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ARCTIC

Ice Charts Compiled

The work of compiling ice charts for the eastern sector of the Arctic has been completed. Hydrologists spent over 50 hours aboard ice reconnaissance aircraft. Flying at zero altitude they surveyed the status of the ice in the East Siberian, Chukchi and northern Bering seas and Long Strait. The charts compiled by the hydrologists will aid safe high-latitude navigation for ships about to open the navigation season in Arctic waters.

Vodnyi Transport

10 April 1990

Page 4 (Full Text)

A Chat with Mikhail Sorokin, Head of the High Latitude "Transarctic" Geological Expedition

The settlement on Srednii Island is the northernmost point in our country, unless of course, you count the polar stations on Ushakov Island and Franz Joseph Land.

My hotel room turned out to be next door to that of geologist Mikhail Yurevich Sorokin, head of the High Latitude Expedition (VShE). The projects which the expedition is working on boggle the imagination. The number of people participating in them is 200 - on drifting ice! They have 4 million roubles worth of work to complete in a month and a half. In the Antarctic, by comparison, where the geologists are some of the chief partners of

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ARCTIC

Goskomgidromet (State Committee on Hydrometeorology), their work "costs" 8 million per year. But the Antarctic is so far and the Arctic so near. There a year, here just a month. What in fact is this work, which is apparently of such great importance, and why is it so expensive?

One of the sensational discoveries of the past fifteen years has been the mountain system beneath the waters of the Arctic Ocean. The maps of this region show the names of Russian and Soviet scientists - Lomonosov, Mendeleev, Gakkel, Knipovich...

The Lomonosov Ridge stretches for almost 2000 kilometers from the New Siberian Islands to Ellesmere Island. The submarine mountains of the ridge attain elevations of 3000-3500 meters. We know that the ridge rose above the surface of the ocean comparatively recently (in terms of geologic time) - only 70-110 million years ago.

New geologic discoveries are expected, but this time we are not talking about minerals. That is a secondary task, as it were. This time the chief interest is basic geologic research concerning the development of the earth. And this is where our conversation with M. Yu. Sorokin began.

"Continents and oceans have a fundamentally different structure," he explained. "A continent has three layers: sedimentary, granite, and basaltic (lower still is the mantle). The ocean lacks the granite layer.

"Physicists can design and construct an experiment, such as an accelerator," Sorokin continued. "For geologists it's different. The time scale for scientific study of the earth is millions of years, and so one can only use abstract models, which are more or less accurate. Moreover, the Arctic Ocean is virtually inaccessible... What is remarkable about the discovery is that the entire

former basin from a geologic point of view is at an intermediate stage, so to speak. At one time there was a typical continent here. As a result of processes occurring in the mantle, the granite layer began to be reworked. In approximately another 60 million years the Arctic will turn into a true ocean, such as the Pacific or Atlantic.

"We can already say with certainty that the crust in the zone between the Podvodniki and the Makarov basins is subcontinental - that is, close to continental - in structure. Relics of a granite layer have been found at depths of more than three kilometers."

"This is your discovery?"

"Hypotheses existed. We confirmed them."

I wanted to know from Sorokin why drifting stations were not used for his work. At the present time there are two such stations - SP-30 and SP-31. The main reason is the lack of certainty that the ice will drift to the required location. The SP-31, which was viewed as a "candidate" for geologic work this year, defied the forecasts by "going off course". An icebreaker is also unsuitable since it cannot manoeuvre in just any kind of ice.

That a drifting station or icebreaker is not suitable is not difficult to understand. But for 200 people you have to have just the right body of ice. People know how difficult it is at times to find a large body of ice in the ocean on which to construct a drifting station. What guarantee is there that the region selected (for study) will have the appropriate ice?

"There are no guarantees," Sorokin agreed. "In addition to the main ice sector we select two or three reserve ones, precisely in case the right ice cannot be found. Naturally, as time goes on the number of sites in the ocean that interest us will diminish, and that means fewer and fewer reserves. The problem will become greater with each passing year."

Sorokin talked about research methodology. First and foremost, there are highly precise aeromagnetic surveys which involve measuring the earth's magnetic field from aircraft. The scale of this work is extraordinary: five kilometers to one centimeter. The airplane which carries the measuring equipment makes repeated 5-kilometer tacks, (eventually) covering a huge area of 50,000 square kilometers. "We observe the earth's magnetic forces under a microscope," Sorokin jokes. A second method, the principal and most reliable one, is depth sounding. The wave from a seismic pulse penetrates into the earth's interior and is refracted at the boundaries between geologic strata. Finally, a third method is gravimetry, which is used to study the gravitational force field with great accuracy.

"We have a solid arsenal of techniques," says Mikhail Yurevich. "Various physical characteristics reveal geologic anomalies. The techniques complement each other and the whole set of them yields very reliable results."

All of this work on the drifting ice is part of the program of the Polar Expedition of the famous Leningrad scientific production association "Sevmorgeologiya", or "Sevmorgeo" for short.

A short digression. Starting with the SP-1 or, more accurately, starting from the Chelyuskinites' camp in the Chukchi Sea, Soviet people have learned to live and work on drifting ice. Since that time we have accumulated an enormous amount of experience doing productive work on the ice. Modern technology makes it possible to determine the location of an observer with great precision, whether he is on the land or in the air. We do not need theodolites, chronometers or astronomical almanacs. Satellites and devices an observer can hold in this hands solve this problem almost instantaneously. On the ice or in an aircraft, Sorokin's people can determine their coordinates with great accuracy.

"The ice island on which we are working," Sorokin relates, "was discovered in pitch-black darkness on February 8th during a radar sweep. Specialists of the Arctic and Antarctic Scientific Research Institute recommended it to us and calculated where it should be in April. This is dense pack ice that is 4 meters thick. It's an almost circular chunk, 20 kilometers in diameter. In the center of it is a lens of smooth one-year old ice measuring 5 kilometers by 1 kilometer - an almost ready-made air strip."

In mid-March a radio buoy was placed on the surface of this giant ice island. "Smooth one-year old ice" is still not a landing strip. That still has to be made, and the next step was to deliver heavy equipment weighing several tons to a point 1200 kilometers from the Srednii airport.

A tractor could be brought in using a powerful Mi-26 helicopter, but, as the head of the High Latitude Expedition pointed out, this type of transportation would be several times more costly than dropping it from an airplane using cargo parachutes. The EKSPARK (Arctic parachute expedition) technique, which was developed over a number of years by enthusiast Aleksandr Sidorenko, an officer in the All-Union Volunteer Society to Assist the Army, Aviation and Navy (DOSAAF), has now proven its worth. Three organizations offered their services to Sorokin. The best proposal came from "Spetsatom" (a production corporation for robotics and emergency reconstruction work in Chernobyl) of the USSR Ministry of Nuclear Energy. For 150,000 rubles they promised to conduct four trips whereas their competitors had only agreed to three. In the event a tractor was damaged upon landing, the firm guaranteed delivery of a new machine free of charge.

"Elementary competition," said Sorokin, obviously pleased with his deal. "Monopolies are the death of enterprise. But competition... It isn't so much a matter of saving money, although that is important, but you get better service."

Once the world's northernmost airport is open, An-12 aircraft arrive daily, one after another. While the airdrop of equipment on freight platforms was carried out by pilots of the Antonov Design Bureau at Kiev, the remainder of the air operations are the responsibility of the Krasnoyarsk Civil Aviation Administration. The biggest portion of the money - one and a half million rubles - goes for transporting the freight. Only half of this amount is due to the cost of the light aircraft: four An-2 aircraft and 3 MI-8 helicopters, which fly directly to the camp. The 200-member party on the ice consists of 120 in the aviation group, 60 workers from "Sevmorgeo" and 20 from outside. The camp itself costs 600,000 - 3000 per person - for construction of the landing strip, gasoline, diesel fuel, foodstuffs, shelter...

"What's the most difficult thing?"

"The pace of the expedition is very fast. If you've forgotten something in Leningrad, consider it lost. The work is extremely intense."

April is the only suitable time for the High Latitude Expedition. There's lots of light - the polar summer is on its way. There are no storms, visibility is excellent. There's the sun, but still you have the cold - minus 30, minus 40 degrees. At the beginning of May it gets warmer, fog appears, and the bad weather becomes more frequent - the arctic idyll comes to an end.

"Something else," Sorokin continues. "The transport of hundreds of tons of cargo has to be strictly regulated. Some operations you would like to get a good jump on. But for people living on the ice you need an autonomous support system. After all, the ice could break up at any moment. Deliveries would be halted. People would be left with just what they have. For this reason, every airplane arriving at the camp must carry a full assortment of cargo. Making this happen is far from simple."

"Is it possible to save money?"

"Yes, if we had more manoeuvrable aircraft that used less fuel. The An-74 is good. I cannot understand why Aeroflot to this day has still not accepted this jet aircraft, which has shown itself to be excellent in the Arctic and Antarctic."

I noticed that the geologists speak about themselves little and reluctantly. Sorokin is no exception. He is from Leningrad, is a geophysicist, and graduated from the Leningrad Mining Institute. He is 38 years old. He spent ten years in Yakutiya "working on diamonds", and was head of a detachment and a geological party. He became the head of the High Latitude Expedition last year.

"Drifting ice is a constant risk," he said.

"Last year at the end of the season the ice island broke up. We had completed most of the work, but we still had to move our base, which cost us almost 700,000 rubles. We found a suitable piece of ice which, fortunately, was not very far away. We went through the deployment stage again. The formation of ice hummocks is primarily a danger to the equipment. A tractor or airplane could be lost. It's much less a risk for humans. And yet, last year one fellow fell into the water. Fortunately, he was in full

view and was quickly fished out. But will he be the only one? However strange it may sound, I feel that personal danger is mainly connected with a dulling of the sense of fear. Naturally, we are aware that our secure ice abode could become a site of calamity at any moment. We have a plan for emergency evacuation of personnel. When you have 200 people 1200 kilometers from land in an emergency situation, it's time to sound the SOS".

Sorokin's high-latitude expedition is entitled the "Transarktika" (Trans-Arctic). It is in its second year of operation. At the beginning many people were doubtful of success, but now, in the opinion of its head, the viability of the technique has been proven.

Epilogue

I recorded this conversation in Mid-March. On April 5, we heard some bad news: a crack had developed in the ice island.

Sergei Malyshev, radio operator for the Soviet-British expedition on Srednii Island, who was maintaining round-the-clock radio contact with the "Priklyuchenie" (Adventure) club in Moscow made it possible to speak with Mikhail Sorokin. Here are his words:

"The conditions this year are exceptionally difficult. The landing strip survived for only three days. At the moment incredible efforts are being made to restore the airstrip, but the ice continues to break up. What we succeed in doing today is swept away tomorrow under a crush of hummocks."

In this altogether critical situation, Sorokin, who weighs his words carefully, asked that we tell the directors of the Ministry of Civil Aviation and the Ministry of the Aviation Industry, who have been playing bureaucratic games with the An-74 aircraft for a number of years, that they should finally put it into series production, that there was an acute need for it.

On March 14, 1986 (four years ago!) at the SP-27 station I saw a jet aircraft land successfully on drifting ice for the first time in the world. This magnificent machine required only 300 meters of landing strip. Clearly, the An-74 could be of assistance to the geologists today.

Sovetskaya Rossiya

11 April 1990

Page 6 (slightly abridged)

CONSTRUCTION

They Took the Initiative

Yesterday, on the eve of their professional holidays, approximately one hundred families of workers of the Murmansk Geological Prospecting Expedition received warrants for new apartments. The 119-unit apartment house, funded from oil workers' above-plan profits, was built for them by the Apatity Construction Trust (Apatitstroi) - one of the geologists' new business partners.

The transition to a complete self-supporting basis forced the Arctic geologists to find non-traditional sources of income. Of course, they did not have to change their way of working. For example, the expedition collective performed design and survey work on new construction units on behalf of the "Apatitstroi" Trust. As a result, the trust completed the documentation sooner, and the geologists added 700,000 rubles to their budget.

Sovetskaya Rossiya

1 April 1990

Page 2 (full text)

Housing Needs in the Northern "South"

Developing housing and living conditions on the "northern model" is expensive, but in Vorkuta there are more than 30,000 people on the waiting list for an apartment - 20,000 of whom are retired workers (veterany).

The hurricane that raced over Vorkuta at the beginning of February wreaked havoc with the long-time problems of this Arctic city, revealing all the sore spots which people had either tried to gloss over or to which they had become resigned and no longer wished to heal. At this point an attentive reader might tell me that I am repeating myself, that I have already used this clever image in three or maybe four past newspaper articles. But is it really surprising if we journalists, while probing into each new disaster - whether man-made or natural - keep running into such a diversity of "if only's" that we simply can't pass over them in silence. Like delayed-action landmines, old unsolved problems lie in wait for us at literally every step. And if we don't take a good look around and stay alert, and get serious about disarming them one by one, then we're going to have to live in this minefield forever. While it's one thing for us to live with it, it's another thing to ask our children to do so!

I want to briefly recall something I wrote about a month ago. The hurricane destroyed a number of old apartment houses. Roofs were torn off and windows were smashed... but hardly had the storm died down when the town was assailed by more news - a new five-story building had to be quickly evacuated because the capricious permafrost was crushing it like a matchbox.

Under the circumstances, of course, everyone started talking about the new building. The apartment house had been completed, figuratively speaking, on December 31. The entire month of January the builders were still scurrying about in the building applying putty and paint. The 'Raiprofsoyuz' (district committee of the railway workers' trade union) had already allotted the apartments in the building, and the trade union committees of the enterprises had made their decisions. There was a little delay in transferring documents to the city executive committee

but finally the people had the warrants in their hands. Let's make one thing clear at the start: none of those legally entitled by the information presented in the lists figured among the new inhabitants. The new tenants were people moved from dilapidated homes and run down huts in the tundra, and workers of the Ministry of Railroads.

Without going into details about the ingenuity the people of Vorkuta displayed in selecting the most unfortunate of their unfortunates or how they allotted these 50 or so apartments, I would nonetheless like to draw attention to one fact. They also managed to "squeeze" two elderly ladies from the shanty town of Mulda into the building.

A lonely old age is terrible enough in itself, but old age in a rotted "billet" with a smoking stove, when there is no one to fetch water or gather coal as the Arctic night stretches on for months... Within the Vorkuta rail district alone live approximately 300 retired workers' families, and this does not include those living in Mulda or the railroad towns of Eletsckaya, Sivaya Maska and many others. But then why are they here in these god-forsaken places?

By a rough estimate, a single resident living in Vorkuta costs the State an amount of money many times greater than what it costs in the central zone. Thus, leaving pensioners in the North when they are no longer working is not only cruel but also uneconomical in the extreme.

Meanwhile, the "Housing-2000" program developed for the Vorkuta sector of the Northern Railroad calls not only for expanding construction to satisfy the requirements for new arrivals in the North but also for the demolition of dilapidated housing and the relocation of older residents into well-built apartments.

That is, there are already construction plans now for the retirees. But in the aftermath of the hurricane people had to closely reexamine this program so as to accelerate the destruction of damaged and dilapidated housing (inhabited almost exclusively by retired workers).

The solution was a typical Vorkuta response. Next year construction is to begin on a plant for large-panel prefabricated housing. And although the residents had serious doubts about whether it should be built, the number of new housing units in Vorkuta should practically double as time goes on. The doubts are based on the following calculation: the population of this 200,000 - strong city is more than is needed for its production activities and could be reduced by at least one fourth without any negative impact. At one meeting a speaker cited the following figures: of the more than 30,000 people on the city's waiting list for apartments, approximately 20,000 are veterany.

"It is hard for us to make other plans," I was told by V. Yakimenko, deputy head of the Vorkuta sector of the railroad. "Thanks to the hurricane, for the first time in many years we have obtained twenty apartments in the central zone: fifteen were allocated to us by railway workers of Solvychevodsk and five by those in Vologda. We can't find enough words to express how grateful we are for this help because we know what an extreme sacrifice this was for them! We know that they too are having difficulties with housing for their railway workers. For years we haven't been able to make any headway with construction "in the south" as they say. And today there are still no prospects...

Of course, the second housing construction combine within "Pechorshakhtstroi" (Pechora Mining Construction Trust) of the USSR Ministry of the Coal Industry will soon go into action and begin solving the city's problems. But

this still does not mean that the railway workers' housing program will be carried out more efficiently. Today, at least, there are no grounds for optimism. Well, of course, in terms of good intentions, in terms of an understanding that we need to live and work together, that no one should be overlooked - in these terms, which soften somewhat the bureaucratic rigidity - the railway workers of Vorkuta are already receiving assistance from "Pechorshakhtstroi": its collective has erected one residential building in the transport micro-region and is starting on another. But we need to have things more definite. All the more so since there still needs to be a great deal of construction for railway workers in Vorkuta: the housing situation for them is different than in the city - almost 80% of the residential buildings are run down!

Construction in the south was another clear case of bureaucratic inefficiency. In March, 1982, the government adopted resolution no. 179 "On Measures to Develop the Pechora Coal Basin for the Years 1982-1985." In this resolution the councils of ministers of Russia, the Ukraine and Belorussia were instructed to begin construction of cooperative housing for workers of the coal basin. Unfortunately, railway workers for some reason were not classed as "workers of the basin." Good, bad or indifferent, and four years behind schedule, the "Vorkutaugol" Corporation will build 19 residential buildings in various parts of the country for the miners and thereby fulfill this resolution. A provision in the Council of Ministers' document simplified the negotiations with the local soviets and enabled them to erect a few buildings more than called for in the program.

During these years, however, none of the railway workers (apart from those who managed to "squeeze in" among the miners by way of relatives) succeeded in getting into the southern cooperatives.

One might accuse our own railway bureaucracy of a lack of clout, a lack of skill or will to "arrange" this type of governmental document. And this reproach would be well-founded. After all, this isn't just a matter of Vorkuta or even of the Northern Railroad alone. The problem of housing construction for veteran workers is also urgent for the October Line as well as for the even more northerly Sverdlovsk Line. Nor would it be an exaggeration to mention the Baikal-Amur Line either... But first, let's take stock of where we are now.

One has to admit that during these past years the problem has become more acute. Secondly, let's consider whether we can solve it without going "to the top" - solve it with our own so-called "local" resources.

The Northern Line, after all, does not lie entirely beyond the Arctic Circle. The Ivanovo, Kostroma, Yaroslavl and Vologda oblasts are also part of the Northern. The "southern" sectors of the rail line have their own construction branches, micro-regions and towns with service lines. Wouldn't "tagging on" housing here for northerners and putting up even one house every three years substantially ease the present situation?

"This is a sensitive issue," replies V. Yakimenko, "but our southern neighbors have never been eager to let us onto their building sites. And one can understand them. They need their heat and water reserves themselves - plans have been developed for the long term. They begrudge the money and effort invested in construction of service lines. What's more, we mustn't forget that construction capacity is in short supply everywhere. Every building project, even if it is built with State capital, is in fact a form of pay-your-own-way: you have to provide the workers, you have to provide the building materials... Under these circumstances, who wants to build for anyone other than his own?"

"It isn't as simple as that," people at the railway administration commented to me. It might be possible to find some understanding and even support among the "southerners". For example, it's clear to everybody that for the same amount of money you can build two and a half residential buildings in the central zone in place of a single building in Vorkuta. More than once, in spite of months of talks in Ivanovo, Kostroma and Yaroslavl, we failed to overcome the egoism of local soviets: they said, "we don't need retired people, and that's that." And so, in the end, people gave up.

Everything is ultimately explainable. We've been trained to do that. But it wasn't until our backs were against the wall, when it became clear that there was no way out of the mess except to pull out all of the stops, that those twenty apartments turned up in Solvychegodsk and Vologda.

As for the local soviets, we can cite the vivid example of the miners, who are building even more than the "higher ups" ordered for the southern cities. The reason for this is that they try to accommodate local needs: they participate in tearing down dilapidated housing, they play a substantial role in developing the local construction base, and they invest resources in providing amenities. Of course, their money alone would not be enough for this. But just this year, State capital investment funds have been earmarked for the USSR Ministry of the Coal Industry to begin construction of cooperative housing in a number of oblasts in Russia and the Ukraine. Finally, the ministry will also put up State housing in the central zone for people from Vorkuta in exchange for the vacating of apartments in the Arctic.

Incidentally, the central government is now considering a new resolution concerning the Pechora Basin. The miners "embodied" in the resolution a list of those oblasts in which they would like to have homes, as determined from a survey of the workers. At the risk of being mistaken, my data indicates that railway workers once again are not included in the anticipated action by the Council of Ministers.

Without a doubt, things are not so simple under current regulations. For example, the USSR Council of Ministers' decree no. 765 "On Cooperation in Residential Construction" of 19 August, 1982, requires local soviets to take northern residents into account in residential construction cooperation throughout the country. But no penalty was provided for failure to comply with the decree. It wouldn't be a bad idea to formulate some benefits for executive committees which decide to concern themselves with northern residents. Builders too should be given some sort of priorities, if only in the supply of materials, if they get involved in building for northerners.

It would be helpful to have some specific examples on hand, for use in the discussions with the oblast committees. Here is one such ...

In a locomotive depot in Vorkuta, I met a "veteran" who was unusual by normal standards. V. Barsukov (he asked me to change his last name: he's waiting for an apartment which he intends to exchange straight away) in his forty years has earned all of the privileges and today wouldn't mind at all moving back to his native Orenburg. He has no intention of filing for retirement. He wants to continue working in his field. With some effort and the help of the Party oblast committee, he was able to get into a cooperative in his home town. On the waiting list he's number 2800. When will he get his apartment? And how many others like him are there in Vorkuta?

Gudok

8 April 1990

Page 3 (slightly abridged)

ENVIRONMENT

On the Pollution of Lake Ladoga

Lake Ladoga is the largest body of fresh water in Europe and it plays a considerable role in the overall ecological development of the Baltic Sea. The status of Ladoga is discussed by Candidate of Biological Sciences Valentin Ikonnikov, an associate of the USSR Academy of Sciences' Institute of Lacustrine Studies:

"Especially worrisome is the overloading of Ladoga with chloro-organic compounds, which are extremely persistent in the biosphere and capable of accumulating in the tissues and organs of animals, and which possess pronounced carcinogenic and mutagenic properties.

There are several sources of chloro-organic pollutants. In the Ladoga basin are the Svetogorsk and Syas pulp and paper combines, where chlorine is used in the bleaching of the pulp. Other contributors to the polluting process include trash incinerating plants, as well as persistent pesticides that were used in agriculture in Leningrad Oblast until recently and a certain portion of which were washed into the lake by streams, rivers and rainfall.

Monitoring data indicates that 99% of water samples taken from waters flowing into the lake and from the lake itself contain chlor-organic compounds, and hexochlorocyclohexan in particular. And this despite the fact that the State standard stipulates that this pesticide "must be absent" in waters used for the purpose of fishing.

As a result of the violations of this standard, 70% of the fish in the southern portion of the lake display one or more symptoms of toxic damage. The survival of the lake's only mammal - the ringed seal - is also threatened.

The main problem, in our view, is that Lake Ladoga is used as a source of drinking water. The lack of effective methods for purifying the water is leading to the accumulation of harmful compounds in the tissues and organs of humans.

The battle against toxic substances flowing into bodies of water, and Lake Ladoga in particular, is one of the most complex and costly socio-ecological problems of the region, but is one which demands immediate solution."

Vodnyi Transport
10 April 1990
Page 3 (full text)

MINERAL RESOURCES/MINING

Diamonds and Oil from the Arctic Ocean

Today geologists are focusing more and more attention on the Arctic Ocean. In recent years Soviet scientists have carried out a wide range of research projects on the Soviet Union's Arctic Shelf and have obtained some initial data on the geologic structure of the ocean. We invited Academician Igor Sergeevich Gramberg, Director of the

All-Union Scientific Research Institute of Geology and Mineral Resources of the Pacific Ocean, to speak about the status of research on northern mineral deposits. Gramberg is heading up a program of research to evaluate mineral resources in northern regions of the country.

Q. What is the main reason that scientists are studying the Arctic Ocean so closely?

"To the list of acute problems facing mankind we have to add the growing scarcity of mineral resources. Reserves of oil and many metals are running out rapidly and the discovery of large new deposits on land is becoming a rarer and rarer phenomenon. For this reason we need to get a head start on being concerned about the exploitation of mineral resources in the ocean. Geologists have determined that shelf zones comprise the continent itself and its margin, submerged in the ocean. All of the mineral resources found on land can also be found on the continental shelf."

"Let's look at the map ..."

"As you can see, many of the geologic structures of Western Siberia - our main source of oil and natural gas - do not stop at the coast but continue into the shelf zone. If we keep in mind that the most promising area of Western Siberia itself is the northern part, then we can assume that the underwater deposits will also be rather extensive. We should also note that a great number of major oil and gas deposits have been discovered on the opposite side of the ocean on the Canadian and Alaskan shelves. These deposits occur not only along the coast, but also in the waters of shelf seas, on the islands of Canada, and in the Beaufort Sea."

Q. "Are only oil and gas found in abundance in the Arctic Ocean?"

"We should point out that far from all the mineral resources found on the shelves can be of practical interest. The mining of many of them might be so complex that it would not be feasible economically. For this reason, the greatest interest, because of the ease in mining them, is in placer deposits of metals and diamonds, which are mined on the continental shelves of many countries. How promising the Arctic Ocean is in this respect will be shown by further research.

In deep-water sections of oceans most attention now centres on iron-manganese nodules and polymetallic sulfide ores. Finds of nodules in the Arctic Ocean are rare and we can hardly count on large quantities of them, but large quantities of polymetallic ores here are altogether possible."

Q. "What determines the kinds of deposits present in the ocean?"

"There are two theories. Some scientists assert that there is no universal model for their existence that each ocean has its own individual geologic history. Others feel that the diversity of the oceans and, consequently, the presence of one type of mineral or another, is due to the different stages in their development. The Pacific Ocean is the "granddaddy" of all the oceans: it is hundreds of millions of years old. It is distinguished by a high degree of tectonic activity and intensive magnetism, leading scientists to conclude that there are numerous ore shows here. The Indian and the Atlantic oceans occupy an intermediate position. Here, ore genesis is less pronounced than in the Pacific Ocean. On the other hand,

the prospects for oil and gas are considered to be higher. The Arctic Ocean is the "youngest". The principal events connected with its formation occurred in the Neogene, and so we can assume that it has retained those special geologic traits which more ancient oceans have lost. The temperature and pressure in the thick sedimentary layers are especially favourable for the formation of oil and gas."

Q. "More than a decade ago you edited the first oil and gas map of the northern USSR, including the area covered by water. At that time the main deposits were concentrated on land. Has this map undergone many changes since that time?"

"The first map had an extremely limited factual basis. Much of it was based on comparisons with adjacent land areas and on the kind of geologic intuition required for any prognosis. Now, geologic studies embrace the entire northerwestern shelf of the Arctic. As a result, precise data on the geologic structure of the shelf and the thickness of the sedimentary mantle have been plotted on the map. A major event was the discovery of oil deposits on Kolguev Island in the Pechora Sea. Drilling here was begun on the recommendation of specialists from our institute as part of a major overall program to study the deep structure of the Soviet Union, including its shelf.

"The next step is research on the continental slope. This is also an area of development of continental crust, and structures found on the shelf extend this far. Today some sections of it can already be considered promising. It is believed that in the coming years scientists will be able to assess the possibility of hydrocarbon accumulations in deep water areas of the Arctic ocean as well."

Q. "The demands of rapid industrial development require that we move from predictions and exploration of water deposits to developing them. As you see it, when will industrial development of deposits in the Soviet section of the Arctic begin?"

"As we know, the Soviet Union is now extracting oil in the Caspian and on the shelves of the Baltic Sea. The exploration and extraction of oil and gas on the Arctic shelf is difficult because of the shifting ice cover. Even so, I think that the mining of minerals on the Arctic shelf will begin in the near future."

"And just how profitable will it be?"

"Obviously, getting minerals from the ocean deeps is not easy, but it does have its advantages. You don't need to build railway and motor access routes. You can use water transport, the cheapest form of transportation. And we don't have to worry about the losses to the national economy that result when large areas of arable land and pastures are taken up with quarries and rock piles. Economic projections indicate that development of offshore deposits can be quite profitable."

Q. "Two large countries are engaged in studies of the Arctic Ocean - the USSR and Canada. How is cooperation between the scientists of these two countries developing?"

"Quite successfully. We have, by the way, a comprehensive program of Arctic research which was agreed to a number of years ago. It calls for conducting not only geologic research but also archaeological work and studies aimed at protecting the environment. A major focus in this program is the problem of building in the Arctic. We assist each other in paleontological research and are working on a joint mapping project. Cooperation between our two countries will undoubtedly make a major contribution to the study of the Arctic."

SOCIOLOGICAL ISSUES

Association of Peoples of the North Founded

The association was established on March 31 at the Congress of Minority Peoples of the North, held for two days in the Kremlin, and is designed to protect the interests of the indigenous peoples who inhabit vast areas of the country.

Representatives of all of the delegations attending the forum spoke about the complex tangle of problems in which the minority peoples find themselves. There are many of them, but the troubles are theirs alone. This includes the administrative expansion of ministries and government departments on the lands of the native inhabitants, distortions in the nationality policy, lack of social development, and a sharp deterioration in the environmental situation.

The Association of Minority Peoples of the North, according to its program, will contribute actively to realizing the political, social and economic rights of northern minorities and to preserving their cultural distinctiveness, which is inseparably linked with a rebirth in the traditional way of life and in the use of natural resources. The association will also exercise some control over the protection of natural resources on the northern peoples' ancient homelands. To do this, the association will represent their interests before State, administrative, judicial and other organs and institutions.

The association's charter extends membership not only to representatives of northern minorities, but also to those of any nationality who share the vital interests of ethnic minorities of the Far North, Siberia and the Far East.

The congress delegates adopted a declaration. In particular, the document points out that only seven of the twenty-six ethnic nationalities of the region have national autonomy. The absence of State, economic and legal structures among the Evens, Nanais, Saami, Selkups and other peoples of the Soviet North complicates the processes of consolidation and renewal of national consciousness. For this reason, the congress feels that the reconstitution of national regions and rural soviets must be accompanied by a return to such forms of self-government as kinship and tribal councils and councils of elders.

In calling for a review of the principles of regional industrial development, the congress participants demanded the declaration that any large-scale project connected with the use of natural resources be subject to review by regional associations of minority peoples.

The delegates called on their fellow native inhabitants to take heart and become actively involved in the re-structuring of their lives. As stated in the declaration, ensuring our future is only possible through our own efforts and intelligence, anchored in faithfulness to national traditions and socialist ideas.

Sovetskaya Rossiya

1 April 1990

Page 1 (full text)

TRANSPORT - RAIL

Important Talks in Vorkuta

The minister of railroads, N.S. Konarev, has completed his visit to Vorkuta by holding major discussions with workers of the Vorkuta Railroad Centre and representatives from enterprises of the entire railway division. The discussions focused on the social development of the centre and on the working and living conditions of northern railway workers.

The minister familiarized himself in detail with the affairs of this coal mining region's "railway shop". He reviewed the progress of reconstruction that was begun last year and visited homes destroyed by the hurricane. The increase in coal mining in the Pechora Basin and the startup of new mines was not accompanied by a corresponding development of railway transport in the region. The notorious "residual principle" for the planning of capital investments began to spell troubles for the transport of the coal being mined. But it was particularly harmful to the development of the social aspect of transport.

The enterprises have no normal public amenities. The hospital and school are in a depressing state, and the railroad towns have many seriously deteriorated and improperly built homes. Today, the rebuilding of stations has begun, which is long overdue. But there are no prospects for upgrading production capacities among train car and locomotive workers. The problems of housing construction in Vorkuta appear equally insoluble.

TRANSPORT - WATER

The Icebreaker Lenin Lives On

At the museum of the Murmansk Maritime Steamship Line a separate display is devoted to it. Visitors are particularly interested in the history of the icebreaker "Lenin", which was responsible for a glorious chapter in the heroic story of the defence of the Soviet Arctic during the last war.

"The twin-stacked steam-powered icebreaker bearing Lenin's name had a splendid ten-year career in the Arctic," relates V. Beletskii, head of the steamship line. "The war found it in dock at the port of Murmansk, where it was undergoing major repairs. On the second day a fascist plane swooped down upon it but did not attack. The people of Murmansk understood why. The Nazis hoped to use the icebreaker to carry out operations in northern waters. The fascists were convinced that the city would not hold out even two months. But having been halted at the approaches to Murmansk in September 1941, they were unable to penetrate further for the duration of hostilities in the North.

The crew of the "Lenin" did much to assist the heroic defenders of the Arctic. On leaving the dock, the ship began accompanying transport ships loaded with war cargo. It operated year-round on Arctic routes, and nearly every voyage was a test of the sailors' courage and determination, and not only in the struggle with the treacherous ice of the Arctic. The Nazis set out to hunt the icebreaker down. Once, when the "Lenin" was escorting ten transport ships loaded with military equipment and supplies through the ice, it was attacked by a large group of enemy aircraft.

"Battle stations!" ordered the icebreaker captain N. Khromtsov.

The sailors took up their stations at the heavy-calibre machine guns and other weapons with which the ship had been equipped while still in port. Opening a furious fire the crew forced the enemy to drop their bombs short of the target. Not one of them caused any damage. The convoy reached Archangel safely.

There were also setbacks. Once, in an unequal battle with heavy aircraft, the icebreaker was holed in 30 places. Fire broke out, but the sailors were able to put out the flames and bring the ship to a safe location. Repaired, it once again led convoys in the Arctic, and continued to do so until the day of victory.

The nation has acknowledged the "Lenin" crew's contribution to the defeat of the enemy. The famed icebreaker was awarded the Order of Lenin, and numerous members of its crew received combat medals.

After the war, having completed its service at sea, the icebreaker was taken out of service, but a new one also bearing the name of Lenin soon set out on Arctic routes. This was the world's first nuclear-powered icebreaker. For three decades it led convoys of ships through the ice with cargoes for the inhabitants of the remote shores of Siberia and Chukotka. This ship, too was awarded the Order of Lenin for its services to the motherland.

Today the nuclear-powered icebreaker "Lenin" has also been retired. But the people of the north are certain they will soon see a new ship bearing the name of the leader of the proletariat. They have appealed to the appropriate authorities to give this name to one of the icebreakers currently under construction.

Vodnyi Transport
5 April 1990
Page 4 (Full Text)

Icebreaker Undergoes Modifications and Sea Trials

A photograph in the 12 April edition of "Vodnyi transport" shows the icebreaker "Kapitan Nikolaev" of the Murmansk Maritime Steamship Line and the unusually full, rounded lines at the bow.

The replacement of the ship's pointed bow section was carried out at the New Wharf in Helsinki by A/O Masa yards.

Another innovation are the ice-deflecting yards installed on the icebreaker's bottom to help keep the channel clearer. A cathode protection system has been added and repairs were carried out on the hull and mechanical systems.

Merely as a result of the new and effective bow configuration (the ship's) ice penetration specification increases from 1.6 to 2 meters while other specifications were maintained or improved.

Sea trials to determine the ship's operational performance and manoeuvrability were conducted in the Gulf of Finland and gave satisfactory results.

Ahead are trials to test the ship's capabilities in ice. These will be conducted this summer in the Soviet Arctic by Soviet and Finnish specialists.

Vodnyi Transport

12 April 1990

Page 1 (slightly abridged)

Anxious Days in Labytnangi

The importance of the Labytnangi port in the freight system for the entire Ob-Irtysh Basin cannot be underestimated: it is, after all, the shortest route for delivering freight to the gas field workers of the Yamal Peninsula and to construction workers, geologists and oil workers of the Tyumen northland.

Hundreds of thousands of tons of the most diverse cargo flow into the river wharfs of the Northern Railway Line. For many years the port and railway workers of the Labytnangi Transport Centre have coordinated their work in accordance with a "temporary agreement". These workers concluded a similar agreement this year as well, but this one included what is frankly an ultimatum from the administration of the Northern Railway Line.

Essentially, the demand is as follows: if the railway sidings leading from the Labytnangi station to the mechanized docks of the river port are not repaired by July 1 of this year and are not turned over to the Ministry of Railroads, this port will be closed to cargo carried jointly by rail and water transport. What this means is that the work of the entire fleet of the Ob-Irtysh Steamship Line will come to a halt, and workers in the Far North will not be receiving nearly 700,000 tons of essential freight.

What's going on here? Why has the dispute around this northern trans-shipping point suddenly heated up? This is, as they say, a well-worn issue. Six years ago, in March 1984, authorities adopted a decision requiring three union ministries - Mingazprom (Ministry of the Natural Gas Industry), Minneftegazstroi (Ministry of Oil and Gas Construction) and MIntransstroi (Ministry of Transport Construction) to complete in 1984 the construction of rail sidings from the Labytnangi station to the mechanized docks of the port and to transfer them to the USSR Ministry of Railroads. However, these decisions have still not been implemented. As before, this northern transshipping point has many bosses but no order.

The longest section of sidings - 3 kilometers 700 meters in length - as well as the Rechnaya (River) station with its reserve sidings is owned by the state concern "Gazprom" (the former Mingazprom). The gas industry people have left much undone in the way of station equipment. In addition, work on automatic pneumatic cleaning of switches and on the electrical power supply has not been completed, and the sidings belonging to the geologists of the USSR Ministry of Geology and oil workers of USSR Minneftegazstroi are in an extremely unsatisfactory state. Ties and rails need to be replaced, and technical service lines are in the need of repair.

Some time ago already the directors of the Ob-Irtysh Steamship Line directed urgent telegrams to the attention of gas, oil, construction and geology workers. They are also aware of the unpleasant situation in the RSFSR Ministry of the River Fleet but, unfortunately, no change for the better is in sight for this northern freight hub. After all, the opening of the navigation season is not far off, and a solution to this problem can no longer be delayed. What else is there to do? Leave the Ob River Fleet in port?

There's only one solution: the rail sidings to the port of Labytnangi must be quickly repaired and transferred to the Ministry of Railroads. This way, everybody wins, both the transport workers and those receiving the cargo. Now is no time to dawdle: the fate of "Navigation - 90" is at risk.

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12 April 1990
Page 2 (full text)

Men of the Icebreakers

When a new ship goes out to sea it is always a celebration for sailors. Especially when the "newcomer" is the latest nuclear-powered giant to join the icebreaker fleet in the North. People in Murmansk have been waiting for it and preparing for its arrival, and a schedule of operations has already been drawn up for the new ship. Symbolically, the new ship bears the name "Sovetskii Soyuz"

The "Sovetskii Soyuz" has begun its first ice duty. Its assignment is to escort transport ships carrying domestic freight on the year-round route Murmansk - Dudinka. Icebreaker crews know this route well, and still, the maiden voyage is always exciting for crew members: How will the new ship perform in heavy ice? Especially since conditions on the northern sea route are extremely difficult this year. Thus, the first voyage of the "Sovetskii Soyuz" was in fact a test for all of the ships' systems and machinery. They demonstrated that highest degree of reliability and compliance with the strictest requirements of maritime inspection imposed on ships of this type.

Special criteria are used in selecting personnel for the atomic fleet. Most of the crew members on the "Sovetskii Soyuz" have sailed before on the nuclear-powered icebreakers, and they have not only received specialized training but have also gained experience working on these new ships. Anatolii Grigorevich Gorshkovski has been appointed Captain. He considers his real teacher to be the experienced icebreaker captain of the "Arktika" - Vasilii Aleksandrovich Golokhvastov.

Vodnyi Transport
3 April 1990
Page 1 (full text)

MISCELLANEOUS

Activists Working for a Nuclear-Free North

Activists of the movement for a nuclear-free North have created a committee: "Novaya Zemlya - Nevada".

The aim of this citizen's organization is to promote the cessation of nuclear testing. Not only on the island of Novaya Zemlya but throughout the world.

For the first time in the 33 years that the nuclear test site has existed on Novaya Zemlya, people's deputies have obtained detailed information about it and shared this information with their constituents.

"It seems to me," said A. Vyucheiskii, people's deputy from Naryan-Mar, "all sober-minded people understand that a total ban on nuclear testing is still not possible given the situation in the world. That means we need to talk about the curtailment of nuclear testing and also to use every means at our disposal to fight for this. Under no circumstances should we permit an increase to occur in the burden on the northern test site."

Izvestiya

24 April 1990

Page 2 (full text)

Russian-Chukchi Conversational Guide

The weekly newspaper Sovetken Chukotka (Soviet Chukotka) has begun the publication of a Russian-Chukchi guide. Its author is the journalist and associate of the newspaper A. Kerginto.

The instructional manual is particularly needed by agricultural specialists, managers of reindeer-breeding sovkhoses, geological and mining parties, doctors, and people working in the mass media.

It is also intended for rural and village associations of indigenous inhabitants in the Chukchi Autonomous Okrug to assist them in organizing active native language study among young people.

Sovetskaya Rossia
24 April 1990
Page 4 (full text)

Russian-Chukchi Conversational Guide

through self-taught a set of guides activities

The weekly newspaper Sovetskaya Chukotka (Soviet Chukotka) has begun the publication of a Russian-Chukchi guide. The editor of the journal is the associate editor of the newspaper A. Kuznetsov, editor-in-chief.

The newspaper is intended to help the Chukchi people in their work in the areas of agriculture, geology, zoology, and other fields. It is intended to help the Chukchi people in their work in the areas of agriculture, geology, zoology, and other fields.

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