in the development of hydrocarbon resources from this area it was decided to use the railway as the main transportation channel for the development of the gas and gas condensate fields on the Yamal peninsula. The construction of a single track line taking off from the line leading to Labytnangi started at the end of the 1980s with the ultimate goal of reaching Kharasavei, some 500 km to the north, with a branch track leading to Novy Port. The function of the line would be to bring supplies and equipment in and transporting condensate out. Both functions could conceivably have been fulfilled by

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11 Far greater volumes were transported on Irtysj and Ob, however. In the peak-year 1987, 4.5 mill tons were transported into the okrug on the rivers.

12 Conversation with Head of Port, Kocherga, Salekhard, September, 1998.

the NSR. The exact deliberations made are not known, but it may be that some vague military considerations were supportive of the railway alternative. Ideas about a northern line had in fact already been put forward in the 1930s. It may also have played a role that large capacities for the construction of railway was available at the time as the BAM line was being completed. In any case this put further usage of NSR as supply route in the background.

Throughout the Soviet period focus in both the oil and gas industry was on the big fields. These fields were developed and connected directly to trunk pipelines. Further expansion of production was made possible by moving into new territories and opening new giants. Smaller, more complex fields, as well as fields that were located beyond the reach of the trunk pipelines were given little attention. With the introduction of a new economic system, this development strategy has been scrapped and hydrocarbon resources which were identified, but until recently considered uninteresting, are now tested against new assumptions both with regard to production and transportation. As discussed in other INSROP reports the potential for development of fields in connection with shipment on the NSR is quite significant.[13]

This is of particular relevance for Yamal-Nenets autonomous *okrug*. The district contains the biggest resource base for natural gas in the world, but the management of this resource is all but completely controlled by Gazprom, and the region finds itself with falling income and reduced employment deriving from the gas sector. The situation is different with regard to oil and condensate. There are many unlicensed smaller fields where the region will have a potentially strong say in the development of the resource, under the principle of shared competence with the federal level.[14]

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13 See with V. Kryukov, A. Moe and V. Shmat "West Siberian Oil and the Northern Sea Route: Current Situation and Future Potential",), *Polar Geography*, Vol. 19, No 3, 1995, also published as INSROP Working Paper 56-1996 and V. Kryukov, A. Tokarev and V. Shmat: 'Analysis and Evaluation of Economic Conditions of Energy Prospects Implementation of the Yamal-Nenets Autonomous Okrug', INSROP Working Paper 102-1998.

14 For a discussion of the various aspects of regional management of hydrocarbon resources, see Valery Kryukov and Arild Moe: The joint management of Hydrocarbon Resources in the Russian Federation", *Post-Soviet Geography and Economics,* 10, 1998.

Nevertheless, it has not been possible to identify any elaborate policy on the okrug level with regard to NSR. Specific projects have been discussed, though, such as development of an LNG plant on the Yamal peninsula which could use NSR for shipments to foreign markets. (Such a development could come from a field not licensed to Gazprom and could therefore be of particular interest for the regional administration.)

Other developments also show the increased interest in sea transportation of hydrocarbons from the area. In the ARCDEV project initiated and co-ordinated by the Finnish oil company Nest Oy under the 'Waterborne Transport Programme' of the European Commission, the purpose has been to 'demonstrate the year-round shipping and transport possibilities in the Russian Arctic'.[15] The project is organised around an experimental voyage with gas condensate from the Yuzhno-Tambeyskoye field on the Yamal peninsula loaded at the settlement of Sabeta.[16] The voyage took place in April-May 1998 under very difficult ice-conditions. Final assessments have not been made, but the voyage was successful from a technical point of view.

Although there seems to be an opinion in the regional administration that the tariffs on NSR are prohibitive, the only response so far is a proposal to acquire shares in Murmansk Shipping Company, along the same lines that have been suggested in Krasnoyarsk (see below).

An agreement between the *okrug* administration and the federal government on 'division of authority with regard to the functioning and development of the NSR and the adjacent economic zone' was drafted by Yamal-Nenets in 1996, but not signed.[17] It had a broad scope, but was mainly concerned with getting okrug control over the development of adjacent offshore hydrocarbon resources (which according to the law is under exclusive federal management). Its provisions regarding the NSR were not very specific but indicated the okrug interest in integrating shipping in development of resources on its territory: '..development of

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15 See Arcdev web-site http://www.arcdev.neste.com/

16 'Demonstratsiya v Arktike', *Rabochaya Tribuna*, 20 June, 1998.

17 Draft agreement between the Government of the Russian Federation and the executive organs of Yamal-Nenets autonomous okrug about the delimitation of authority with regard to the functioning and development of the Northern Sea Route and adjacent economic zone, Salkekhard, 1996.

a complex federal programme for the development of the Northern Sea Route, industrial exploitation of natural resources on the adjacent territory of the arctic subjects of the Russian Federation and the continental shelf, foreseeing the participation of the arctic subjects of the Russian Federation.' Substantial attention is devoted to the participation of Yamal-Nenets in determining approaches to the exploitation of natural resources in the coastal regions.[18]

Again, more recently, the district's interest as expressed by the deputy governor in charge of transport issues are 'to create economic conditions for the development of the whole infrastructure for shipping, terminals and the utilisation of ships'.[19]

But so far the okrug does not participate in the development of NSR beyond the ports in Ob bay, and it has no contact with neighbouring regions on the operative level.

Krasnoyarsk kray

Even though the bulk of economic activity and population in Krasnoyarsk *kray* is concentrated in the southern part of this vast territory, considerable resources, including oil, which could be developed in conjunction with the NSR have been identified [20], and already the most important source of traffic on the NSR is located on the territory of Krasnoyarsk, namely Norilsk Nikel.[21]

But so far the *kray* administration has not been active developing schemes for usage of the NSR. In the short term the administration's focus is on the very difficult supply situation in its northern part, including Taymyr and Evenkia autonomous *okrugs*. A reappraisal of all

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18 Draft agreement, *op.cit.*

19 'Pochemu ledokoly stoyat na prikole?', interview with Viktor Kazarin in *Krasny Sever,* No 23, 11-17 June, 1998.

20 See V. Kryukov, A. Moe and V. Shmat "West Siberian Oil and the Northern Sea Route: Current Situation and Future Potential",), *Polar Geography*, Vol. 19, No 3, 1995, also published as INSROP Working Paper 56-1996.

21 Norilsk is geographically situated within Taymyr autonomous district, but is administratively directly subordinate to the *kray.*

activities and settlements in the northern part of the kray is going on and so far the impression is that the potential is falling rather than increasing in the new economic environment.

Norilsk Nikel is an industrial giant running its own affairs without need of involvement from the kray. The prospects for development of new resources in its area of activity are so far beyond the horizon. Without substantial investments it is likely that output will fall. For the maintenance of the present output level in Norilsk, the Norilsk Nikel company calculates that 47 000 people are needed. At the beginning of 1996 the company employed 160 000 people. In the west 16-20000 people are required for similar output levels.[22]

Towards the end of 1997 a long term agreement covering five years with possible extension was signed between the Ministry of Transport of the Federation and the administration of Krasnoyarsk Kray 'About co-operation in securing permanent functioning and stable development of the transport complex of the region.' The agreement envisages a decrease in the ice tax collected for financing icebreaker services from enterprises in Krasnoyarsk Kray, and also joint financing for the upkeep of the waterways of the Yenisei basin. The possibility of creating a new company for the icebreaker fleet with participation of the regions was discussed.[23]

Recent political signals indicate that there is a political interest to develop the NSR to substitute for railway transportation. At a press conference in August 1998, the new governor of Krasnoyarsk, Aleksandr Lebed announced that he intended to buy a significant bloc of shares in Murmansk Shipping Company to develop this option.[24] But a more comprehensive approach to the administration and usage of the NSR has not been detected, and as noted above the current social and economic problems take precedence over long term strategies

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22 *Krasnoyarski Rabochiy*, 21 August, 1996. In 1998 the total population of Norilsk was 261 thousand. According to the development program of the *kray* it shall be reduced to 160 thousand by 2005. *Izvestiya*, 30 December, 1998.

23 *Krasnoyarski Rabochiy*, 9 January 1998

24 'Lebed nameren kupit' aktsii Murmanskogo parokhodstva', *Novye Izvestiya,* 11 August, 1998.

The Republic of Sakha (Yakutiya)

For the Republic of Sakha the Northern Sea Route is of crucial importance as a supply corridor for its northernmost parts. As described in other INSROP Working papers[25] it has also been a source of significant shipments out of the region, i.e. timber and coal. But in recent years shipments have dwindled.

The central and southern parts of Sakha is connected to the NSR via several waterways, Lena being by far the most important. In 'the good years' more than a thousand ships were working on Lena, altogether 27 thousand register tons. This was one of the youngest river fleets in Russia. All the activities used to be integrated into one structure, but after incorporation, they were divided among 16 new companies, with different specialities. Ships were distributed among these companies according to their characteristics. For example, in Osetrovo where Lena intersects with the railway, 60 containers ships are located.

Politically though, there have been announcements to the effect that the republic would take an active part in the development and exploitation of the sea route. The republic proposed to have a share of the taxes paid by shippers going through its waters set aside for development of its northern regions, to take active part in international negotiations over the NSR and also to create a shipping company together with other members of the Northern Forum.[26] Sakha has also argued for the creation of a large joint-stock company encompassing the whole NSR transportation system, owned jointly by the federation, regions and private companies, and eventually foreign companies.[27] As conceived, it is more of a superstructure for the operation of the NSR, than a commercial company.

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25 See A. Granberg, G. Kobylkovski and V. Plaksin: 'Cargo-forming Potential of Sakha (Yakutia), Chukot Autonomous District and Other Far-Eastern Regions for the Northern Sea Route' INSROP Working Paper 135-1999; and R. Castberg, A. Moe and A. Berteig: 'Economic Development in Northern Siberia and the Russian Far East: Implications for the Northern Sea Route' INSROP Working Paper No. 117 - 1998.

26 Speech by President M. E. Nikolaev, *Respublika Sakha*, 8 June, 1994.

27 See Y. M. Ivanov, A.P. Ushakov and A. N. Yakovlev: 'Russian Administration of the Northern Sea Route - Central or Regional', INSROP Working Paper No. 106 -1998, p. 43.

In 1995 an agreement between the Government of the Russian Federation and the government of Sakha on 'Delimitation of authority in the management system of the Northern Sea Route' was signed.[28] This agreement is a framework for joint development of the sea route, and is in line with the proposal of creating a joint stock company. In the agreement it is stated that 'The parties will together work out a perspective programme for the development and efficient functioning of the Northern Sea Route. ...contribute to the financing of development of infrastructure in the sea ports located along the NSR, hydrographic works, the establishment and functioning of a communications system along the NSR, etc... in agreed proportions.'. [29]

However, since these ideas were put forward in 1994-95 it does not seem that a further elaboration has taken place, the main reason probably being the lack of financial resources on the federal as well as regional level to carry out a concrete development programme.

Possible regional participation in the longer term

In general the position of the regions with regard to the NSR is determined by the following circumstances:

At the social and economic level support of local industry has high priority. This is industry that deals with the extraction and shipment of raw materials to other parts of Russia or abroad. At the political level 'NSR-policies' are related to attempts to reinforce the newly won status of the northern regions of Russia as subjects of the Russian Federation with some degree of autonomy. This can be clearly seen in for instance Sakha (Yakutiya) which has the status of republic but also in Yamal-Nenets Autonomous okrug which is also a separate subject of the Federation. Such ambitions are reflected in these two subjects' agreements with the federal government.

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28 *Soglashenie*, signed by V.S. Chernomyrdin and Yu. V. Kaydyshev, 28 June, 1995.

29 'Agreement between the Government of the Russian Federation and the Government of the Republic Sakha (Yakutiya) on division of authority in the system of managing the NSR', 28 June 1995

It is clear that solving the problems of the NSR from the point of view of the regions is closely connected to the development of commercial projects along the sea route as well as finding sources to finance the social needs of the regions of the far north, especially the settlements along the coastline.

Possible regional participation is first of all connected to the establishment and maintenance of infrastructure as well as involvement in industrial projects which can generate cargo for the NSR. This all depends on the economic strength and freedom of action of the relevant regions.

But the regions can also influence activity on the NSR more indirectly, by establishing conditions accommodating increased activity on the NSR through a suitable legal framework.

In reality economy and law must be tightly connected. This is easily visible in the proposed project for development of hydrocarbon resources in the northern part of Western Siberia, as well as with regard to the exploitation of forest resources and ores from the central part of the Yenisey basin and from Sakha. It is necessary to establish more flexible framework conditions to accommodate concrete projects. And an important part of the framework conditions are constituted by the tariffs employed and duties paid for transportation along the NSR.

In the soviet tradition costs for a given operation, say shipping services, are determined as a share of the total costs for the whole organisational unit, in this case a shipping company. Prices or tariffs are set up on an average basis to cover the total costs. But there is little or no relation between the specific costs associated with a given shipping operation and the tariff collected. This may work in a centrally planned economy where prices play a minor role, and primarily function as a mirror of political decisions. In a more market oriented system with actors making independent decisions on a commercial basis, the old approach to pricing may have very negative consequences. Applying a uniform tariff and duty system set up to recover all the costs of the shipping company may effectively kill off pilot projects to exploit e.g. mineral resources.

In general we will argue that the best way for the regions to participate in the revitalisation of the NSR, would be the 'project' principle. This means:

- singling out cargo-generating projects,
- determining conditions for profitable development of such projects,
- delineating authority and responsibilities between the regions and the federation in realising such projects.

The same principle can be used for the development of navigational infrastructure along the NSR.

In March 1998 the problems of the NSR were discussed in the Federal Council. Several approaches to reorganisation of NSR activities were discussed:[30]

- returning to Glavsevmorput, i.e. a centralised administrative structure taking care of all aspects of the NSR;
- the creation of a financial-industrial group (FIG) which would include transport, industry and banks relevant for the area;
- decentralisation - the transfer of control over the various stretches of the NSR to the adjacent regions.
- transferring the nuclear ice-breaker fleet to Murmansk shipping company altogether.

Development of a new tariff policy for the NSR

The development of shipping depends on the establishment of acceptable conditions, both technical and economic, for shipping companies as well as the charterers. These rather self-evident considerations are not so apparent in today's economic situation in Russia. One of the

30 *Krasny Sever,* 2-8 April, 1998. In a resolution it is called for '... reestablish an integrated system for the management of navigational, hydrographical and hydrometeorological services for operational safety of the NSR.'

reasons for this is the legacy of the previous economic system, which makes itself felt today and will continue to influence the situation in the years to come.

The 'historical' specifics are all connected to the logic and operation of the centrally planned economy. The transport system was not created with economic efficiency in mind. The main task was to transport certain volumes of cargo. The required financial resources to meet plan targets were automatically made available. The system was geared towards steady growth in the shipped volumes. To support this growth a unique programme for the construction of nuclear ice-breakers was launched. All important decisions were taken at the central level.

Economic considerations were clearly subordinate, and were not analysed in any detail. Furthermore, the financial resources necessary for the operation of the sea-route as well as economic development in adjacent territories were channelled through different ministries and agencies. The sum of financial resources gave a kind of picture of the total resources required, but it was impossible to identify particular cost items and analyse efficiency. It was difficult to distinguish between permanent costs and variable costs. The numbers also could not tell which costs were unavoidable from an economic point of view, and which costs were occurred for political reasons. The latter costs included and will continue to include such concerns as Russian presence in the Arctic.

Thus a starting point for the determination of tariffs should be a division of cost items between the categories just mentioned above.

	Permanent costs	Variable costs	'Commercial' costs	Regional participation in financing
Meteorological services	yes	no	no	no
Hydrographical services	yes	no	yes	possible in river mouths
Upkeep of waterways	yes	no	yes	possible in straits and river mouths
Ice-breaker fleet	no	yes	yes	possible to participate in companies

On the 30th of April, 1998 a new law "On the hydrometeorological service" was put into force. In accordance with this law, chapter 17, 'information about the environment, pollution, and information products is provided to the user free of charge'. However, data about hydrography and the ice situation belong to so-called specialised information, which is provided to customers paying for the information. Because of this, hydrographic works may be included in the category of 'commercial' services.

Very important is also the financing of shipping companies operating on the NSR. Whereas in the old system all costs were covered by the all-union budget, in the new state structure, the roles of the subjects of the federation is on the increase. The regions have started to finance certain parts of the maintenance of water-ways, a share of hydrographic works, and they have received as their property part of the shares held by the state in shipping companies, such as for instance Lukoil Arctic Tanker, where one of the co-founders is the republic of Sakha (Yakutiya).

Shipping on the NSR under market conditions

Ships and port facilities which in the past had been part of the integrated infrastructure serving the NSR, have been transferred to shipping companies. From the outset these companies were state owned joint stock companies. They were supposed to carry out services on a commercial

basis. With varying degrees of success, or failure, this task was fulfilled. But a result of the re-orientation towards commercial assignments was that most of the ships belonging to the companies in the Arctic basin found themselves engaged in other countries and regions of the world. Ports and terminals were in most cases converted to independent companies with or without a state interest.

Starting in 1989 also other attempts were made to 'commercialise' activities directly connected to shipping operations on the NSR. Pilot services, hydrographical works, ice monitoring were all included in the ice tax - *ledyanoy sbor*. Initially the ice-tax was fixed for foreign vessels at 23 USD per ton cargo.

The tax was determined as a fixed tariff with periodical indexation of some of the components. The main purpose was to cover part of the costs associated with maintaining the existing ice-breaker fleet. Full compensation of these costs would still depend on direct state subsidies. Due to the high share of fixed costs in the cost structure of the ice-breaking fleet, about 70 per cent, the ice-tax was imposed on tonnage, not distance.[31] Furthermore, only on 30 per cent of the sea route are ice-breakers never required.

This approach was clearly in line with the so-called 'cost-based price formation', prevalent in the Soviet economic system. The tax was calculated so that it would cover costs. This principle is not helpful when it comes to establishing efficient transport services. The cost structure is non-transparent, and the customers are just expected to foot the bill, no questions asked.

A more flexible tariff system for the transition economy

In a more market oriented economic structure, the transport system built up under the previous economic system became loss-making. Traffic started to fall and the total cargo volume

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[31] INSROP - Discussion Paper, Project 07.1, 1995 'The NSR Tariff Structure of Fees' by Y. Batskih and G. Kurapova.

dropped from 2.8 mill. tons in 1993 to 1.8 mill. tons in 1997. Including maintenance costs for the NSR in the tariff seriously impaired the economy in shipping out raw materials and other sorts of cargo from Northern Siberia, Sakha and the north-eastern regions.

The application of the 'cost principle' led to a further decrease in freight volumes. Forest and pulp producers, for instance, began to look for alternative outlets to the market. A significant share of their output was reoriented towards the railways. At the same time many shippers simply stopped paying the ice tax, especially in cases were convoys were not using ice-breakers.

Altogether this meant that resources for the maintenance of NSR infrastructure and the ice-breaker fleet were dwindling. It was expected that the falling income would be compensated with subsidies from the state budget. And in the period 1992-95 money was forthcoming over the state budget on a regular basis, albeit only barely enough to cover minimum needs. But starting at the end of 1996, the situation deteriorated drastically. The stream of financial resources became a trickle, and Murmansk Shipping Company, the operator of the state-owned nuclear ice-breaker fleet had to use its own means to maintain the ice-breakers, notwithstanding the fact that this company too was in dire straits.

Because of these developments, the NSR as a system of transportation capacities and navigational infrastructure is on the verge of a breakdown. Neither the federation, nor the shipping companies or the shippers are in a position to finance the necessary infrastructure. If the whole complex is 'frozen' until there is a potential for larger transport volumes, the risk is that the investments to re-establish the route will be very substantial and much higher than what it takes to maintain the existing infrastructure uninterruptedly.

At present there are 9 ice-breakers in the western sector of the NSR, 7 nuclear and 2 diesel fuelled, operated by Murmansk Shipping Company on a trust basis. To extend the life of only six of the nuclear ice-breakers by 10 years, investments for about 100 mill. USD are required. To build a new nuclear ice-breaker costs around 250 mill. USD.[32]

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32 Yu. M. Batskikh: 'V ozhidanii starta', *Neftegazovaya Vertikal,* 9-10, 1998, pp 72-74.

The relevance of international comparisons

In an international comparison the NSR system is unique. No other state has a similar transportation system in the Arctic. However, countries like Canada, the United States, Finland and Sweden all operate ice-breakers in Arctic waters. The ice-breakers perform a variety of task of which military and scientific are prominent. These ice breakers are to varying degrees also providing services for commercial actors. The commercial operations form a relatively small part of the total activities of these ice berakers. And the tariffs applied are either negotiated separately each time or are based on marginal costs.

In all these countries there is a strong element of state subsidies of the permanent costs. The full costs of operating the ice-breakers are hard to come by. They are 'hidden' in various broader categories in various parts of the respective state budgets. Thus the relevance of the systems in these countries for the establishment of a commercially oriented tariff system for the NSR is very limited. Ironically, the system in these western countries have more in common with the principles of the Soviet centrally planned economy.

Approaches to a new model for tariffs for the transition period

Even under the present very difficult economic situation in Russia, we believe it is possible to some extent to improve the situation on the NSR by regulating the economic framework. Main issues to be addressed are:

1. Clear delimitation between permanent and variable costs in all cost calculations, and also clear division of costs between different levels in the state hierarchy.

2. The future of the nuclear ice-breaker fleet and how it shall be supported by the state. One possibility is to hire them out on a more extended basis for international economic and technical co-operation.

3. The establishment of more flexible approaches to tariff formation.

4. Extending the usage of project finance for the maintenance of the NSR - especially in connection with the development of oil and gas resources on the continental shelf and in adjacent coastal areas.

We find it most logical that the transport tariff should not exceed a certain level, i.e. the sum of tariffs and taxes must permit shipments to be competitive and not uneconomical.[33]

The level should be determined with a view to the price of the cargo in question in the final market, so as to make the product competitive. It should also take into consideration alternative means of transportation (where they exist), such as the Trans-Siberian railway or shipping through the Suez canal.

Adopting this principle will not solve the problem of financing the infrastructure, but it will increase the competitiveness of the NSR. The challenge is to find a way to cover as much of the maintenance costs for the NSR infrastructure as possible, and at the same time stimulate traffic on the sea route. If the former goal takes total precedence, the result will be prohibitive tariffs which will kill all attempts at starting commercial projects. If attention is only given to the latter goal, the infrastructure, including the ice-breakers, will deteriorate.

These problems were discussed in the session of the Council of the Federation in April 1998.[34] In its resolution it is called for 'measures to establish a consolidated extra-budgetary fund for maintenance and construction of ice-breakers. .... evaluate the question of the legitimacy of the size of the payment to the ice-breaker fleet and other monopoly transporters, carrying out shipments to the regions of the Far North and adjacent areas'.

A transfer to a new system for tariff formation is already visible, both for sea and river transportation. One instance is the new, flexible tariff system adopted by the Yenisey River

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33 This principle is also discussed in INSROP working paper No. 102-1998 'Analysis and Evaluation of Economic Conditions for Energy Project Implementation in the Yamal-Nenets autonomous oktug'.

34 Resolution of the Council of the Federation 'O neotlozhnykh merakh po vyvodu iz krizisa ekonomiki i sotsialnoy sfery RF', No. 242-SF, 10 June, 1998.

Shipping Company. It has lead to more traffic on the river as well as more work for the ports.[35] In 1998 this shipping company announced that it would slash the price for transportation of brick from Achinsk alumina plant to Dudinka for the Norilsk kombinat by two thirds. A precondition for reducing the tariffs was that the cargo volume would be increased - from 50 thousand to 400 thousand tons. The Yenisey River Shipping Company also cut by 50% the tariff for transportation of agricultural products from producers in Krasnoyarsk kray. This immediately led to increased shipments. Thus it seems that in these cases, this shipping company has been able to break out of the vicious circle composed of higher and higher tariffs and less and less cargo.

Possible participation by different territorial levels in the development of a tariff policy

The possible influence and participation of various administrative levels in solving the economic problems of the NSR is tightly connected to their position as determined by the constitution of the Russian Federation.

The continental shelf and the economic zone are under the jurisdiction of the federal level, and thus the hydrographic service and maintenance of the navigational system should be financed over the federal budget. Hydrographic works and maintenance of the navigational systems within the coastal zone are already to a considerable extent financed via regional budgets, e.g. Yamal-Nenets autonomous okrug covers 30% of such costs within their own coastal areas.

Maintenance of the ice-breaker fleet is a federal responsibility and is financed over the federal budget. The federal budget also has an income side for the ice-breakers, namely the special ice tax collected from shipping companies operating along the NSR. But costs by far exceed income. When state transfers have been insufficient, the operators of the ice-breakers, e.g. Murmansk Shipping Company have used their own resources. But this is not a reliable source of finance since these shipping companies are in a difficult economic situation too.

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35 'Informatsionnoye soobschenie ob itogakh godovogo obschego sobraniya aktsionerov OAO "Yeniseyskogo rechnogo parokhodstvo", *Krasnoyarskiy Rabochiy,* 11 August, 1998.

Calculations by Murmansk Shipping Company show that with freight volumes around 2.8 mill. tons and an average ice-tax of 22 USD per ton of shipped cargo, the costs of maintaining the ice-breaker fleet are covered. In accordance with this, increasing the cargo volumes would make it possible to reduce the ice-tax, i.e. by 10 per cent for every million ton of additional cargo.[36] Again it is clear that the most important contribution to the financing of NSR would be to create conditions stimulating increased shipments.

Categorisation of tariffs

In the course of the 1990s the tariff policy in the Arctic was changed. Gradually the policy of placing all the costs of maintaining the NSR infrastructure on the shipping companies and the charterers was moderated. The policy simply had to be changed because of the declining cargo volumes. Two new approaches can be identified:

1. The establishment of fixed rates for individual shipping operations, depending on cargo volume or displacement of escorted vessels. Within these calculations distance has also become a relevant parameter.

2. The establishment of 'discount' tariffs, e.g. 3-5 USD per ton for shippers who have the potential to increase shipped volumes, such as timber, hydrocarbons, ore.

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36 Yu.M. Batskikh: 'V ozhidanii starta', *Neftegazovaya Vertikal*, 9-10, 1998, pp 72-74.

Modelling of a tariff policy for the NSR

The economic role of tariffs in the NSR transport system

NSR can be looked upon from at least three different perspectives:
On one hand, the NSR is one transport corridor among others for Russia's internal and foreign trade and for organising intercontinental transit operations. In this perspective the tariff policy for the NSR system should ideally have a stimulating effect on:

1) the competitive strength of the transportation process itself;

2) the competitive strength of the transported commodity (in particular export commodities from Russian producers);

3) efficient exploitation of the natural resource potential of Russian North and (simultaneously) the vitality of social and economic development of these territories.

On the other hand, the NSR transport system is a rather complicated economic "organism" with an existing industrial and social infrastructure. For the maintenance and development of this system large financial resources are required. In principle they should mainly be generated through income from use of the NSR. And the income will depend directly on the tariff for use of the services of the NSR.

But in a situation where competitive tariff rates are insufficient for profitable operation of the NSR, it is absolutely necessary to attract state resources (mainly from the Russian federal budget) in order to cover the expenses for maintenance of the industrial and social infrastructure of the NSR.

Finally, the sea route can also be regarded as a unique 'natural resource' with the potential of generating rental income. This defines the role of the tariffs as a means for accumulating and extracting economic income. Of course, this is not the role which is of most imminent relevance today. But if cargo flows increase and conditions for profitable operation are created, it will be highlighted.

The principles of forming the tariff rates for the services of the NSR, and the upper and lower limits of the rates should be based upon considerations of this triple economic role.

Basic principles for tariffs and payments for the services of the NSR transport system.

The ideal system

Ideally the tariffs should facilitate an optimal use of resources and be built on the following two basic principles:

1. They should be of an *integrated character*, i.e. without specified allocations for escorting ships, hydrographic services, ice reconnaissance etc.

2. The tariffs should have a *universal* character, i.e. they should be calculated per standard unit of register tonnage of the escorted vessel. The tariffs should not be linked to the properties of the cargo. Payment for the services of the NSR transport system should be calculated and drawn on the basis of the total volume of register tonnage irrespective of the factual loading of the vessel.

The tariff rates should also be differentiated in relation to the following factors:

- the season of work (summer, winter);
- ice class of the escorted vessel according to the Russian classification;
- the distance of transportation - according to a zone principle.

With respect to the potential cargo flow one can define at least 3 zones:
Western (west of 60° east) – export cargo sent westwards from Murmansk, hydrocarbons from the fields on the continental shelf of the Barents Sea and shipments from onshore fields in the Timan-Pechora basin;
Central (60°-90°) – cargo to and from Norilsk Nikel and the aluminium industry in the Angara-Yenisey region, forest products for export, hydrocarbons from fields in the northern parts of Tyumen oblast and Krasnoyarsk kray;

Eastern (east of 90°) – necessary material supplies for settlements in the north-eastern regions of Russia, coal, and timber shipments out of the region.

The basic tariff rate should be applied to payment of NSR transport services for transportation of cargo volumes that are agreed upon in advance. Possibility should be provided for applying special higher rates for transportation that is not planned in advance, escort of vessels with greater tonnage, escort along special routes, and so forth.

A tariff system based on these principles would be most rational from the point of view of the sea route and induce shippers as well as shipping companies to be cost-effective. However, for such a system to be applicable it presupposes a cargo generating potential from day one which is sufficient to require a volume of shipping services which in its can create a stable economic basis for the transport system.. This is clearly not the case. A tariff system which presupposes that the cargo generators are sustainable in a developed market economy will be in risk of killing all economic activity along the sea route. Therefore, a tariff system must take into account the special cercumstances in the *transition economy*, where some transactions are market based and others are not, at the same time as the decisions taken and investments made in the previous, centrally planned economy put constraints on decisions today. A flexible tariff system must be regarded as a tool which encourages usage of the Northern Sea Route and at the same timel helpstransform economic development in the area to market orientation.

A modified approach:
In contrast to the ideal system, we will argue that tariffs will have to be more differentiated. When forming differentiated tariff rates according to cargo groups the following factors should be taken into consideration:

- general competitive power of the NSR (total cost of cargo transportation along the NSR, including freight, all kinds of insurance payments and payment for the services of the NSR transport system, should not exceed costs of transportation by alternative means) - especially important for transit and transportation of export commodities of the Russian industry in regions connected to the NSR;

- general competitive power of the transported commodities (sales price at the point of destination should not exceed the prevailing market price at the point of destination provided other circumstances are equal) - especially important for transportation of export products;
- terms of taxation for Russian industry connected to the NSR;
- the complete transport scheme for the given commodity - important because the commodities are usually exported by combined ways of transportation (rail, river, sea).

By introducing such factors a lot of flexibility is incorporated in the tariff system. Gradually the tariffs will be allowed to increase and the component of subsidies decrease. But the system also entails complicated decisions in each individual case. To implement the system it will be necessary to establish a special body with expertise and high authority to evaluate the factors mentioned, and determine the tariff.

Rough scheme for calculation of tariffs for the services of the NSR transport system.

1. Calculation of minimum prognoses for cargo volumes (on the basis of real cargo volumes), including:
   - state subsidised cargo - necessities of life for the regions of The High North (fuel, food-stuff, consumer goods, building materials, etc.)
   - commodities from industries in the regions of The High North where real alternative ways of transportation are lacking;
2. Calculation of the commercial and non-commercial components of the total minimum cargo flow volume.
3. Estimate of volume of transportation work involved (in the total system) in serving the minimum prognosticated cargo flow, split on commercial and non-commercial cargo.
4. Calculation of the cost of transportation work involved in serving the minimum prognosticated cargo flow, split on commercial (to be paid by the consignor/consignee)

and non-commercial (to be paid by the federal or territorial budget).

5. Calculation of commercial tariffs for the services of the NSR, split on the main groups of cargo carried and in accordance with the principles mentioned above.

6. Assessment of additional cargo flow (exceeding the minimum), including:

- export commodities from existing industry connected to the NSR, but currently using alternative transport corridors (mainly heavy metals, mineral fertilisers, timber);
- commercial cargo for existing industry in the regions connected to the NSR (mainly raw materials for the aluminium industry in the Angara-Yenisey region);
- products (mainly for export) from new industry and exploitation of the mineral resources in northern Russia (mainly hydrocarbons);
- assumed volumes of transit cargo.

7. Calculation of commercial tariffs for the services of the NSR applicable to varying cargo flow volumes.

8. Assessment and analysis of the interdependence between cargo volumes and acceptable tariff rates.

Assessments of cargo flows on the NSR.

Based on various indirect data we estimate the volume of the basic (factual) cargo flow on the NSR to be 2.9 mill. tons, of which approximately 1.1 mill. t. constitute non-commercial transportation (centralised delivery of necessities of life for the northern territories) and 1.8 mill. t. – commercial transportation. In the latter category cargo of Norilsk Nikel dominates).[37]

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37 Sources of information:

1. S. Vorobev: 'Ledoviy put k bogatstvam Rossii', *Finansovye Izvestiya*, № 25, 1998.
2. Bandman M.K., Vorobieva V.V., Yesikova T.N., Ionova V.D., Robinson B.V. 'The Cargo Generating Potential of the Angars-Yenisey Region for the Northern Sea Route' INSROP Working Paper 137-1999.
3. *Russian Petroleum Investor.* September 1998, p. 67.
4. A. Granberg, G. Kobylkovski and V. Plaksin: 'Cargo-forming Potential of Sakha (Yakutia), Chukot Autonomous District and Other Far-Eastern Regions for the Northern Sea Route' INSROP Working Paper 135-1999.

A partial reorientation of the heavy metal, mineral fertiliser and timber industry of the European part of Russia and the Urals into using the NSR for export of their products, would allow for an increase in the cargo flow to 3.75 - 4.35 mill. t. (during summer navigation and prolonged navigation). Exploitation of the hydrocarbon resources in the Nenets autonomous okrug and on the shelf of the Barents Sea may within 5-10 years give from 5 to 15 mill. t. of additional cargo for the NSR.

Table 1: Estimation of cargo flow volumes in the Western sector of the NSR (until year 2005), mill. t.

Cargo types	Volume	Point of unloading
Production from the heavy metal industry	1.7-1.9	Murmansk
Mineral fertilisers	0.75	Murmansk
Timber cargo (including the Central sector)	1.3-1.7	Kandalaksha, Arkhangelsk, Igarka
Hydrocarbons (oil and LPG)	5-25	Western sector
Total	8.75-29.35	

Sources of information:

1. N. Isakov, A. Yakovlev, A. Nikulin, G. Serebryansky, T. Patrakova: ' Potential Cargo Flow Analysis and Economic Evaluation for the Simulation Study' INSROP Working Paper 139-1999.

According to other data, the potential growth in cargo flow generated by existing industry connected to the NSR may be more substantial. For example, possible increase in mineral fertilisers (sent from Murmansk) may amount to 4-4.5 mill. t. (provided there is year round navigation).[38]

The total volume of cargo transported in the Central sector of the NSR can, according to estimates, increase to 13.8 – 43.4 mill. t. (including export of hydrocarbons from the fields of Yamal and the northern regions of Krasnoyarsk kray).

38 N. Isakov, I. Krupsky, M. Kostenko, L. Alekseeva, T. Maksimova, A. Nikulin. The Russian Fertiliser Industry. Potential Cargo for NSR', INSROP Working Paper 132-1999.

Table 2: Estimated cargo flow volumes in the Central sector of the NSR (until year 2005), mill. t.

Cargo types	Volume	Points of departure/delivery
Cargo going out:		
Light metals	2.1-2.4	Dudinka
Timber	0.6-0.9	Igarka
Oil products (oil, condensate, LNG, LPG):	9.0-37.6	
fields in Yamal-Nenets A.O.	25.0	Yamal
fields in Krasnoyarsk kray	9.0-12.6	Dikson
Total cargo flow out	11.7-40.9	
Cargo coming in (raw materials and equipment):		
Yamal (our estimates)	0.3	
Krasnoyarsk kray	1.8-2.2	Dudinka, Dikson
Total cargo flow in	2.1-2.5	Yamal
Total cargo flow	13.8-43.4	

Sources of information:

1. Bandman M.K., Vorobieva V.V., Yesikova T.N., Ionova V.D., Robinson B.V. 'The Cargo Generating Potential of the Angars-Yenisey Region for the Northern Sea Route' INSROP Working Paper 137-1999

2. N. Isakov, A. Yakovlev, A. Nikulin, G. Serebryansky, T. Patrakova: ' Potential Cargo Flow Analysis and Economic Evaluation for the Simulation Study' INSROP Working Paper 139-1999

In the Eastern sector of the NSR one can expect a considerably smaller increase in cargo flow (up to 1.9 – 1.2 mill. t.), the main part of which will be non-commercial cargo, as at present.

Table 3: Estimated cargo flow volumes in the Eastern sector of the NSR (until year 2005), mill. t.

Cargo types	Volume	Main points of departure/delivery
Cargo flow within the sector	0.14-0.17	Pevek, Tiksi
Transportation out	0.08-0.15	Pevek, Tiksi
Transportation in	0.68-0.90	Pevek, Tiksi
Total cargo flow	0.9-1.22	

Sources of information: A. Granberg, G. Kobylkovski and V. Plaksin: 'Cargo-forming Potential of Sakha (Yakutia), Chukot Autonomous District and Other Far-Eastern Regions for the Northern Sea Route' INSROP Working Paper 135-1999.

Based on the data above and taking into account the most probable directions of cargo transportation, one can present the combined prognosticated indicators for cargo flow on the NSR within three different scenarios:

basic - based on data of real volumes of cargo transportation;

minimum - under the condition that the hydrocarbon fields in northern Tyumen oblast and Krasnoyarsk kray will use land transportation;

maximum - under the condition that hydrocarbons from regions connected to the NSR will be transported out by sea.

It is assumed that export of the hydrocarbons from Yamal and Krasnoyarsk kray will be evenly distributed between the western and eastern direction:

Table 4: Estimates of cargo flow on the NSR, mill. t.

Scenario	Direction of transportation		Sectors of the NSR			
			Western (<60°)	Central (60°-90°)	Eastern (>90°)	Total
Basic	Out	West	0.2	1.1	0.0	1.3
		East	0.0	0.3	0.0	0.3
	In	West	0.1	0.4	0.2	0.7
		East	0.0	0.4	0.2	0.6
	Total	West	0.3	1.5	0.2	2.0
		East	0.0	0.7	0.2	0.9
		Total	0.3	2.2	0.4	2.9
Minimum	Out	West	5.6	2.5	0.0	8.1
		East	2.7	0.2	0.2	3.1
	In	West	0.1	0.8	0.2	1.1
		East	0.0	0.8	0.5	1.3
	Total	West	5.7	3.3	0.2	9.2
		East	2.7	1.0	0.7	4.4
		Total	8.4	4.3	0.9	13.6
Maximum	Out	West	25.6	21.8	0.0	47.4
		East	6.4	19.1	0.4	25.9
	In	West	0.3	1.4	0.3	2.0
		East	0.0	1.1	0.6	1.7
	Total	West	25.9	23.2	0.3	49.4
		East	6.4	20.2	1.0	27.6
		Total	32.3	43.4	1.3	77.0

Expenses on maintenance of the NSR transport system.

Since the input data are insufficient, we can only make a very rough estimate of the costs of maintenance of the NSR transport system. The annual costs (need for finances) for maintenance of the existing infrastructure amounts to approximately 33 mill. dollar.

Table 5: Estimated need for financial resources for maintenance of the NSR transport system

Indicators	
Current tariff rate for payment of escort services, dollar/unit GRT	22.5
Cargo volume necessary for profitable operation with the current tariff, mill. t.	3.2
Costs of maintenance of the icebreaker fleet, mill. dollar	28.8
Costs of maintaining the hydrographic services, mill. dollar	4.2
Annual costs – total, mill. dollar	33.0
Number of icebreakers	13
Sum of costs per icebreaker, mill. dollar	2.5

Sources of information:

1. S. Vorobyev: 'Ledoviy put k bogatstvam', *Finansovye Izvestiya*, 25, 1998.
2. *Russian Petroleum Investor*. September 1998, p. 67.
3. Information on financing of the departments of the Ministry of Transport of The Russian Federation in 1998. Russian Ministry of Transport.

In the centrally planned economy, for profitable operation of the icebreaker fleet, every icebreaker should serve a cargo volume of approximately 1 mill. t. The following factors are taken into account:

- we assume that the greatest increase in cargo will occur on the shortest stretches of the NSR (in the Western and Central sector);
- we expect hydrocarbons to be dominating in the cargo structure. To carry these products westwards from the Ob bay one may use tankers with significantly larger carrying capacity than the vessels which are used to transport oil products into the areas

further east. INSROP research indicates vessels up to 30,000 dw. tons, working at full capacity, and possibly 60,000 tons working from Kharasavei on the Yamal peninsula.[39]

- prolonged sailing season and possibility of year round navigation

In this way the potential annual capacity of the NSR transport system can be estimated to volumes of 19.5-26 mill. t., which exceeds the cargo volume needed for profitable operation of the NSR (3.2 mill. t.) with a factor of 6-8 times.[40]

Estimate of the maximum acceptable competitive tariff rate.

The maximum acceptable average tariff rate depends directly on the difference in cost between cargo transportation on the NSR and use of alternative transport corridors. The maximum acceptable tariff rate is estimated on the basis of average values for use of one type of vessel (GRT=20000) on the distance between ports in northwestern Europe and ports in Japan/China.

If the entire NSR is traversed, the maximum acceptable tariff rate will be 6.57 dollars per one unit GRT of the escorted vessel.

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39 L.G. Tsoy et.al: 'Design Requirements for Future NSR Ships', INSROP Working Paper No. 160-1999.

40 Y. Batskih, G. Kurpatova. Main principles of marine tariff policy for ice-breaker support in the Arctic for period 1993-1995 and formation of fee system for ice-breaker support in Arctic seas of Russia. INSROP Discussion Paper. August 1995.

Table 6: Calculation of the maximum acceptable tariff rate for the services of the NSR transport system

Indicators	The northern route (through the NSR)	The southern route (through Suez)
Average time for one passage, days	26.5	34.4
Daily operation cost of vessel, dollar	6500	6500
Vessel operation costs for one passage, dollar	172250	223600
Fee for passing through the Suez canal, dollar	0	80000
Sum of costs for one passage, dollar	172250	303600
Basis for calculating the tariff on NSR services, dollar	131350	
Maximum average tariff rate for the services of the NSR dollar/unit GRT	6.57	

Sources of information:

1. T.R. Ramsland: 'Cargo Analysis, North West Europe – The Far East & Canada US West Coast – NW Europe. The Potential for Transit Traffic on the NSR. INSROP Working Paper 145-1999.
2. Y. Batskih, G. Kurpatova. Main principles of marine tariff policy for ice-breaker support in the Arctic for period 1993-1995 and formation of fee system for ice-breaker support in Arctic seas of Russia. INSROP Discussion Paper. August 1995.

The input data and estimates given above are used as a basis for a rather simple model with a limited number of modelled factors, and the input data are not complete.. But it can be used for analysis of the possibility of applying a flexible tariff policy for the NSR, in particular:

- evaluate the interdependence between probable values for average tariff rate and volumes of cargo transportation;
- evaluate the possibility of differentiating tariff rates depending on the transportation distance (according to the zone principle).

Modelling of situations with average tariff rate.

Situation 1: Estimate of financial parameters using basic cargo volumes and maximum acceptable competitive tariff rate	West	Centre	East	NSR
Cargo volume – total mill. t.	0.30	2.20	0.42	2.92
non-commercial	0.10	0.60	0.42	1.12
commercial	0.20	1.60	0.00	1.80
Total GRT of vessels in commercial transportation, mill. units	0.08	0.64	0.00	0.72
Average tariff rate, dollar/unit GRT				6.57
Total income, mill. dollar				4.7
Financial needs, mill. dollar				33.0
Need for subsidies, mill. dollar				28.3
for service of non-commercial cargo				2.9
to cover deficit				25.3

Situation 2. Estimate of profitable tariff rate using basic cargo volume.	West	Centre	East	NSR
Cargo volume – total mill. t.	0.30	2.20	0.42	2.92
non-commercial	0.10	0.60	0.42	1.12
commercial	0.20	1.60	0.00	1.80
Total GRT of vessels in commercial transportation, mill. units	0.08	0.64	0.00	0.72
Average tariff rate, dollar/unit GRT				41.75
Total income, mill. dollar				30.1
Financial needs, mill. dollar				33.0
Need for subsidies, mill. dollar				2.9
for service of non-commercial cargo				2.9
to cover deficit				0.0

Situation 3. Estimate of the minimum acceptable profitable cargo volume for the currently used tariff rate	West	Centre	East	NSR
Cargo volume – total mill. t.	1.84	2.20	0.42	4.46
non-commercial	0.10	0.60	0.42	1.12
commercial	1.74	1.60	0.00	3.34
Total GRT of vessels in commercial transportation, mill. units	0.70	0.64	0.00	1.34
Average tariff rate, dollar/unit GRT				22.50
Total income, mill. dollar				30.1
Financial needs, mill. dollar				33.0
Need for subsidies, mill. dollar				2.9
for service of non-commercial cargo				2.9
to cover deficit				0.0

Situation 4. Estimate of profitable tariff rate for the scenario of a minimum increase in cargo volume	West	Centre	East	NSR
Cargo volume – total mill. t.	8.40	4.30	0.90	13.60
non-commercial	0.10	0.60	0.42	1.12
commercial	8.30	3.70	0.48	12.48
Total GRT of vessels in commercial transportation, mill. units	3.32	1.48	0.19	4.99
Average tariff rate, dollar/unit GRT				6.07
Total income, mill. dollar				30.3
Financial needs, mill. dollar				33.0
Need for subsidies, mill. dollar				2.7
for service of non-commercial cargo				2.7
to cover deficit				0.0

Situation 5. Estimate of profitable tariff rate for the scenario of a minimum increase in cargo volume with the addition of transit operations.	West	Centre	East	NSR
Cargo volume – total mill. t.	8.40	4.30	0.90	22.60
non-commercial	0.10	0.60	0.42	1.12
commercial	8.30	3.70	0.48	12.48
transit				9.00
Total GRT of vessels in commercial transportation, mill. units	3.32	1.48	0.19	8.59
Average tariff rate, dollar/unit GRT				3.65
Total income, mill. dollar				31.4
Financial needs, mill. dollar				33.0
Need for subsidies, mill. dollar				1.6
for service of non-commercial cargo				1.6
to cover deficit				0.0

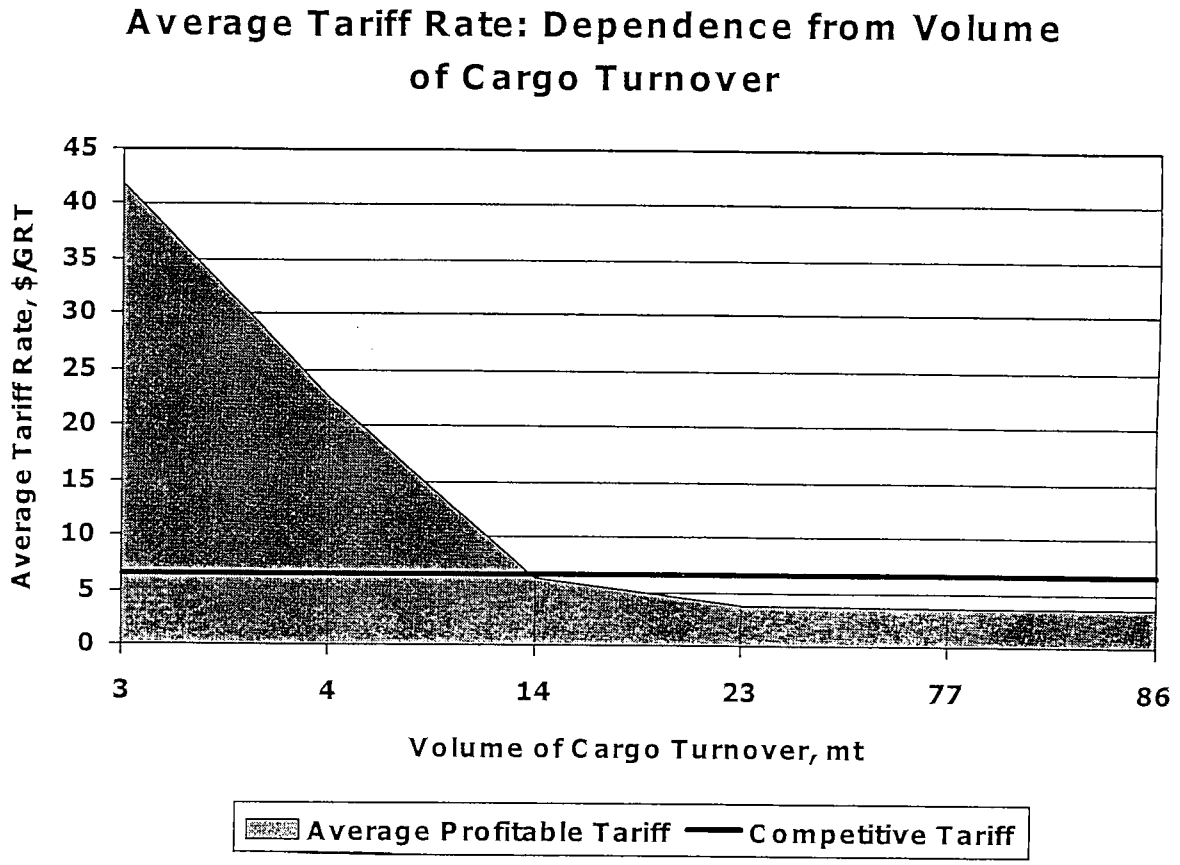
Remark. The volume of transit carriages are calculated from the basis of the potential capacity of the existing transportt system, 1.75 mill. t. per icebreaker.

Situation 6. Estimate of profitable tariff rate for the scenario of a maximum increase of cargo volume	West	Centre	East	NSR
Cargo volume – total mill. t.	32.30	43.40	1.30	77.00
non-commercial	0.10	0.60	0.42	1.12
commercial	32.20	42.80	0.88	75.88
Total GRT of vessels in commercial transportation, mill. units	12.88	17.12	0.35	30.35
Average tariff rate, dollar/unit GRT				3.57
Total income, mill. dollar				108.4
Financial needs, mill. dollar				110.0
Need for subsidies, mill. dollar				1.6
for service of non-commercial cargo				1.6
to cover deficit				0.0

Situation 7. Estimate of profitable tariff rate for the scenario of a maximum increase in cargo volume with the addition of transit operations	West	Centre	East	NSR
Cargo volume – total mill. t.	32.30	43.40	1.30	86.00
non-commercial	0.10	0.60	0.42	1.12
commercial	32.20	42.80	0.88	75.88
transit				9.00
Total GRT of vessels in commercial transportation, mill. units	12.88	17.12	0.35	33.95
Average tariff rate, dollar/unit GRT				3.57
Total income, mill. dollar				121.2
Financial needs, mill. dollar				122.9
Need for subsidies, mill. dollar				1.6
for service of non-commercial cargo				1.6
to cover deficit				0.0

Remark. The volume of transit transportation is calculated in the same way as in situation 5.

Figure 1



The calculations of the various situations have shown that (see figure 1):

1. the average profitable tariff rate for the services of the NSR transport system with the current cargo flows are many times higher than the competitive tariff rate, e.g. a tariff rate that would make cargo transportation on the NSR competitive with transportation by means of alternative transport ways.;

2. to introduce a competitive tariff rate with the current cargo volumes would demand a large amount of budget subsidies in order to maintain the infrastructure of the NSR - more than 25 mill. dollars annually;

3. if a competitive tariff rate is introduced, the NSR transport system will become profitable if the cargo flow volumes can be raised to 13 mill. t. annually (12 mill. t. commercial cargo);

4. if cargo volumes can be increased to equal the capacity of the NSR transport system,

the profitable tariff rate will be lower - approximately half of the maximum acceptable competitive rate;

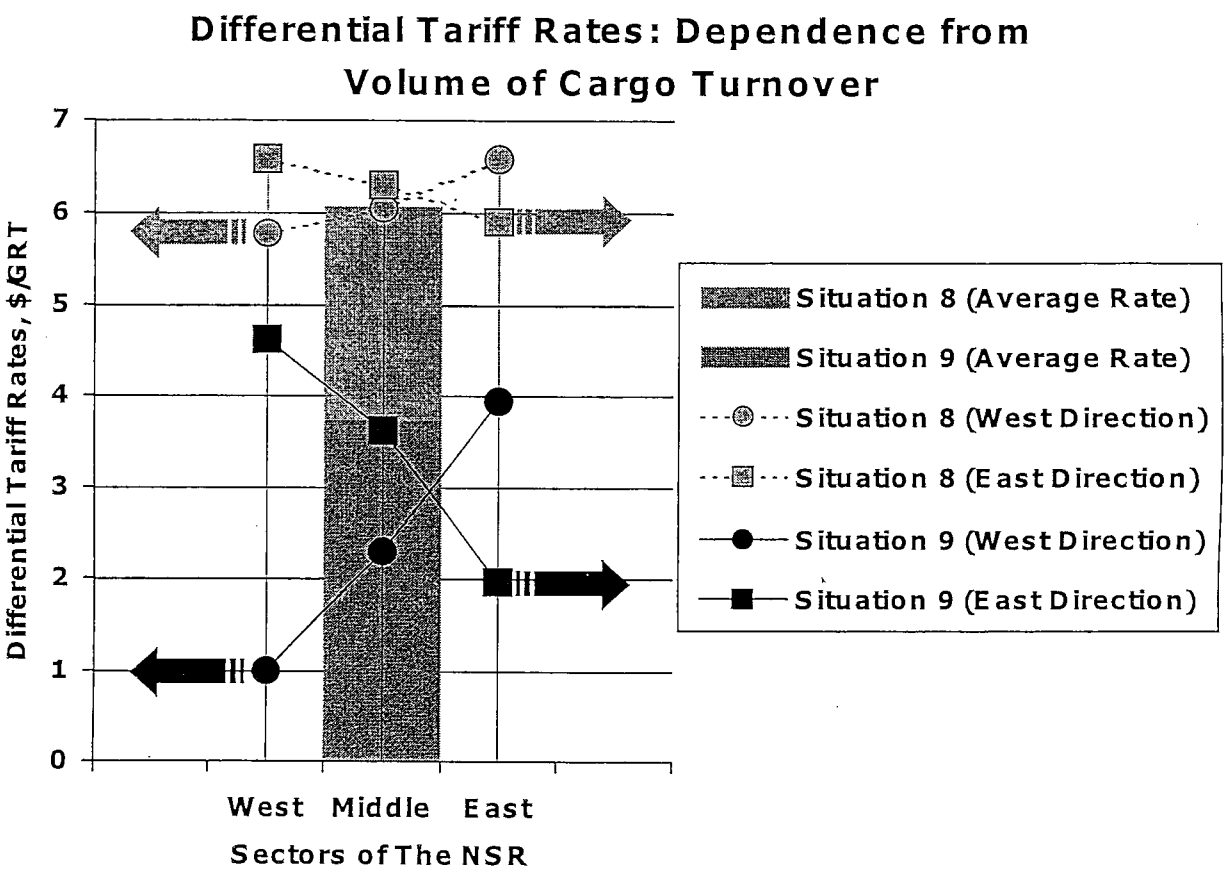
5. if cargo volumes are further increased, there will not be a proportional decrease in the profitable tariff rate, since the costs of running the NSR transport system will increase with the growth in cargo transportation.

Modelling of situations using differentiated tariff rates (according to zones)

Situation 8. Estimate of differentiated tariff rates for a minimum increase of cargo volume	Unit	West	Centre	East	NSR
Cargo volume - total	mill. t.	8.40	4.30	0.90	13.60
Western direction	mill. t.	5.70	3.30	0.20	9.20
Eastern direction	mill. t.	2.70	1.00	0.70	4.40
Transit	mill. t.				0.00
Non-commercial cargo	mill. t.	0.10	0.60	0.42	1.12
Western direction	mill. t.	0.10	0.40	0.10	0.60
Eastern direction	mill. t.	0.00	0.20	0.32	0.52
Commercial cargo	mill. t.	8.30	3.70	0.48	12.48
Western direction	mill. t.	5.60	2.90	0.10	8.60
Eastern direction	mill. t.	2.70	0.80	0.38	3.88
Total GRT of vessels in commercial and transit transportation	mill. units	3.32	1.48	0.19	4.99
Western direction	mill. units	2.24	1.16	0.04	3.44
Eastern direction	mill. units	1.08	0.32	0.15	1.55
Transit	mill. units				0.00
Maximum competitive tariff rate	$/unit GRT				6.57
Zone discounts:					
Western direction		12%	8%	0%	
Eastern direction		0%	4%	10%	
Zone tariff rates:					
Western direction	$/unit GRT	5.78	6.04	6.57	
Eastern direction	$/unit GRT	6.57	6.31	5.91	
Transit discount					0%
Transit tariff rate	$/unit GRT				6.57
Calculated average tariff rate	$/unit GRT				6.06
Total income	mill. dollar	20.0	9.0	1.2	30.2
Western direction	mill. dollar	13.0	7.0	0.3	20.2
Eastern direction	mill. dollar	7.1	2.0	0.9	10.0
Transit	mill. dollar	0.0	0.0	0.0	0.0
Need of financing	mill. dollar				33.0
Need of budget financing	mill. dollar				2.8
service of non-commercial cargo	mill. dollar	0.2	1.6	1.0	2.8
coverage of deficit	mill. dollar				0.0

Situation 9. Estimate of differentiated tariff rates for the scenario of a minimum increase in cargo volume with the addition of transit.	Unit	West	Centre	East	NSR
Cargo volume – total	mill. t.	8.40	4.30	0.90	22.60
Western direction	mill. t.	5.70	3.30	0.20	9.20
Eastern direction	mill. t.	2.70	1.00	0.70	4.40
Transit	mill. t.				9.00
Non-commercial cargo	mill. t.	0.10	0.60	0.42	1.12
Western direction	mill. t.	0.10	0.40	0.10	0.60
Eastern direction	mill. t.	0.00	0.20	0.32	0.52
Commercial cargo	mill. t.	8.30	3.70	0.48	12.48
Western direction	mill. t.	5.60	2.90	0.10	8.60
Eastern direction	mill. t.	2.70	0.80	0.38	3.88
Total GRT for vessels in commercial and transit transportation	mill. units	3.32	1.48	0.19	8.59
Western direction	mill. units	2.24	1.16	0.04	3.44
Eastern direction	mill. units	1.08	0.32	0.15	1.55
Transit	mill. units				3.60
Maximum competitive tariff rate	$/unit GRT				6.57
Zone discounts:					
Western direction		85%	65%	40%	
Eastern direction		30%	45%	70%	
Zone tariff rates:					
Western direction	$/unit GRT	0.99	2.30	3.94	
Eastern direction	$/unit GRT	4.60	3.61	1.97	
Transit discount					13%
Transit tariff rate	$/unit GRT				5.69
Calculated average tariff rate	$/unit GRT				3.72
Total income	mill. dollar	7.2	3.8	0.5	31.9
Western direction	mill. dollar	2.2	2.7	0.2	5.0
Eastern direction	mill. dollar	5.0	1.2	0.3	6.4
Transit	mill. dollar	0.0	0.0	0.0	20.5
Need of financing	mill. dollar				33.0
Need of budget financing	mill. dollar				1.1
service of non-commercial cargo	mill. dollar	0.0	0.7	0.4	1.1
coverage of deficit	mill. dollar				0.0

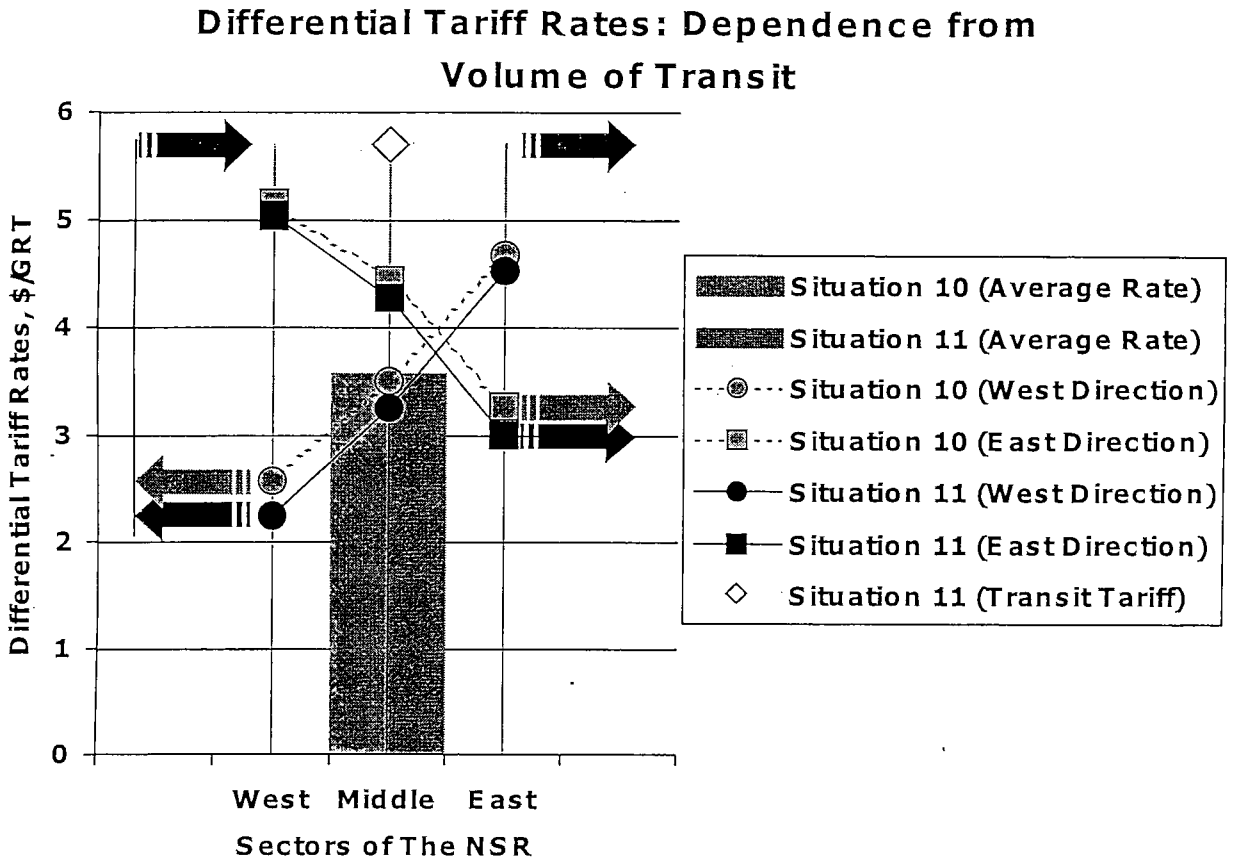
Figure 2


Differential Tariff Rates: Dependence from Volume of Cargo Turnover
Differential Tariff Rates, $/GRT
7
6
5
4
3
2
1
0
West
Middle
East
Sectors of The NSR
Situation 8 (Average Rate)
Situation 9 (Average Rate)
Situation 8 (West Direction)
Situation 8 (East Direction)
Situation 9 (West Direction)
Situation 9 (East Direction)

Situation 10. Estimate of differentiated tariff rates for the scenario of maximum increase in cargo turnover	Unit	West	Centre	East	NSR
Cargo volume - total	mill. t.	32.30	43.40	1.30	77.00
Western direction	mill. t.	25.90	23.20	0.30	49.40
Eastern direction	mill. t.	6.40	20.20	1.00	27.60
Transit	mill. t.				0.00
Non-commercial cargo	mill. t.	0.10	0.60	0.42	1.12
Western direction	mill. t.	0.10	0.40	0.10	0.60
Eastern direction	mill. t.	0.00	0.20	0.32	0.52
Commercial cargo	mill. t.	32.20	42.80	0.88	75.88
Western direction	mill. t.	25.80	22.80	0.20	48.80
Eastern direction	mill. t.	6.40	20.00	0.68	27.08
Total GRT of vessels in commercial and transit transportation	mill. units	12.88	17.12	0.35	30.35
Western direction	mill. units	10.32	9.12	0.08	19.52
Eastern direction	mill. units	2.56	8.00	0.27	10.83
Transit	mill. units				0.00
Maximum competitive tariff rate	$/unit GRT				6.57
Zone discounts:					
Western direction		61%	47%	29%	
Eastern direction		22%	32%	50%	
Zone tariff rates:					
Western direction	$/unit GRT	2.56	3.50	4.68	
Eastern direction	$/unit GRT	5.15	4.45	3.27	
Transit discounts					0%
Transit tariff rate	$/unit GRT				6.57
Calculated average tariff rate	$/unit GRT				3.57
Total income	mill. dollar	39.6	67.5	1.3	108.4
Western direction	mill. dollar	26.4	32.0	0.4	58.8
Eastern direction	mill. dollar	13.2	35.6	0.9	49.7
Transit	mill. dollar	0.0	0.0	0.0	0.0
Need of financing	mill. dollar				110.0
Need of budget financing	mill. dollar				1.6
service of non-commercial cargo	mill. dollar	0.1	0.9	0.6	1.6
coverage of deficit	mill. dollar				0.0

Situation 11. Estimate of differentiated tariff rates for the scenario of a maximum increase in cargo volume with the addition of transit transportation	Unit	West	Centre	East	NSR
Cargo volume - total	mill. t.	32.30	43.40	1.30	86.00
Western direction	mill. t.	25.90	23.20	0.30	49.40
Eastern direction	mill. t.	6.40	20.20	1.00	27.60
Transit	mill. t.				9.00
Non-commercial cargo	mill. t.	0.10	0.60	0.42	1.12
Western direction	mill. t.	0.10	0.40	0.10	0.60
Eastern direction	mill. t.	0.00	0.20	0.32	0.52
Commercial cargo	mill. t.	32..20	42.80	0.88	75.88
Western direction	mill. t.	25.80	22.80	0.20	48.80
Eastern direction	mill. t.	6.40	20.00	0.68	27.08
Total GRT of vessels in commercial and transit transportation	mill. units	12.88	17.12	0.35	33.95
Western direction	mill. units	10.32	9.12	0.08	19.52
Eastern direction	mill. units	2.56	8.00	0.27	10.83
Transit	mill. units				3.60
Maximum competitive tariff rate	$/unit GRT				6.57
Zone discounts:					
Western direction		66%	51%	31%	
Eastern direction		23%	35%	54%	
Zone tariff rates:					
Western direction	$/unit GRT	2.23	3.25	4.53	
Eastern direction	$/unit GRT	5.04	4.27	2.99	
Transit discount					13%
Transit tariff rate	$/unit GRT				5.69
Calculated mean tariff rate	$/unit GRT				3.57
Total income	mill. dollar	35.9	63.8	1.2	121.4
Western direction	mill. dollar	23.0	29.6	0.4	53.0
Eastern direction	mill. dollar	12.9	34.2	0.8	47.9
Transit	mill. dollar	0.0	0.0	0.0	20.5
Need of financing	mill. dollar				122.9
Need of budget financing	mill. dollar				1.5
service of non-commercial cargo	mill. dollar	0.1	0.9	0.6	1.5
coverage of deficit	mill. dollar				0.0

Figure 3



Calculations with differentiation of tariff rates for services of the NSR transport system for the various situations have shown (see Figure 2 and 3):

1. A differentiation of the tariff rates does not lead to reduction in the average minimum acceptable profitable tariff rate, or correspondingly, to reduced income from cargo transportation;

2. If the scenario of a minimum increase in cargo flow becomes a reality, this will give totally negligible possibilities for zone differentiation of tariff rates (Situation 8);

3. A sharp differentiation of tariff rates will be possible only if one can obtain cargo flow volumes corresponding to the capacity of the infrastructure of the NSR (Situation 9);

4. Analogous possibilities of tariff rate differentiation are preserved in case of further

increase in cargo flow (corresponding to the scenario of maximum growth), however, the absolute values of the differentiated tariff rates show some increase (under the condition of constant mean value). This is related to increased costs for the transport system;

5. If other terms are equal, one can see from situation 10 and 11 that the greater the growth in transit transportation, the more possibility there will be for lowering the zone tariff rates.

For the present level of use of the NSR transport system there are no real possibilities for introducing a competitive tariff rate. This will become possible only with about a fourfold increase in cargo volume.

If the cargo flow is increased further, it is possible to lower the limit of the profitable rate significantly. The profitable rate will stabilise as cargo flows approach 100% of the capacity of the NSR.

The possibility of conducting a flexible tariff policy, in particular by differentiating tariffs in relation to distance of transportation, will appear when one reaches total cargo volumes corresponding to the capacity of the NSR transport system (i.e. an approximate increase by a factor of 7).

The level of differentiation of zone tariff rates will vary substantially with the volume of transit traffic. For the latter higher tariff rates are applied - close to the maximum acceptable competitive rate, in order to compensate for reduction of tariffs in separate sections of the NSR.

The present results may be used mainly for analytical purposes. In order to make more accurate calculations which could be used for setting up parameters for a real tariff system, it would be necessary to take into account the entire set of factors, influencing the competitive power of transportation along the NSR, in particular:

- real estimates of the costs for exploiting and increasing the capacity of the NSR transport system;
- production costs and market situation for the transported commodities;
- tax conditions for all subjects taking part in the production and transportation

processes;

- additional transport costs, connected with mixed transportation scheme of most commodities (railway - NSR ports, river - NSR ports, etc.);
- considerations of possible competitors' actions

General conclusions

In this report we set out to discuss the economic sustainability of the NSR, with a view to the possible role played by the regional level. As is argued throughout the report, the economic problems are of a fundamental nature which must be solved on the federal level first. Only with a general framework in place does it make much sense to discuss more specifically the development of regional institutions.

Even though the regions over the last few years have become indispensable actors in securing essential services and infrastructure for the NSR, development of any coherent or well defined policy in key regions have not been identified. The lack of financial resources on the regional level has meant that questions and problems related to the Northern Sea Route, both current and future potential, have received an extremely low priority and are practically outside the political agenda. Instead the main attention is devoted to solving social problems and securing a minimum standard of living in the northern cities and settlements averting a catastrophic development in these areas.

An over-arching problem is to introduce tariffs which are competitive, i.e. able to attract traffic in competition with other modes of transportation, in a situation when tariffs are not sufficient to cover the operating costs. If this is not done however, the risk is that traffic will continue to fall, making the unit price for the services of NSR higher and higher.

In the absence of large available state subsidies, the only way to break out of this vicious circle is to increase the cargo potential, by stimulating economic activity along the NSR as well as offering attractive transit services. The most important contribution from regional

authorities would be to support the development of large scale cargo-generating projects by creating attractive framework conditions

Friday 12 February 1999

RE: Review of INSROP Discussion Paper "Financing the NSR: Regional Aspects" by Kryukov, Moe and Shmat.

Dear Dr. Ragner,

I have read the INSROP Discussion Paper by Kryukov, Moe and Shmat. My review will be a short one, so I am incorporating it into this message rather than sending it as an attachment or a fax. In my opinion this is much the best of the three papers you have asked me to review. It is impressively well argued and presented. It also makes appropriate references to other papers in the series: the lack of such references was one of my criticisms of the last paper reviewed. There are a few typographical errors, which you will presumably catch in the final version, but I have only three comments of any substance and one minor question:

1. On p. 25, the second 'basic principle for tariffs' states that 'the tariff should [be] calculated per standard unit of register tonnage of the escorted vessel. It should not be linked to the properties of the cargo'. This appears to be contradicted by the statements on p. 26, that 'if the competitive power of the commodities of different consignors varies greatly, one should consider differentiating the tariff rates according to main cargo types...', and on p. 27, that 'the following factors should be taken into consideration....general competitive power of the transported commodities'. In other words, the second 'basic principle' seems to go against the philosophy expressed later, which is essentially that of charging what the traffic will bear.

2. The second 'basic principle' also states that 'the tariff should have a universal character'. If the later arguments about differentiating according to main cargo types and taking the competitive power of the transported commodities into account are taken to their logical conclusion, is one not likely to end up with individually-negotiated rates?

3. I recognise that the 'maximum acceptable competitive tariff rate' is calculated on the basis of a full traverse of the NSR, where the competition is the route via Suez, for illustrative purposes only. Nevertheless, if data are available it would be useful to give some idea of what is necessary to compete with river and rail transport, where they are in a position to take potential NSR traffic.

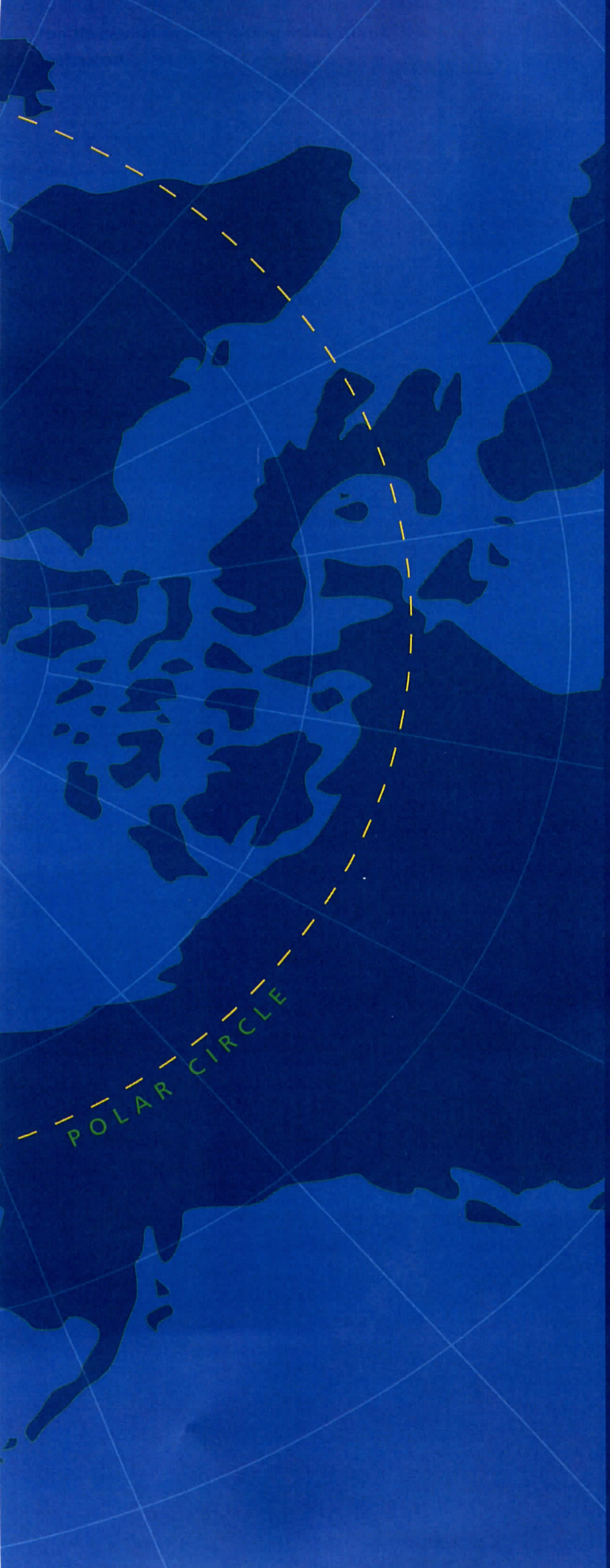
4. On page 34 there is a mention of the use of large tankers. I remember reading an article about the difficulties of using vessels larger, especially in beam, than the escorting icebreakers. Does this impose a practical limit in this case?

I hope these comments are of some use. Once again, many thanks for letting me see a most interesting and useful paper.

Yours sincerely,
Robert N. North

Remarks from the authors:

We are grateful for the positive and encouraging comments from Professor North. His critical comments 1 and 2 are understandable, but are caused by indistinctness in the text of the preliminary version. Our point was to compare an ideal tariff system with a compromise model, necessary in Russia's special circumstances. This is now spelled out more clearly and elaborated on pp 27-29. Unfortunately we do not posses comparable data for river and rail transportatior costs as requested in comment 3. The use of the word 'large tankers' as mentioned in comment 4, is relative. It must be seen together with the expectation that tankers are mainly going to operate in a westerly direction from the Ob bay area, which can accommodate larger vessels than the ones sailing further east.



The three main cooperating institutions of INSROP

Ship & Ocean Foundation (SOF), Tokyo, Japan.
SOF was established in 1975 as a non-profit organization to advance modernization and rationalization of Japan's shipbuilding and related industries, and to give assistance to non-profit organizations associated with these industries. SOF is provided with operation funds by the Nippon Foundation, the world's largest foundation operated with revenue from motorboat racing. An integral part of SOF, the Tsukuba Institute, carries out experimental research into ocean environment protection and ocean development.

Central Marine Research & Design Institute (CNIIMF), St. Petersburg, Russia.
CNIIMF was founded in 1929. The institute's research focus is applied and technological with four main goals: the improvment of merchant fleet efficiency; shipping safety; technical development of the merchant fleet; and design support for future fleet development. CNIIMF was a Russian state institution up to 1993, when it was converted into a stock-holding company.

The Fridtjof Nansen Institute (FNI), Lysaker, Norway.
FNI was founded in 1958 and is based at Polhøgda, the home of Fridtjof Nansen, famous Norwegian polar explorer, scientist, humanist and statesman. The institute spesializes in applied social science research, with special focus on international resource and environmental management. In addition to INSROP, the research is organized in six integrated programmes. Typical of FNI research is a multi-disciplinary approach, entailing extensive cooperation with other research institutions both at home and abroad. The INSROP Secretariat is located at FNI.