Arctic in Change: New Prospects for Resource Exploitation and Maritime Traffic

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1. The Arctic Is Facing Tremendous Changes: New Possibilities But Also New Responsibilities

At present the Artic must for all practical purposes be regarded as a virgin area. We are talking about an area with a rich and until now unspoiled nature, but also an area with vast resources which the world needs: energy (oil and gas), food (fisheries, other animals and organisms) and fresh water (melting ice). We have already seen increased activity in the area, but not yet on a big scale. However, interested parties are now busy discussing new possibilities and activities, especially production of energy and harvesting of the rich fishery resources.

Since we are in an early phase, there is still time to discuss and clarify the fundamental issues involved. Governments are obliged to make decisions and give necessary guidance to commercial stakeholders, business partners and the public. I will also underline the need for dialog with NGOs engaged in environmental issues.

The United Nations Convention on the Law of the Sea (UNCLOS)[1] provides the legal platform for all discussions and decisions regarding the Arctic. Thus, the necessary legal framework already exists, established by the global society through the United Nations. There is no lack of rules – rather a lack of policies.

In this article I will focus on new prospects for resource exploitation and maritime traffic. I will pay particular attention to future oil and gas activities. Fisheries are important as well, and Norway has particular interests and experience in this field.

Fisheries are the backbone industry of coastal Norway. Over the past 35 years, Norwegian fishing has developed from an open-access, unregulated fishing activity to a thoroughly regulated industry. Measures like quotas and licenses are effectively used to prevent overfishing and depletion of stocks, and stocks of commercial value are strictly regulated. Many stocks we share with other parties, and in this regard our cooperation with for instance the European Union (EU) and the Russian Federation (Russia), based on the United Nations Fish Stocks Agreement,[2]

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[1] United Nations Convention on the Law of the Sea (concluded 10 December 1982, entered into force 16 November 1994) 1833 UNTS 396.

[2] Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish

is essential. The Norwegian Government has a strong focus on fighting illegal, unreported and unregulated fisheries, particularly as regards cod in the Barents Sea.

2. Some Facts and Possibilities

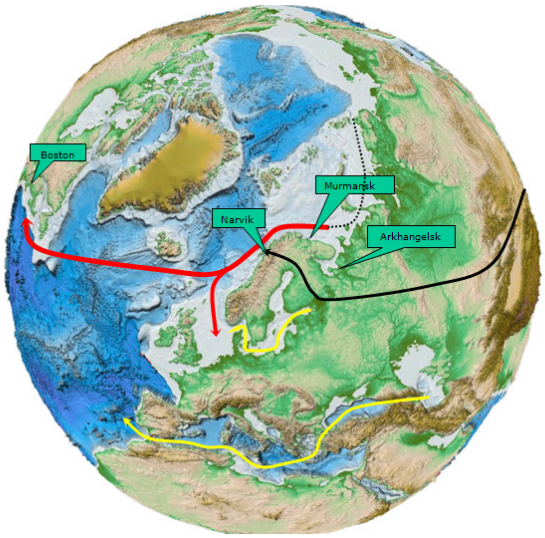
Production of oil and gas is an activity of a permanent character, involving heavy and long-term investments. Maritime traffic is more flexible, and it can serve both the oil industry and other needs. Resources possibly harvested (fish) or exploited and produced (oil and gas) in the Arctic will have to find their way to the world markets, particularly in Europe and America. This will lead to a substantial increase in transport along the northern coast of Norway and other parts of the area.

Development of Transport-corridors

All production have a common challenge; how to transport and distribute the product in the most cost-effective, safe and secure way. If the owner cannot get the product transported and distributed – whether it is a new car, fish or energy/oil – it has no value. Only a few years ago the map in figure 1 was relevant as a point of departure for discussing transport between the Far East, Russia and the European and to some extent the US markets, shown by the grey arrow on the map. The black arrow shows the potential transport corridor NEW (North East West Freight Corridor). In this interesting, but clearly challenging project the freight could go on existing railway tracks from Western China to the port of Narvik. From Narvik it could be shipped to the US East Coast or Europe.

Stocks and Highly Migratory Fish Stocks (done 4 August 1995, entered into force 11 December 2001) 2167 UNTS 3.

Figure 1: The Development of Transport Corridors



The Northern Sea Route and the Russian Approach

Russia is working seriously to establish the Northern Sea Route (NSR) as shown in figure 2, along its northern coast.

Figure 2: The Northern Sea Route

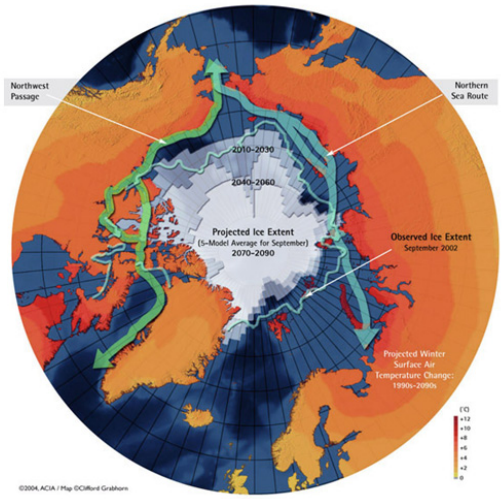
The melting of ice has opened this possibility, and the financial crisis has underlined the need for finding new transport corridors with lower costs. NSR connects Russia with Asia, Europe and USA. The negative features, however, are the shallow waters: only smaller tankers and ships can be used and all year shipping is not possible. NSR also passes through remote areas with little or no infrastructure.

Notwithstanding the climate change, the Arctic remains an area with harsh weather conditions and complete darkness in parts of the year. It is important to emphasize the darkness both as a psychological and a practical factor: all year shipping might be very difficult, if not impossible. Since nobody would like to spend six days in total darkness, we probably will not see the most extreme corridors used during winter when it is dark. Icing on the ship is another challenge for maneuvering and navigating. These factors are highly relevant when we discuss the rules for transport and other activities in the Arctic – new measures are needed.

Arctic Climate Impact Assessment 2004[3]

According to figure 3 from 2004 the retreating ice and opening of new corridors was not expected until mid century. Newer research shows that the ice is melting faster than expected. We have also learned that new interaction between weather changes, warmer winds and fast melting ice is expected to create an entirely new situation. Wind from Siberia forces the pack ice to Northern American shores.

Figure 3: AMAP-assessment



[3] See Arctic Climate Impact Assessment (ACIA) *Impacts of a Warming Arctic* (CUP Cambridge 2004).

More icebergs are now appearing in the areas closest to the northern part of Russia and Norway. Icebergs may be of quite considerable weight, and their speed is surprisingly high, see figure 4, which shows the movement of an iceberg over a period of three days. Consequently, icebergs have to be considered as a serious challenge for both permanent oil activity and shipping in the areas. This has to be taken into account when designing new platforms – it will not be possible to close down the activity to wait for an iceberg to pass. Ships are more flexible, but still vulnerable.

Figure 4: Icebergs

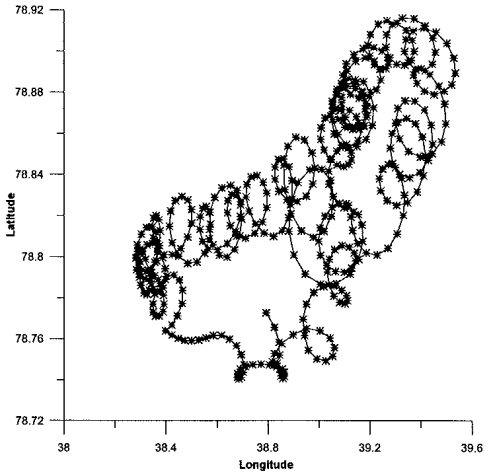
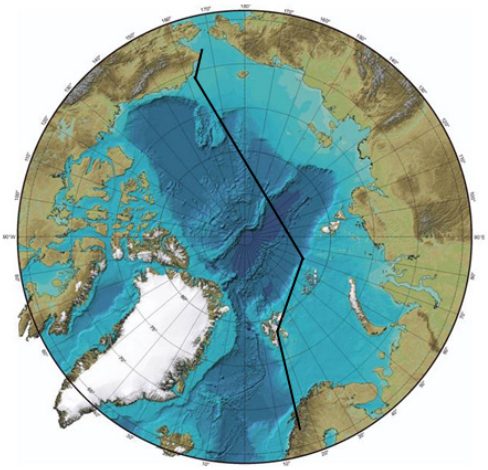


Fig. 6 Iceberg drift trajectory with hourly position marks for the period August 8-10, 1990 (SNOP data).

Source: Observations from Soviet Norwegian Oceanographic Programme (1990)

The consequence of climate change may be ice free and open sea in the Artic, see figure 5 as an example.

Figure 5: September 2008 – Ice-free Waters



Source: Norwegian Research Council

This will provide new possibilities for alternative routing which can shorten the distance between the Far East, Europe and North America considerably, for example:

Yokohama-Bering Strait:
2200 nm = 4 ½ days at 21 knots
Bering Strait-Melkøya (Northern Norway):
3000 nm = 6 days at 21 knots

It will also allow transport corridors to be established outside the Russian territorial waters, implying that there would be no control, no fees and no shallow waters. This would however also imply that there would be no monitoring, no rescue preparedness, no people close to you and, consequently, a very long response time in case of incidents or accidents.

3. What Type of Activities Can We Foresee?

A discussion on possible new activities in the vulnerable Arctic area must take into consideration the character of the activity and the security measures that can be taken, both from a practical view and a more formal and economic perspective.

The types of ships required in the Arctic are already available. A ship's lifetime is 25–30 years. It means that there is a risk that old and not adequately equipped vessels can be used, unless we adopt special requirements for ships navigating in

this area. We have to focus on the design and equipping of ships and on the education and training of staff, preparing them for handling a ship under these very special conditions, e.g. with icing and darkness. In this regard the International Maritime Organization (IMO)'s work on the Polar Code is very important.[4] Some nations have problems accepting binding rules for polar navigation, but I hope we will see substantial progress on this matter very soon.

Ownership and insurance are other important elements to be considered before increased sea transport should take place in these areas. Unfortunately, we have experienced problems related to identifying the real and responsible ship-owner, establishing sufficient insurance and the division of responsibilities between the ship and the coastal State. Dialog with insurance societies might give important indications on how the risks are assessed, and the rules and regulations concerning limitation of compensation for oil spill and other damage should be addressed and elaborated. Should we stick strictly to the polluter pays principle, or should the burden be shared in some way between involved partners?

The character of the oil industry is different from that of the shipping industry. Within the oil industry ownership and responsibility for the activity are clearly identified and regulation and control of the activity is thus easier. When an oil field is to be developed or new platforms set up, the activities are usually based on the best known and available technology. In addition, challenges may be adequately analyzed in advance and we can take appropriate precautions.

Which forms of shipping and sea transportation can we foresee in the Arctic? The tourism industry is expected to take advantage of the new opportunities in the area. In the future I suppose that we will see cruise ships sailing to the North Pole, since we know that many tourists would like to go there. Let me in this regard remind you that there is no maritime infrastructure or adequate navigational aids in this area. In a case of shipwreck in the Arctic, it might take many hours, or even days, to get necessary assistance. Norway has relevant experience from Svalbard, where major tourist ships with up to 2000 passengers come every year. They have to make the booking one year in advance, but information about their arrival can not eliminate the risks. How will we handle 1000 people left on an ice flake? Even in summertime the air temperature is as low as 0-10°C and in the water it is around zero. There is little accommodation in Svalbard outside Longyearbyen, only some hunting cottages of 20-30 m². Nevertheless, tourism can – with the appropriate security measures in place – be a viable industry in the summer. Reporting systems and safety regulations are the primary tasks. We can for example establish stricter regulations regarding design and equipment of ships sailing in the Arctic and we can demand that ships sail two and two together in this area. Such measures would, however, have to be agreed between States and this would take time.

Will we see container ships using the new routes? I think these routes will be uncertain from a commercial point of view because of cold climate, darkness, lack

[4] International Maritime Organization 'Guidelines for Ships Operating in Arctic Ice-covered Areas' IMO doc. MSC/Circ.1056 and MEPC/Circ.399 (23 December 2002).

of mapping, infrastructure and training. Much has to be accomplished before the conditions for sea transport along the Artic routes can be a real alternative to the existing routes for east-west shipping.

As a coastal State with significant fisheries and oil and gas activities, Norway has a particular focus on the ongoing sea transport of oil and gas from fields in the Barents Sea. Such transport is expected to increase in the years to come, particularly if oil and gas activities become a reality in the polar region. In general, sea transport of oil and gas faces the same challenges as shipping activities in general. An additional challenge in northern waters, however, is the present need for transfer of oil from ship to ship at sea. The reason is that the Russian oil fields currently under production or development are generally located in areas of shallow waters, allowing only the use of tankers up to 50.000-70.000 GRT. Accordingly, transfers have to take place either in Murmansk, Norway or along the coast on the way to the markets. The first shipping from the Russian fields and the transshipments at Varanday started last year. So far, no particular problems have been experienced, probably because of the strict requirements to the ships used imposed by the Russian government and the sellers and buyers of the oil. The States involved have their respective responsibilities, and effective bilateral cooperation has proved to be of great value. The cooperation between the Russian Ministry of Transport and the Norwegian Ministry of Fisheries and Coastal Affairs covers both safety at sea and oil spill preparedness.

In relation to transshipment between oil tankers at sea, we should focus on the amendments to Marpol Annex 1 for the prevention of marine pollution during some ship-to-ship (STS) oil transfer operations[5], expected to enter into force 1 January 2011. An important question discussed is whether such oil transfers in open sea should be reported 48 or 24 hours in advance, or not at all. Here we need regulations, either agreed bilaterally or adopted within the IMO. I hope the IMO regulations on transfers of oil at sea will be adopted soon.

The primary task if an accident occurs is to save lives of passengers and crew. Secondly, the task is to prevent oil spill or other pollution and to reduce any damage. All ships are carrying bunkers, and for long journeys without ordinary access to refueling, ships will carry extras. One of the biggest oil spills in Norway, the "Rocknes" in 2005, carried merely 450 tons of bunker oil. In the legal action concerning responsibility and compensation now before the court, the amount in dispute is more than NOK 500 million, approximately € 60 million. As a responsible flag State and a coastal State with a long coastline, Norway regularly keeps oil-spill preparedness in focus. Development of technology for handling of oil spills in areas with harsh weather conditions is a serious challenge and a joint responsibility

[5] International Convention for the Prevention of Pollution from Ships, 1973 (signed 2 November 1973, entered into force 2 October 1983) 1340 UNTS 184 (MARPOL Convention); MARPOL Revised Annex 1 (Prevention of Pollution by Oil) (adopted 15 October 2004, entered into force 1 January 2007) <http://www.imo.org/Conventions/contents.asp?doc_id=678&topic_id=258#7> (27 August 2009).

for all States in question. This is an important area for bilateral cooperation between Norway and Russia.

In the polar area there is no adequate infrastructure readily available to handle incidents of oil spill. Far from the coast there are obvious practical problems related to relying on traditional terrestrial based supplies and resources to combat oil spills. With the expected increase in activities such as shipping and fisheries, there is a pressing need for regular exchange of information in advance of activities and movements in these areas. Thus, we need instruments for reporting, monitoring and surveillance of the maritime activities in these waters. As regards shipping on the high seas, satellite based technology has become increasingly important. Systems for tracking have long been used for the commercial fleet, and such systems have now also been developed for use by the public maritime authorities in the form of a long range tracking and identification system (LRIT). This system will be implemented this year, and other projects based on satellites are also under development.

It can hardly be overlooked that sea transport and other activities in the polar area represent great challenges. A realistic view is that these challenges will slow down any immediate development, but they will not imply an indefinite postponement of future development in the polar region. Our point of departure should rather be that the challenges will gradually be overcome, due to the fact that the polar region is rich in natural resources and can play an important role as a transport corridor. In my opinion, the next step for responsible governments should be to develop the regimes necessary to meet the challenges created by increased use of the polar region.

4. The Norwegian Work Method: Safe and Secure Transport Corridors

In Norway we are working to ensure sufficient and adequate measures and regulations relating to sea transport. One element in the consideration is the overall costs, and we seek a balance between government measures and commercially sponsored initiatives. An important point of departure is risk analysis. Knowledge, data, research and experience must form the basis for finding the right solutions and making the right decisions. The government has systematically conducted risk analyses in the northern part of Norway, and presented this to the Parliament in White Paper No. 14 (2004-2005) "On the Safe Side".[6] The White Paper outlined affordable preventive measures and oil spill preparedness. Our integrated management plan for the Norwegian part of the Barents Sea covers strategies for coexis-

[6] Det kongelige Fiskeri –og kystdepartement (Minstry of Fisheries and Coastal Affairs) 'Stortings melding nr. 14 (Report to the Storting No. 14) På den sikre siden—sjøsikkerhet og oljevernberedskap (On the Safe Side)' (2004-2005) <http://www.regjeringen.no/Rpub/STM/20042005/014/PDFS/STM200420050014000DDDPDFS.pdf> (10 August 2009).

tence between oil and gas, fisheries and shipping activities, while also addressing the environmental concerns. This spring a comprehensive management plan for the Norwegian Sea will be submitted to the Parliament. The Government has this spring also provided a strategy document concerning the High North, "New Building Blocks in the North",[7] following our High North Strategy[8] from 2006.

National Measures

The national measures are divided in escalating groups. Preventive measures to avoid incidents and accidents are the primary element. Total avoidance is largely beyond reach, since human failure is a contributing factor in up to 80% of the incidents and accidents. Preparedness is the second element, consisting of measures to reduce the damage and the consequences if the preventive measures fail. The third element in the "package" is the plans for prompt and adequate reaction to an incident or accident.

Among preventive measures for safety at sea are traditional means such as lighthouses, pilotage, as well as more advanced systems such as Vessel Trafficking Systems (VTS) and Automatic Identification Systems (AIS). For sea transport in the waters adjacent to the Norwegian coastal areas, particularly in the areas outside Northern Norway, surveillance through AIS and VTS has been combined with routing measures. Regarding oil spill preparedness, we have adequate equipment like booms and skimmers stored on board coast guard vessels and in depots located along the coast, tug boats for handling ships in distress and plans for possible ports of refuge (places for anchoring tankers with problems).

In Arctic waters monitoring and surveillance will be one of the most important preventive measures. It is an advantage that such systems can be operated on long distance, but it is challenging to combine existing and new systems. Some systems are regional and some are global – and every country might have their own systems more or less integrated with global systems. Modern monitoring is based on extended monitoring from coast to open sea and integration of different monitoring data. Since shipping is global, monitoring of shipping has to be based on intentional cooperation and systems. In the Arctic this is particularly important. Activities in the Arctic depend on surveillance and monitoring, since no navigational aids or other infrastructure is available.

Let me draw your attention to the following systems:

- Automatic Identification Systems (AIS) – coastal systems,

[7] Norwegian Ministry of Foreign Affairs *New Building Blocks in the North: the Next Step in the Government's High North Strategy* (Ministry of Foreign Affairs Printing Service Oslo 2009); see <http://www.regjeringen.no/upload/UD/Vedlegg/Nordomr%C3%A5dene/north_text_eng.pdf> (10 August 2009).

[8] Norwegian Ministry of Foreign Affairs 'The Norwegian's Government High North Strategy' (1 December 2006) <http://www.regjeringen.no/upload/UD/Vedlegg/strategien.pdf> (10 August 2009).

- IALA-NET (AIS-Data Exchange),
- Satellite based AIS-monitoring,
- IMO – Long Range Identification and Tracking (LRIT),
- EU – European Network for Maritime Surveillance,
- BarentsWatch – a Norwegian integrated system for monitoring and management of activities and resources in Arctic waters.

The AIS-system has a coverage of 30-40 nautical miles off the coast, which is not sufficient when we are talking about the Arctic. Implementation of the IMO LRIT will provide supplementary coverage. We also see pilot projects and initiatives for satellite based AIS monitoring, and the European Union has an active policy on surveillance, sharing data and building of new systems; for example SafeSeaNet (SSN). The IALA-NET (AIS Data Exchange) is an interesting and important data-sharing initiative by the US coastguard, under development within the International Association of Lighthouse Authorities (IALA). A key question in connection with any such surveillance system is the reliability of the data collected and made available for common use. May users regard the delivered data and information as correct? In this regard I note that the European Commission now is doing a project on the legal aspects of data sharing.

Norway is presently working on a new system, the Barents Watch. The purpose of this system is to gather data from various sector-systems and make real-time and historical data and information available in one system. Relevant sector-data might be data from maritime surveillance, fisheries and environmental monitoring. Barents Watch will be an important tool for planning of activities and responding to accidents, for example for reducing the environmental impact of an oil-spill.

Let me also mention the terrestrial based radio-navigation system Loran C. Reliable positioning of vessels is a prerequisite for both safe navigation and maritime traffic monitoring outside the range of coastal radars. The Loran C is still functional in the northern hemisphere in Europe (Norway, UK, France), in the Far East (China, South Korea, Russia and Japan) and in the US. On a Russian initiative, Norway is currently working with Russia to establish a joint chain of radio-navigation between the Norwegian Loran C and the Russian Chayka. The US, on the other hand, has for budgetary reasons proposed to close down the American part of Loran C. To some extend this part of Loran C can be regarded as an independent or regional Loran C system, but in Alaska it is linked to the Russian Chayka Chain and in the future it could play an important part in the coverage of the circumpolar area.

The Global Navigation Satellite System (GNSS) is important for all modern activities, especially for activities depending on critical infrastructure. Banking systems, information exchange and other advanced services all depend on this service. Today the American system GPS is the primary system for civil use. A new European system – Galileo – is under establishment, and the Russian system GLONAS is in operation. China has similar systems, but not for a worldwide civil use.

In 2001, based on knowledge from the only system in operation, GPS, Norway did a study concerning the coverage of Galileo in the high latitudes. The study showed that the Galileo system should be based on Medium Earth Orbit satellites and that additional satellites would be needed in order to ensure adequate coverage in the northern areas. On this basis we engaged in a dialog with the EU for getting the right architecture for Galileo and also with the US regarding their modernization of the GPS.

Monitoring of sea transport activities and routing measures are important tools. A combination of monitoring and routing measures will probably be two of the most important measures in the Arctic, particularly when it comes to search and rescue (SAR). The region will probably need SAR measures, and hopefully such measures will be established through cooperation between involved nations.

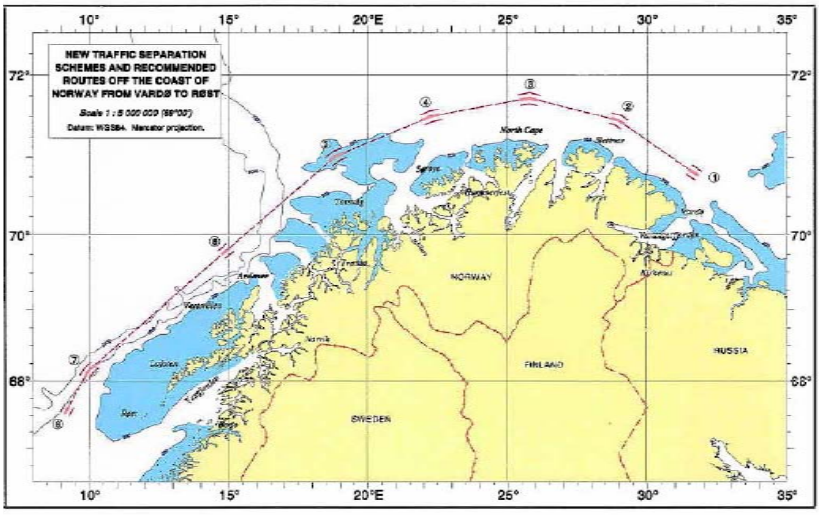
Mandatory Routing Scheme

In the territorial sea coastal States may require foreign ships to use designated sea lanes and traffic separation schemes. Until recently there has been some reluctance towards accepting such measures in international waters. However, with the support of Russia, and with the US as a positive partner, Norway has established a ship's routeing system off the coast of Northern Norway. The system was approved by IMO MSC 82[9] and implemented as of 1 July 2007 to promote better protection of the environment and responsible maritime transport in an area of great interest to world trade. The system is very important in that it pushes the traffic further away from the vulnerable coastline and thereby gives us more time to respond in case of emergency along the coast, particularly in cases of oil spills.

Located 30 nautical miles off the coast, the system is 560 nautical miles long and consists of eight mandatory traffic separation schemes, connected by seven recommended routes. The routing system applies to tankers of all sizes and all other cargo ships of 5000 gross tonnage and upwards, in transit or on international voyages to or from ports in Norway. The system allows the Norwegian VTS in Vardø to follow the movements of oil tankers and other ships sailing in these harsh waters, thereby reducing the risk of accidents and pollution from ships.

[9] International Maritime Organization 'IMO Committee Report: Maritime Safety Committee (MSC) Session 82' (29 November - 8 December 2006) <http://www.lr.org/NR/rdonlyres/23311B11-AEB9-40C4-8EDD-E9B530D93C58/80600/LRIMOMSC82Report1.pd> (10 August 2009).

Figures 6 and 7: The Vardø-Røst Routing Scheme



The Future of the Arctic – Final Comments

Important for the future of the Arctic is to utilize the possibilities provided by existing international instruments and organs, for instance the IMO and the Arctic Council. The first steps are taken; Guidelines for Ships Operating in Arctic Ice-Covered Waters,[10] new NAVAREAs have been adopted and the Arctic Council

[10] International Maritime Organization 'Guidelines for Ships Operating in Arctic Ice-covered Areas' (note 4).

has proclaimed its intention to play an even more active role. Preventive measures, oil spill preparedness and SAR will be important.

The role of the European Union will be based on the integrated policy for maritime affairs in Europe,[11] focusing on regulations for monitoring and surveillance of shipping. In that context Norway is setting up an AIS-based vessel traffic management and information system (VTMIS) for the Northern Atlantic region in cooperation with EU, Iceland, Denmark and UK. This is a system for monitoring maritime traffic in these areas, similar to the HELCOM system and the Mediterranean system.

Finally, I would again like to underline the importance of the cooperation between Norway and Russia relating to sea transport in the northern waters. I have a special steering committee with my counterpart from the Ministry of Transport in Moscow. We meet regularly for discussions of safety at sea and oil spill preparedness. We have also established two technical expert groups, including one for oil spill preparedness. Important in this context is a training program covering the Murmansk area and adjacent Norwegian areas. The other group is dedicated to safety at sea and cooperation on maritime traffic monitoring and information and warning-systems. A new initiative in the Russian-Norwegian cooperation is on radio navigation.

In Brief: "Better Safe Than Sorry"

- UNCLOS, the comprehensive legal framework for the oceans, applies to the Arctic Ocean and establishes the framework for activities in the region. The challenge is effective policy-making through implementation of existing rules.
- International cooperation in the IMO, the Arctic Council etc. is essential for further implementation and establishment of practical solutions to existing and future challenges.
- We must take preventive measures: monitoring and surveillance, routing systems, Polar Code.
- We must establish oil spill preparedness: regulation of transfers of oil at sea.
- We must establish SAR measures.
- Dialog with NGOs and commercial partners and societies is important.

[11] Commission of the European Communities 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – b An Integrated Maritime Policy for the European Union' COM (2007) 575 final (10 October 2007).