Oil Transport from
the Russian part of the Barents Region
on July 1, 2003

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Crude oil loading in the Kola Bay, March, 2003. Tankers: “Usinsk” of 20,000 tons deadweight, and “Moskva” of 100,000 tons deadweight
Oil Transport from the Russian part of the Barents Region

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Abbreviations:

ASMI - Archangelsk Specialized Marine Inspection
MBESA - Murmansk Basin Emergency and Salvage Authority
NAR - The Nenets Autonomous Region
BIC - Barents Information Center
NSC - Northern Shipping Company
DNR - Department for Nature Resources
CNIIMF - Central Marine Research & Design Institute (St. Petersburg)
NCA - Norwegian Coastal Administration

Note 1: The English version of the report is direct translation of the Russian one.
Note 2: The Russian version of the report is up-dated in references towards Norwegian one.
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1. Introduction

In the year of 2002 the amounts of oil transportation along the Norwegian coastline from the North-West of Russia increased considerably. It could be accounted for by the general increase of oil production in Russia and by a growing influx of oil from the Eastern regions to transshipping terminals in the White and Barents seas. The previous sea transit volume forecasts made by the Norwegian Coast Guards in cooperation with the Russian state institutions were based on the prospects of oil production and oil extraction infrastructure development in the Russian part of the Barents Euro-Arctic Region\(^1\). That is why the Norwegian authorities were surprised by the tremendous growth of oil transportation, which exceeded the expected transportation flows and oil production volume estimates for the Russian part of the Barents region.

Oil transport along the Norway’s northern coastline is one of the hottest topics discussed by the Norwegian society and it is also one of the most important issues of today’s political agenda. This situation makes us think that the Norwegian authorities did not anticipate the recent developments and were taken off guard in view of the increased oil exports from the North-West of Russia. The present report provides a short overview of the existing crude oil and oil products export volumes by sea from the Russian part of the Barents region and outlines oil transportation infrastructure development in the region. At present hydrocarbons are shipped mainly in the form of crude oil or fuel oil, which, as a rule, is delivered by railway to the White Sea ports to be loaded on tankers for direct export or export via the Murmansk oil loading terminal. The summer of 2003 saw a new oil transportation route originating from the central parts of Russia by river tankers via inland waterways for further transshipping in the White Sea. Oil production volumes have also grown in the Russian part of the Barents region, mainly in The Nenets Autonomous Region and in the adjusting offshore areas. The first ice-reinforced oil-drilling platform on the continental shelf of the Barents Sea is to be installed and put into operation in 2004. The existing system of export pipelines from Western Siberia to Southern and Western Russia has reached the maximum of its throughput capacity. Some oil producing companies are planning to build a pipeline, which would connect Western Siberia and Murmansk. The projected throughput capacity of the new pipeline is to be 100 millions tons of oil a year and if the building construction proceeds as scheduled the new pipeline will be put into operation in 2007.

In view of the existing growth figures in oil production and transportation infrastructure development in 2010 the oil flow by sea can reach a yearly level of 150 million tons, of which 80 millions will be transported by tankers of 250,000 tons deadweight and the rest is to be carried by smaller tankers of 100,000 tons deadweight. We can expect 320 runs of tankers of 250,000 tons deadweight year and 700 runs of 100,000 tons tankers to the west and south. Accordingly there will be the same number of empty tanker return runs.

In the report one can find a short overview of the prospects in oil production and transportation volumes from the Russian part of the Barents region including the oil shipping from the White Sea oil loading terminals, where oil is delivered by railway and via inland waterways from other Russian territories. The report also provides data of

\(^{1}\) The Barents Euro-Arctic Region was founded in 1993 and include 13 regions: Finnmark, Troms and Nordland in Norway; Norrbotten and Västerbotten in Sweden; Lappland, Oulu and Kajani in Finland; Murmansk region, Archangelsk region, Republic of Karelia, Komi Republic and Nenets Autonomous Region in Russia.
transportation network potential and development plans of future transportation routes. The special emphasis is given to the present situation. The risk analysis of this and similar transportation volumes will be given in the report of the Norwegian Coastal Administration /CNIIMF scheduled to be published in the fall of 2003.

Certain data in this report might differ from those in the Norwegian Coastal Administration’s report, the latter being based on the input from the Russian partners in Moscow and Saint-Petersburg. In our report we have based our estimates on information received from the subjects of Russian Federation. The report has been discussed with representatives of Ministry of Nature Resources, regional authorities and transportation companies. The report also integrates information previously published in Russian and European mass media.

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2 Russia is comprised of 89 administrative territorial units; Murmansk region, Republic of Karelia, Archangelsk region, Nenets Autonomous Region are among them.
2. Oil Production in the Nenets Autonomous Region and on the Continental Shelf

At present transportation of crude oil by sea is being done from two oil loading terminals at the coast of the Nenets Autonomous Region: one is on Kolguyev island and the other is on Varandey island. In 2004 the first ice-reinforced offshore drilling platform is planned to put into operation in the Prirazlomnoye oil field in the Pechora Sea. The oil production development data have been integrated into the joint action plans within the framework of the bilateral Russian-Norwegian cooperation in environmental protection in view of oil transportation prospects. In 2002 the parties discussed various plans for oil transportation from the Region’s oil fields.

![Figure 1 The Nenets Autonomous Region map. The arrows from left to right (from west to east): Cape Kanin Nos, Cape Svyatoy Nos, Kolguyev island, Varandey island. The South-Eastern part of the Barents Sea is traditionally called “the Pechora Sea”.](image)

The Administration of the Nenets Autonomous Region initiated a building construction of an oil terminal on Cape Svyatoy Nos in the area of the Indiga, accompanied by a pipeline, which will provide the major oil fields of the Region with transportation facilities (Vedomosti, June 2001). The chief advantage of the project is that the area of the cape is free of ice most of the year and it should be more cost efficient than uploading in ice conditions. According to Aftenposten (Aftenposten, July 2003) there are construction plans for two oil terminals on Cape Kanin Nos. The volume of oil production in the Nenets Autonomous Region in 2002 reached 5.1 million tons and in the first two quarters of 2003 – 3.1 million tons (Press Service of the Nenents AR Administration).
Oil Terminal on Kolguyev island in the Pechora Sea

In 2002 120,000 tons of oil was unloaded from the Peschanozerskii oil terminal (Norwegian Coast Guards, 2003), in 2003 the estimates are 200,000 tons. In the future oil flow volumes can grow insignificantly due to the limited capacity of oil field reserves and weather conditions. Possibilities for all season oil transportation had been tested but the experiment was stopped last winter because of the heavy ice conditions. Oil is uploaded onto ice-reinforced tankers of “Astrakhan” type via an underwater pipeline (MBESA, NSC). The bottom contour around Kolguyev Island is complicated and depth variation differences are up to 50 meters.

The island has a single settlement of Bugrino in the southern part of the island. Bugrino is populated by the indigenous people – Nenets, whose only means of living is reindeer husbandry. Since 2003 the island has been the area for the project of establishing a protected ethnic and ecological zone within the framework of GEF ECORA. The biological resources of the island and the adjacent sea areas have not been thoroughly researched yet but it is known that the island is the breeding ground for a large stock of sea birds and the adjacent sea areas are used as moulting and feeding grounds (Norwegian Polar Institute).

Figure 2. Hydrocarbons reserves on Kolguyev Island

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3 Moulting and colour change takes place as a rule in July-August when birds are more vulnerable.
The oil terminal, which is being built in Varandey within the framework of the global transportation project “The Northern Gateway”, has long been the most promising export facility for oil produced in the area of Timano-Pechora oil fields\(^4\). The first oil on Varandey was uploaded in August 2000, in September 2002 the second section of the Arctic underwater oil loading complex was put into operation. This allows increasing the oil loading capacity up to 20 million tons a year. (RIA Novosti – North West, September 2002). The oil volume loaded on tankers in Varandey in 2002 was 240,000 tons (CNIIMF/NCA, 2003).

The oil terminal development in Varandey has been carried out in stages during the last few years. The first 10,000 tons of Varandey oil were loaded onto tanker “Volgograd” (Murmanskii Vestnik, August 2000). In 2000 Murmansk Shipping Company initiated the conversion of ice breaker “Captain Nikolayev” into a salvage ship for tankers en route in heavy ice conditions. The ice-reinforced tankers of 20,000 tons deadweight commissioned by Lukoil company can be loaded via the underwater pipeline four kilometers away from the shore, although to load heavier tankers of e.g. 80,000 tons of deadweight, a new 12 kilometers long bottom pipeline (siphon) is needed. Varandey oil terminal has no parallel in the world, it is capable of operating through all the year. The well-tuned mechanisms and advanced technologies allow loading oil tankers smoothly in summertime though in winter the operations are hampered by heavy ice conditions despite the provided icebreaker assistance (MBESA, MSC).

\(^4\) The Timano-Pechora gas and oil fields are comprised of oil and gas fields located on the territories of Komi Republic, the Nenets Autonomous Region and on the continental shelf in the Pechora Sea.
In 2002 the Murmansk Shipping Company built the second section of the Arctic underwater oil terminal in Varandey. The underwater installation consists of a solid steel structure 12 meters in diameter, about 3 meters high with more than 100 tons of weight. The special mooring unit and the underwater pipeline, which is 4.8 kilometers long, 270 mm in diameter and with the operating pressure of 30 atmospheres, supports uploading rate of 5,000 tons of oil per hour. The loading system is capable of operating steadily in severe cold and rough sea conditions with waves as high as 5 meters (Murmanskii Vestnik and Polyarnaya Pravda, August 2002). The terminal is going to be served by five ice-class tankers of “Astrakhan” type with deadweight of 20,000 tons; with a proper management the terminal can upload 20 million tons a year (RIA Novosti – North West). September 25, 2002 the first 20,000 tons of oil was loaded onto tanker “Saratov” via the new facilities of the terminal. The icebreaker assistance for the offshore loading operation was provided by icebreaker “Captain Nikolayev” (SeaNews, September 2002). By the end of 2002 the new terminal uploaded 200,000 tons of oil (Murman State TV and Radio Company, May 2003).
In 2003 the projected volume of offloaded oil is set to be at the level of 1.5 million tons of oil. (NAR Administration, April 2003) and in 2015 the exports to Europe and the USA are to reach the yearly volume of 12 million tons (CNIIMF/NCA, 2003).

**Prirazlomnoye Oil Deposit**

Prirazlomnoye oil deposit is the largest among the proven oil deposits on the shelf of the Pechora Sea. The deposit belongs to the list of the natural resources areas, which are being developed on the basis of a production share agreement. Primarily the deposit was planned to be developed by an international consortium with participation of Norway’s Statoil and Norsk Hydro. At different times the Australian holding BHP and German Wintershall/BASF took part in the project (Pravda Severa, February 2001). Until 2002 the license for the deposit belonged to Rosshelf, in November 2002 the Ministry of Natural Resources re-issued the license to Sevmorneftegaz, founded by a conglomerate of subsidiaries of Rosneft and Gasprom. In 2002 a negotiation commission was formed to agree upon a production share agreement (www.rosneft.ru). In 2002 Sevmorneftegaz purchased a Norwegian TLP Hutton platform, which operated previously in the Northern Sea and its upper part was planned to be used as a drilling rig. Sevmashpredpriyatiye in Severodvinsk is now building the substructure for the platform and setting up the drilling unit equipment. The Prirazlomnoye platform is planned to be completed and installed on the location in 2004 (BIC Archangelsk - bulletin, February 2003). It is planned to drill 40 wells, to reach maximum annual production volume of 7.55 million tons in the 5th year of the field exploration. In total, in the project period of development on production share agreement terms oil production will account for 74.6 million tons in 22 years (www.rosneft.ru). The first commercial oil from the Prirazlomnoye deposit is expected in 2005 (Severnyi Orakul, April 2003). The non-stop transshipping operations are planned to be implemented by shuttle tankers to Murmansk (the Kola Bay or the Pechenga Bay) where the oil is to be uploaded into a storage tanker for further export (CNIIMF/NCA, 2003). Oil transportation from Prirazlomnoye and the development service will be provided by Far
Eastern Marine Company (FEMCO) that is planning to complete the construction of the transportation and technological system by December 2004. To implement the onsite development operations FEMCO established a subsidiary, Northern Marine Company in Archangelsk. (SeaNews Weekly – www.seanews.ru, April 2003). This platform is the first to do a commercial operation at a location that is in the sea ice up to 6 months a year.

Figure 6. The Pechora Sea oil deposits map, the arrow shows the Prirazlomnoye deposit (DNR NAR).
3. The White Sea Development of Ports Handling the Oil Transferred by Railway and via Inland Waterways

The oil transportation by railway to the White Sea ports with further export shipments began in summer of 2002 and it has been on steady volume growth ever since. Russia may boast of well developed infrastructure and experience in transporting energy supplies by railway tanks and river tankers along inland waterways. When Russia got an opportunity to increase export volumes it was necessary to develop additional transportation routes and logistics plans for the northern gateway. The main focus was on the cities in the Russian part of the Barents Region, which already had railway terminals and sea ports. Today oil loading terminals are being built or projected in all the cities of the Region with similar transportation infrastructure. In summer 2003 the White Sea and Baltic Canal, the waterway leading to the northern Russian ports, was integrated into the oil transportation network carrying oil to marine terminals for further export delivery. The reconstruction and modernization of port facilities is going on with the growth of oil flow volumes.

![Map of key ports on the White Sea](image)

Figure 7. The map shows the key ports on the White Sea, which are already or planned to be oil export terminals. Arrows from left to right (from west to east) – Vitino, Belomorsk, Onega, Severodvinsk, Archangelsk.

Hydrocarbons, as a rule crude oil and fuel oil, are delivered via inland transportation routes from the terminals in Yaroslavl and other Russian cities to the White Sea ports. Practically all the White Sea ports, which have access to railway network and sufficient harbor depths, will be involved in oil transshipping and oil export.

With the growing oil transportation infrastructure the railway network and terminals will be developed because export of hydrocarbons via railway is a new direction in the industry and the transportation flows will steadily increase in the nearest future. In addition to transportation by railway there is an opportunity to deliver oil to the White Sea ports from
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other Russian territories by river tankers via inland waterways, in particular along the White Sea and Baltic Canal.

Oil is delivered by railway to the Port of Vitino near Kandalaksha and the Rosneft terminal in Talagi. Oil is transported via the White Sea and Baltic Canal and Belomorsk by river tankers for further transshipping in the Onega Bay, the White Sea. Several oil terminals that transfer oil cargo from the incoming railway tanks onto sea oil tankers are also being built in Severodvinsk.

**The Port of Vitino in the Kandalaksha Bay, Murmansk Region**

The Port of Vitino is the first privately owned sea port in Russia. Created on the basis of the White Sea Oil Center (Belomorskaya Neftebaza) the port has become an integrated part of the larger project of export oil transportation from Siberia (IA Regnum Murmansk news – www.murmannews.ru, February 2003).

![Figure 8 The Belomorskaya Neftebaza and the Port of Vitino (www.vitino.ru)](image)

The head quarters of the port are situated in Saint-Petersburg. The terminal itself was built in 1972-1975 for delivering oil products to customers inside Murmansk region. With the new investments the port was modernized in 1993 and equipped to transship crude oil from railway tanks onto sea oil tankers. The first crude oil was uploaded in 1995 onto the Malta registered “Probitas” tanker.

There are four piers in the harbor: the smallest is able to berth vessels with the draught of 3.5 meters, the other two can handle river tankers of oil-and-ore type with 4 meter draught and the largest pier can berth sea oil tankers with up to 13.7 meters draught. In 1993 the port of Vitino received a license to load oil tankers in summertime; testing loading
operations were carried out in 2001 and in 2002 the port was authorized to transship oil around the calendar.

The port of Vitino is transshipping crude oil mostly for Yukos Oil Company. The oil is delivered to the terminals by railway from Yaroslavl. In 2003 it is projected to export 3.5 million tons of oil via the Port facilities. The Port can handle hydrocarbons for storage and transshipping, unloading it from both railway tanks and ore-oil carriers. At present the monthly oil transshipping capacity of the port is: 140,000 tons of crude oil; 100,000 tons of fuel oil; and 120,000 tons of NGL. The port can simultaneously handle one sea and two river tankers. With further modernization of the transshipping unit it would be able to serve two sea tankers simultaneously; the yearly loading volumes of oil can reach 6 million tons (Arctic Marine Inspection; The sea port of Vitino– www.vitino.ru).

During the ice-free season in Vitino oil is uploaded onto tankers of 70,000 tons deadweight heading for Europe. In wintertime oil is loaded onto reinforced ice-class tankers of 20,000 tons deadweight delivering the cargo to tankers of 150,000 tons deadweight in the Kola bay (MBESA; CNIIMF/NCA, 2003). In 2002 the Ministry of Transport of The Russian Federation initiated “The Northern Bridge” project, which presupposes development of transportation system on the Northern Sea Route with a focus on the Western markets. Development of the oil transshipping complex in the port of Vitino is a part of this project (IA Regnum – www.regnum.ru, November 2002).

The oil terminal in Vitino and the main fairway are located in the close vicinity of the Kandalaksha State Nature Reserve that was founded in 1930 and its major territory extends over most of the islands and the water area of the Kandalaksha bay. Considering the heavy ice and weather conditions in the area one should pay special attention to ensuring ecological safety while developing the oil transshipping complex (Arctic Marine Inspection).
**Oil Transportation by River Tankers**

The sea port of Vitino is connected to oil suppliers in Yaroslavl, Nizhni Novgorod, Nizhnekamsk, Perm, Ufa and Syzran by inland waterways. Oil cargo from these cities can be delivered by ore-oil carriers (www.vitino.ru).

The White Sea and Baltic Canal was not involved in export oil transportation until summer of 2003. In order to increase the transit capacity of the Volga-Baltic Route and the White Sea and Baltic Canal, in particular, Volgatanker Company, the major carrier of oil by sea-and-river ships, in 2003 started a project “The White Sea” (www.morvesti.ru). In April 2003 the project was discussed at the meeting of the coordinating council of North-West Association, and it was announced that oil cargo delivery would be arranged via the White Sea and Baltic Canal for further offshore loading onto collector tankers. During the summer of 2003 the amount of 800,000 tons of oil was planned to be transported by 30 tankers of ore-oil type and in 2004 the transportation volume should grow up to 1.5 million tons (The Northern Courier, April 2003).
Offloading Oil from River Tankers in the Onega Bay

While working out “The White Sea” project, in which the White Sea and Baltic Canal is directly involved, different offshore transshipping modes were considered. One possibility was to build an oil terminal in Belomorsk and an offshore transshipping unit to the east of the Solovetski islands. Finally Volgatanker worked out a plan of building a sea oil loading terminal in the Onega Bay. The main idea is to anchor a collector tanker of 100,000 tons deadweight in the area of Tonkaya Osinka island. In summertime 3,000 tons deadweight river tankers will deliver oil products to the collector tanker via inland waterways. Further on, the oil will be exported by a sea tanker of 80,000 tons deadweight (The Moryak Severa, June 2003).

During the summer of 2003 800,000 tons of oil was planned to be transported through the sea oil reloading terminal in the Onega Bay, in 2004 the volume should reach 1.5 million tons of oil. To implement the shipment from Yaroslavl through the White Sea and Baltic Canal Volgatanker planned to gather 29 oil-and-ore vessels of river-and-sea type with 2,700 tons of deadweight and 3.8 meters draught. The summer navigation season for the oil loading unit is from May 25th till October 1st. The environmental protection plan for the project was designed by NordEco-Eurasia Company (Novosti Parokhodstva – www.morvesti.ru, March 2003).

The leading vessel of the oil-and-ore “Nefterudovoz” type with tanks for oil and oil-related products along the boards and a dry cargo hold in the center was built in 1968 and since 1971 the vessels produced were modernized motor ships. All in all until 1992 there were built 60 ships of this type, one of them was put out of service in 1990 (www.riverships.ru).
The White Sea and Baltic Canal with its 19 locks connecting Lake Onego and the White Sea was built in 1933 and for a long time was the main waterway for commercial and other cargo to the northern regions. At present the Canal requires a reconstruction plan, which should integrate an assessment of the Canal’s impact on water and wetland ecosystems of Karelia, especially in view of the growing cargo flows in the area.

In its turn the plan of anchoring a collector tanker in the Onega Bay, the mooring system, oil spill prevention and oil spill response management with offshore loading operations, especially in heavy weather conditions in the area of numerous small islands, seem unreliable and hardly satisfies the safety requirements (ASMI, NSC, April 2003).

In 2003 it was decided to transship oil via 30,000 tons deadweight transport-tankers in order to test the projected transit sequence of oil delivery, loading procedures and piloting of sea tankers. The piloting assistance in the area of the offshore loading terminal, during operations and vessel registration is provided by the Onega Commercial Sea Port, which commissions one or two tugs of the Archangelsk commercial port for docking the tankers. (IA Regnum Archangelsk news – www.arnews.ru).

The opening of the oil transshipping terminal had originally been planned to take place on June 1st, 2003 but later the date was changed. (Moryak severa, June 2003). The terminal was put into operation on June 24th, 2003; the first river tankers, “Neferudovoz-24” and “Neferudovoz-38”, delivered 2,700 tons of fuel oil each to “Zoya-1” sea tanker of the Latvian Shipping Company. (IA Regnum Archangelskie Novosti – www.arnews.ru, June 2003). On June 30th “Zoya-1” tanker with 27,000 tons of fuel oil left the Onega port and headed for Rotterdam. Till the end of the summer navigation season of 2003 300-400 thousand tons of oil products are planned to be exported via the Onega oil terminal (SeaNews Weekly – www.seanews.ru, June 2003).
With a success of the transit sequence operation oil export volumes via the White Sea and Baltic Canal are to be increased and oil could be delivered by river tankers for transshipping at the oil terminals in the Onega Bay and the Port of Vitino.

**The Commercial Sea Port Development in Severodvinsk, Archangelsk Region**

In Norway Severodvinsk is known as a city with one of the largest shipyards of the Russian nuclear submarine fleet. Now the military shipyards are producing commercial tankers and oil rigs.

In 1996 the Decree “On creation of industrial and production complex for the Arctic continental shelf oil deposits development” was issued and by which the Government was assigned to build a commercial sea port and an oil loading terminal in Severodvinsk with the help of private investments (*Neftegazovaya vertikal* - www.ngv.ru).

In 2002 the Russian Ministry of Defense agreed with the Administration of Severodvinsk to hand over to the city a part of the sea port belonging to the Belomorsk Naval Base as a construction site for an oil loading terminal. The space assigned for the construction site is 4.4 hectares adjacent to the territory of Severmashpredpriyatie company. The Northern Shipping Company was supposed to take part in the project (*Prime-TASS, July 2002*).

In 2003 the Belomorsk Naval Base signed a protocol of intentions for a joint venture with Tatneft Oil Company of building in Severodvinsk an oil terminal (*Severnaya Nedelya, April 2003*).

Lukoil company is researching oil transportation possibilities through Archangelsk region and in particular a possibility of building an oil terminal in Severodvinsk (*Interfax, June 2003*).

**Oil Terminal in Talagi, Archangelsk Region**

The Archangelsk Oil Center (Archangelskaya Neftebaza) in Talagi is the largest one in Archangelsk region. The owner of the company is Rosneft-Archangelsknefteprodukt.

In 2001 the Archangelskaya Neftebaza signed contracts for oil exports with Lukoil, Tatneft and Sibneft oil companies. In November the company signed with a Swedish company Van Ommeren a contract according to which the Archangelsk company was to load three - four tankers of 22,000 tons deadweight with export oil. The first tanker “Weichselstern” delivered to Rotterdam the first 21,000 tons of fuel oil belonging to Tatneft Company. The reservoir park of the tank farm in 2002 was able to store 800 tons of light petroleum, 64,000 tons of diesel fuel and 35,000 tons of fuel oil. The maximum daily intake could reach 7.2 thousand tons of light petroleum products and 3.6 thousand tons of fuel oil. The loading capacity of the terminal was 800 tons of light petroleum products and 400 tons of heavy petroleum products per hour. The terminal can berth tankers of up to 30,000 tons deadweight (*SeaNews Weekly – www.seanews.ru, November 2001*). In 2002 Talagi terminal served 191 tankers, of which 100 were carrying 1.93 million tons of export oil.

The transit operations are on around the calendar using tankers of 25,000 tons deadweight; during the winter season some tankers ran aground in the inner harbor while exiting the terminal (NSC, 2003).

In June 2002 Rosneft-Severnefteservis Company began to dredge the main channel leading to the Archangelskaya Neftebaza. The insufficient depth of the channel, which had not been swept for six years, forced tankers of 20,000 tons deadweight to run underloaded (IA Regnum – www.regnum.ru, July 2002).

In 2003 Rosneft invested 336 million rubles into large scale modernization of the terminal. First of all, it is planned to increase the capacity of oil-loading racks. At the moment the two racks provide simultaneous drain of 60 oil tank cars. After the modernization is completed the tank farm can handle 108 tank cars simultaneously. Four new storage tanks will be put into operation: two 40,000 cubic meters tanks and two 10,000 cubic meters tanks. One part of the tank farm is planned to be converted into the storage for crude oil, which will start arriving in Archangelsk as early as autumn of 2003. The channel dredge shall reach the second pier of the tank farm and it will allow the terminal to berth two tankers simultaneously. Upon the completion of the projected work the Archangelskaya Neftebaza will be able to upload 400 thousand tons of oil and oil products for export monthly (IA Regnum Archangelsk News – www.arnews.ru, April 2003).

The oil produced in the Timano-Pechora oil fields is planned to be transported to the south of Archangelsk region by a pipeline. There, at Privodino railway terminal, the oil will be uploaded into railway tank cars and sent to Archangelsk. From Archangelsk reinforced ice-class tankers of 17-18 thousand tons deadweight will deliver the crude oil to a 300,000 tons deadweight collector tanker anchored in the Kola Bay. As the stored volume grows tankers of 100-150 thousand tons deadweight incoming from the West will carry the Timano-Pechora export oil further to the Western market (IA Regnum Archangelsk News – www.arnews.ru, April 2003).

Totally in 2003 the Talagi terminal is expected to offload 2.2 million tons of export crude oil (while its simultaneous handling of light petroleum products will be on the level of 2 million tons). Upon the completion of the reconstruction maximum volumes should jump up to 4 million tons per year. The total turnover of oil related products is projected to reach 6 million tons a year (SeaNews Weekly – www.seanews.ru, June 2003).

Privodino – a New Terminal in the South of Archangelsk Region

The oil terminal in Privodino, at 40 km away from Kotlas, Archangelsk region, was built in 1974. Privodino terminal is operating along the Uhta-Yaroslavl section of the Transneft main trunk line. It carries the Timano-Pechora oil for refining and further transportation (Pravda Severa, June 2001).
Now Privodino is an important link in carrying out a plan of Rosneft to send the oil flow through Archangelsk region. In 2003 Rosneft has made plans to start building a 23 million USD worth railway terminal with a yearly throughput capacity of 4 million tons of crude oil. The terminal is planned to be completed by June 1st, 2004. The railway line between the terminals of Privodino and Talagi will be served by 700 railway oil tanks, the number of which by 2005 should reach 1500. Three ice-class “Samotlor” tankers will ship oil from Archangelsk to a collector-tanker in the Kola Bay, whence oil will be carried away for export (SeaNews Weekly - www.seanews.ru, June 2003).
4. The Offshore Transshipping Terminal in the Kola Bay, Murmansk Region

The offshore oil transshipping terminal is located in the Kola Bay in close proximity of the city of Murmansk and can be seen from the mountain with a famous WWII monument, nicknamed “Aliosha”. The terminal was designed, approved and built on contract with the Murmansk Shipping Company within the period from November, 2002 till May, 2003.

The terminal is comprised of 9 anchor-mooring systems (anchors, bridle cables, buoys) allowing to berth and safely position seagoing tankers with up to 150 thousand tons deadweight in strong wind conditions (up to 20 m/s). Shuttle tankers of 15-60 thousand tons deadweight are able to go alongside with heavier seagoing tankers for oil transfer. The terminal operates around the clock. The yearly throughput capacity is 5.4 million tons of oil. Slick bars and MBESA salvage ships are stationed in the Kola Bay to prevent and respond to possible oil spills during loading operations. The terminal is situated in the wind protected harbor where waves are never higher than 1.5 meters. It is designed to transship crude oil delivered for export by Yukos oil company (RZD-partner - www.rzd-partner.ru, May 2003).

The first oil was exported from the Kola Bay in November 2002. “Moskva” tanker with 100,000 tons deadweight was loaded with Yukos-produced oil, which was delivered from the port of Vitino by reinforced ice-class tankers “Georgii Kononovitch”, “Kaliningrad”, “Usinsk”, “Magas” (IA Au-92 - www.au92.ru, November 2002). On February 21st the millionth ton of export oil was uploaded in the Kola Bay (Murman State TV and Radio Company, February 2003).

Ice assistance in the White Sea in wintertime is provided by diesel-electric icebreaker “Captain Nikolayev” and nuclear icebreaker “Rossia”, which are in trust management of Murmansk Shipping Company (Neft Rossii – press.lukoil.ru, February 2003). The Vitino-Murmansk route is served by 6 reinforced ice-class tankers. On the whole Lukoil commissioned to build 10 “Astrakhan” type tankers with about 20,000 tons deadweight. These are modern double-hulled tankers of UL A1 class, which can break ice 0.5–1 meter thick without icebreaker assistance. Five of them were built in Germany, the other five were built in Saint-Petersburg (CNIIMF/NCA; Lukoil – www.lukoil.com, 2003).

The sea port of Murmansk is ice-free and the Kola Bay is rarely covered with ice but ice may drift from the rivers opening into the Bay.
In 2002 700,000 tons of oil was exported from the Kola Bay. Now the annual throughput capacity of the terminal is 5.4 million tons of oil.

The Murmansk Shipping Company is considering a plan of building another oil terminal in the Kola Bay in the area of Belokamenka (IA Regnum VolgaInform – www.volgainform.ru, March 2003). Rosneft is planning to station a collector tanker of 300,000 tons deadweight in the Kola Bay for transshipping oil delivered to the region from Archangelsk (IA Regnum Murmansk News – www.murmannews.ru, April 2003).
5. Western Siberia – Murmansk Pipeline Project

In November, 2002 four largest Russian oil companies Lukoil, Yukos, TNK and Sibneft signed “Memorandum of Mutual Understanding” on development of oil pipeline system via the sea bulk-oil terminal in the area of Murmansk (www.yukos.ru), later Surgutneftegas joined the consortium.

The project of Murmansk pipeline system is the first joint project of the area of transporting hydrocarbons raw materials, which is being carried out by the nation’s largest oil companies. The declaration of intentions was planned to be finished in April, 2003. The development of the investment plan, the feasibility report of building construction and documentation will be completed in the span of 2003-2004. The building construction is planned to be commenced in 2004 and to be completed in 2007 when it will be put into operation. The yearly oil flow volume of the Western Siberia- Murmansk oil pipeline is expected to be 80 million tons. The main portion of the oil will go to customers in Western Europe and North America. The consortium members considered two routes for the projected pipeline: one was Western Siberia-Uhta-Murmansk and 3600 km long and the other one was Western Siberia-Usa-Murmansk (via the White Sea) 2500 km. Preliminarily, the total cost of the project depending on a route of the pipeline is worth from 4.5 billion up to 3.4 billion. US Dollars (IA Regnum - www.regnum.ru, November 2002).

In January, 2003 it became known that Lukoil, Yukos, TNK, Sibneft, Surgutneftegas commissioned Starstroi company to design a pipeline and a bulk-oil terminal in one of the harbors of the Kola Peninsula. According to the specifications the total transshipping volume of the oil complex should gradually grow and reach the point of 120 million tons per year (IA Regnum Murmansk News – www.murmannews.ru, January 2003).

Also in January the Government of RF confirmed that all newly built oil and gas pipelines shall belong to the state but the matter of private investments may help in selecting companies for favorable use of the pipelines in the future (Pravda.Ru – www.pravda.ru, January 2003). Transneft, the nation’s only contractor in building and servicing main trunk lines in Russia, publicly noted in return that the pipeline Western Siberia-Timano-Pechora-Murmansk may not need participation of the above named oil companies and could be built mostly on loans and private investments (IA Rosbalt – www.rosbalt.ru, February 2003).

The Russian Ministry of Energy believes that a Murmansk heading pipeline must take its beginning in the area of Nadym. The pipeline is suggested to follow the following checkpoints: Nadym – Salehard – the region of Obsko-Tazovskaya Guba – Inta – Ukhta – Belomorsk – Murmansk. The length is to be 3200 km. The Ministry considers the reasonable volume for the pipeline to be 50 million tons per year with further growth up to 90 million tons (Neft Rossii – press.lukoil.ru, March 2003).
The significance of the northern oil export channel becomes greater with the growing complexity of restrictions imposed on supertanker passing the Black Sea and the Baltic Sea straits and in view of the overloaded existing pipeline systems and railway network (www.yukos.ru). Shipping oil via the Black and the Baltic Seas requires passing through narrow straits, besides the Gulf of Finland is covered by ice 4-5 months a year, which results in problems for most of tanker types at loading and seafaring. From the Kola Bay heavy tankers may easily reach international waters without facing such obstacles as ice, shallow waters and narrow straits. Though in turn heavy tankers of 250,000 tons deadweight and more will affect the civil and military traffic schedules in the Bay.

The Russian Government has made a priority list for oil export development. The project of Western Siberia-Murmansk pipeline is given the fourth priority in the list after the Baltic pipeline system development, management improvements and reconstruction of pumping systems and the Angarsk pipeline construction (RusEnergy – www.rusenergy.com, July 2003).
6. Oil Transport from other Russian Territories

The largest oil and gas deposits are situated in Western Siberia, to the east from the Ural Mountains dividing Europe and Asia. The transportation of hydrocarbons from these deposits is carried out, basically, by main trunk lines in southern and western directions. The certain portion of oil is delivered by rail and inland waterways. The opportunity of transporting oil and NGL from northern regions of Western Siberia, the Yamal peninsula and the Bay of Ob to the west through the Kara sea, the Barents sea and further along the Norwegian coast is being under consideration now. The river Ob and the Kara Sea are covered with ice most part of the year and as a result one is forced to use reinforced ice class tankers with icebreaker assistance for regular oil shipments.

Oil Transportation in Yamalo-Nenets Autonomous Region

The Yamal Peninsula and the Bay of Ob are washed by the Kara Sea. They located to the north from the major oil and gas deposits of Western Siberia. Oil extraction on the Yamal peninsula has already led to confrontation between the local population of indigenous people and oil companies.

Oil shipments from the Bay of Ob have been carried out since 1999 (NSC). Gazprom and Lukoil plan to build a sea terminal and a liquefaction plant in the area of Kharasavey. The Ministry of Transport in cooperation with Gazprom and Lukoil plan to develop railway network on the peninsula. (FBK – www.fbk.ru, May 2003). There is also a private pipeline being built in the Bay of Ob with throughput capacity of 3 million tons per year (NSC).

Figure 14. Map of the Yamal Peninsula and the Bay of Ob (Kharasavey is situated in the western part of Yamal).
Oil Transportation via the Baltic Sea

The new transportation route – the Baltic pipeline system, which includes a sea port in Primorsk and a main trunk line leading to it, was opened in December, 2001. In 2002 the terminal in Primorsk reached the projected capacity of 12 million tons. Further on the throughput capacity of the terminal is planned to be gradually increased – first, up to 18 million tons and then up to 30 million tons of oil a year. Transneft is planning to make Primorsk the largest oil export port in Russia (www.primorsk.ru). According to the forecasts made by Baltic Pipelines (Baltiiskiye Nefteprovody) company the overall capacity of the Baltic pipeline system and the sea terminal in Primorsk in the future may reach 50 million tons of crude oil per year (Logistic.Ru – www.logistic.ru, July 2002).

From the moment when the pipeline and the sea terminal in Primorsk were put into operation deliveries of crude oil to Ventspils, Latvia had been falling and after January 1, 2003 oil shipments in this direction were completely terminated (www.primorsk.ru).

Today in the eastern part of the Baltic Sea there are 11 oil loading terminals, a larger one in Finland with the capacity of 10 million tons of oil (Russian exports) per year, one in Estonia, four in Latvia and two in Lithuania. In addition two terminals are being built in Russia and one in Estonia.

The Russian Government declared its ambitions to develop the transportation infrastructure and to use Russian terminals for oil exports avoiding the use of ports in the Baltic States. The volume of oil shipments via the Russian part of the Baltic Sea is expected to reach 40 million tons and can double in 2005 reaching 80 million tons a year (Lloyd’s List, May 2003).
The Finnish officials demand a guarantee of safety while transporting oil and claim the requirements at the moment do not correspond with the international criteria. Last winter the ice cover reached the thickness of 80 cm; this resulted in real difficulties for passing tankers. New bulk-oil terminals in Russia are being built according to high safety standards used in the world’s oil industry. They also should be operated according to all requirements of safety, oil spill prevention and response with the help of most advanced technologies. VTMIS (vessel traffic management and information service system) is to be installed in the region in June, 2004. The system is already operating in the port of Primorsk. During the joint meeting of IMO/Helcom/EU in Warnemunde, Germany, in March, 2003 it was proposed to take the following measures:

- unification of rules for winter traffic, ice classification and icebreaker service arrangements;
- investigating the possibility of establishing a deepwater route in the whole Baltic Sea area for ships posing a risk to the marine environment;
- establishing escort towing and compulsory pilotage in special high risk areas;
- phasing out the use of single-hull tankers carrying the heaviest grades of oil;
- introducing measures to reduce the effects of ballast water discharges;
- investigate the feasibility of designating the whole Baltic Sea, or parts of it, as a particular sensitive sea area;
- further co-operation in ensuring adequate emergency and recovery capacity;
- further promotion of the designation of places of refuge.

(Lloyd’s List, May 2003).

The oil is transported by the Baltic Sea via Kategatt and the increase in oil traffic can have a negative ecological impact on Southern Norway in case of oil spill accident during passing through a narrow strait or the Strait of Skagerack in the Norwegian Sea. When in addition to the existing ones the projected and finished Baltic terminals will be put into operation the oil traffic in the area can reach 100 million tons per year. Approximately the same export oil traffic is expected from the northern direction in the Russian part of the Barents Sea. The Baltic direction is disadvantaged compared to the Barents one – the Baltic Sea is a closed system with a single passage through Kategatt. In the future the tanker traffic will increase, although at the moment the frequency of tankers passing through Kategatt is very high and there is always a possibility of an accident. The consequences of the Chinese oil tanker accident near Denmark’s coastline in May, 2003 were obvious all along the popular seaside resort of Skåne despite the advanced oil spill prevention equipment and the relatively favorable weather conditions of the inland sea.