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4 December 1984

# USSR Report

## TRANSPORTATION





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# USSR REPORT

## TRANSPORTATION

## CONTENTS

# INTERNATIONAL AIR SERVICES CHIEF ON CURRENT PROJECTS

Moscow VOZDUSHNYY TRANSPORT in Russian 17 Jul 84 p 3

[Article by N. Poluyanchik, general director of the International Air Services Central Administration: "Competition in Which There Are No Losers"]

[Text] "CEMA member countries are implementing coordinated measures to comprehensively develop mutual transport links. These measures envision, in particular, closer coordination of plans for development of transport and agreement on capital investment of mutual interest in the development of the countries' transport infrastructure," says the "Statement on Basic Directions of the Further Development and Intensification of Economic and Scientific-Technical Cooperation of CEMA Countries," adopted at the summit Economic Conference.

The course adopted to improve socialist economic integration in the transport field requires aviation enterprises of socialist countries to seek out new reserves in order to put these decisions into effect.

The fulfillment of tasks established by Minister of Civil Aviation B. P. Bugayev to convert aviation enterprises to exemplary ones and Aeroflot into the standard in transport is a subject of special concern for party and public organizations and economic managers.

Every year the bonds of friendship, fraternity, and cooperation between aviation transport enterprises of the Berlin Agreement become stronger. International socialist competition to convert the air lines which connect the capitals of CEMA countries into exemplary ones and into routes of friendship has been a new manifestation of these bonds. The emergence of this form of cooperation was not accidental -- after all, trips between socialist states occupy a significant place in international air travel, and they are steadily increasing.

The identity of socio-economic systems, the community of goals, the strong material base, and qualified personnel -- all these were prerequisites for the exchange of agreements which took place in 1975 between the TsUMVS [International Air Services Central Administration] of Aeroflot and the Bulgarian Balkan Aviation Company and Czechoslovak Airlines (ChSA) on socialist competition and labor rivalry under the slogan "Turn the Moscow-

Sofia-Moscow and Moscow-Prague-Moscow Air Routes into Exemplary Ones and Routes of Friendship." Similar agreements were signed with the MALEV, LOT, and Interflug airlines in 1976.

But what are the tasks of socialist competition between members of the Berlin Agreement? Primarily they are to mobilize aviation workers to fulfill national economic plans and socialist obligations, insure the safety and regularity of flights, utilize aviation equipment efficiently, increase the sophistication of passenger service on board planes and at airports, improve information and publicity work, and introduce the achievements of science and engineering and suggestions of innovators and inventors in practice. In light of this an important place is given to increasing occupational skill and strengthening discipline and personal responsibility for the work assigned.

It should be emphasized that socialist competition has a noticeable positive effect on production indicators. And this is completely natural. Paramount significance is attached to flights on friendship routes. In 1983, 37 percent of the total number of passengers departing from Sheremetyevo Airport were traveling on these air routes. Passenger complaints and grievances concerning baggage, freight, and mail shipments were kept to a minimum on these routes.

I would especially like to single out such a qualitative indicator as flight regularity. Sheremetyevo Airport workers, as well as their colleagues in the Berlin, Sofia, Prague, and Budapest airports, treat the preparation and servicing of flights on friendship routes with great responsibility. And this gives noticeable results. For example, the regularity of flights from Sheremetyevo on all friendship routes significantly exceeds the overall indicator. And regularity is continually increasing. Whereas the overall regularity of flights from Sheremetyevo Airport last year was 88.7 percent, this indicator exceeded 90 percent on friendship routes. This is graphic evidence of the efficiency of competition among aviators of the socialist countries.

The past nine years or so have demonstrated that not only are all basic points of agreements on socialist competition being successfully fulfilled -- this has a positive effect on the practical work of aviation enterprises and makes it possible to indentify and bring into action unutilized reserves and increase creative activity. The initiatives of the crews of the IL-86 planes commanded by Yu. Ovsyannikov and G. Sheremet'yev for standard flights, or of the ATB [motor transport base] brigade of Ye. Kharitonova which called for "Exemplary Servicing to Friendship Flights" may serve as typical examples of this. Most crews and brigades of ground services supported these initiatives. And each collective managed to introduce its own proposals aimed at improving technical preparation of friendship flights and precisely coordinating the technological servicing schedule of planes of Aeroflot and aviation companies of socialist countries.

Results of socialist competition are summarized every year in the capitals of the partner-countries. Not only successes and achievements are discussed at these meetings which traditionally take place in an exceptionally warm and comradely atmosphere, but new tasks are posed and paths for further cooperation among aviation workers are determined.

This year a TsUMVS delegation visited the GDR, Hungary, Czechoslovakia, and Bulgaria, where results of competition and labor cooperation to turn the Moscow-Berlin-Moscow, Moscow-Budapest-Moscow, Moscow-Prague-Moscow, and Moscow-Sofia-Moscow lines into friendship routes and exemplary services were summarized.

It is impossible not to say that the creation of the friendship routes has been a good stimulus for the emergence of a qualitatively new form of cooperation. This means jointly operated lines. The entire network of lines between the USSR and the People's Republic of Bulgaria is now being converted to these conditions. As the first results are demonstrating, joint lines have become an efficient form of cooperation between aviation enterprises of socialist countries and make it possible to more fully satisfy the demand for air shipments.

Next year we will celebrate the 10th anniversary of the beginning of flights on friendship routes. Of course, we are already preparing for this event. Consequently we consider the meeting of friends in socialist competition which will take place 16-20 July in Moscow, on the eve of the 25th anniversary of the opening of the Sheremetyevo International Airport, a very important event in summarizing the experience accumulated and in putting further aviation cooperation based on the principles of genuine equality and fraternal mutual assistance into practice.

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## ULYANOVSK TRAINING CENTER CHIEF ON SCHOOL'S ACTIVITIES

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 14 Jul 84 p 4

[Interview with Pavel Petrovich [also given as Pavlovich] Mushtatov, chief of the Order of Lenin Center for Combined Instruction of Civil Aviation Flight, Technical, and Controller Personnel of CEMA Member Countries, conducted by SOTSIALISTICHESKAYA INDUSTRIYA correspondent A. Vorob'yev; date and place not specified]

[Text] Ulyanovsk--Saturday Meetings

> His office, where he is seldom found, is in the very center of Ulyanovsk. English, French, German, Spanish, Vietnamese, and many other languages of the world are often heard there. And in conversations over the intercom, the newest types of Soviet airliners are mentioned time and again: IL-86, IL-62, IL-76, TU-154, and YaK-42. The people who come here are severe and smartly-dressed, in the handsome uniform of civil aviation pilots. Because the owner of the office is Pavel Petrovich Mushtatov, Honored Pilot of the USSR and chief of the Order of Lenin Center for Combined Instruction of Civil Aviation Flight, Technical, and Controller Personnel of CEMA Member Countries.

[Answer] "Ulyanovsk," says P. Mushtatov, "has become one of the most outstanding aviation centers in the world: in 1974, eight CEMA countries concluded a General Agreement on creating and building our Center on share principles. An educational building, a hotel, a dining hall, a medical department, and an excellent airfield complex with a runway capable of accepting all types of airplanes are already in operation. By the end of the five-year plan the construction of the first phase of the Center will be complete.

[Question] You probably started from scratch?

[Answer] The Center is built on the basis of one of the country's oldest educational institutions. In September 1935, a school for pilot training for the civil fleet was opened in Bataysk. The name and location of the school changed. Mineralnyye Vody, Tashkent, Novosibirsk, Baku -- those were our addresses. In 1950 the school of higher pilot training was rebased in

Ulyanovsk and here began the second stage of its development, the international one. Aviators from 36 countries of the world have visited us here, mastering new equipment.

[Question] Does this mean something like an institute for improving the qualifications of civil aviation pilots?

[Answer] Only partly. The point is that we do not teach only pilots. We update the knowledge of technicians, engineers, management personnel, and controllers. And another equally important task of the Center is to introduce principles and methods of instruction that have been coordinated and ratified by the CEMA countries at the standing methodological council. Center specialists have developed hundreds of normative documents, study and methods manuals, syllabi and curricula, specialized training equipment, moving displays and models, and instructional films. They are being used in the fraternal countries of socialism.

[Question] Pavel Pavlovich, are genuine flying aces, and the most experienced methodologists and instructors needed to perform such complicated tasks?

[Answer] We have nothing to complain of there! Our school has Heroes of the Soviet Union, Honored Pilots of the USSR, and people with 40 years of teaching and flying experience. There is Mikhail Vasil'yevich Grebenko, chief of the flying-methods department, for example. He has worked as a flight instructor for more than 30 years. It has been estimated that he has made about 50,000 take-offs and landings in that time. He was the first to master all the heavy jet aircraft. Even now he is full of creative plans. He paints in oil. He participates in amateur performances. He made a color training film.

[Question] I heard that someone is also involved in shooting an art film.

[Answer] Do you remember El'dar Ryazanov's comedy "The Adventures of the Italians in Russia"? There is an episode when a plane lands on a city street. These frames were shot on our runway, which had been appropriately camouflaged. An actor was to sit at the plane's controls. But the director observed the double for the work Ivan Antonovich Tarashchan, and said: "Let's shoot him in real life." Ivan Antonovich is an Honored Pilot of the USSR.

[Question] I can see a supersonic TU-144 parked on the airfield. What role will it perform here?

[Answer] The role of an exhibit. The ministry commissioned us to organize a museum of the history of USSR civil aviation. All possible types of planes which have flown and are flying are to be collected, not models, but the real thing. A search group is working already. It was not at all long ago that a report arrived that a PS-5 plane was discovered in a swamp near Magadan. It has already been put in the museum now. An old passenger plane found in the Igarka region is also being restored.

The base for the future main museum already exists. And Ivan Fedotovich Yakurnov, Hero of the Soviet Union, war veteran, and now engineer, is to serve in this capacity.

[Question] Pavel Pavlovich, when did the chief of the Center begin flying and does he fly now?

[Answer] There is nothing fine or heroic in my biography. It is true I have been flying for 30 years. And for almost all of those years as an instructor. And as a boy I was not crazy about flying -- I had other things on my mind, the war had come to the Salsk steppes. I carried and delivered mail. I remember how I just could not deliver the fifth death notice to one family. I asked my father to do it. I graduated from a tekhnikum after the war. I became a foreman of a gray iron shop at the Rostov Agricultural Machinery Plant. And it was only afterwards that I came to aviation. But even now when I go to my shop, the old workers say to me: "Hello, comrade foreman!"

[Question] In your opinion what qualities should a contemporary civilian pilot have?

[Answer] He must be a erudite specialist in his work, a physically trained person who observes flying laws strictly, is extremely disciplined, and religiously loves his Homeland.

Above all, a pilot must insure the safety of his passengers. Our work does not forgive anyone's mistakes. But how much one must know for this! One instruction manual for the TU-134 plane takes up two volumes. The collection of recommendations on crew actions in case of failure of aviation equipment and in special cases, for example, has only slightly fewer paragraphs.

Another aspect. Our crews fly to many countries of the world. Quite often they find themselves in conditions of political provocation and face biased attitudes on the part of some authorities. This is where high moral, political, and civil qualities are needed. And we instill them here in the Center. The whole atmosphere in which we live and work helps. After all, Ulyanovsk is the birthplace of the Earth's greatest person.

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## INSTITUTE TESTS 'VACUUM CLEANER' TRAIN IN LENINGRAD METRO

Moscow GUDOK in Russian 14 Jul 84 p 3

[News report by TASS correspondent N. Krupenik: "Made in a Leningrad VUZ"]

[Text] Leningrad, 13 July. Testing of a vacuum-cleaner train began today on the Metro tracks of the city on the Neva. Set up in the three cars of the train is a unique cleaning system, compressors and ventilation equipment. Its output is 100 thousand cubic meters of clean air per hour.

Specialists estimate that every square meter of the subway gets coated with five grams of dust in the course of one week. It enters the underground mainly through the ventilation shafts, but is removed by inefficient machines. It is these that the vacuum-cleaner train will replace.

"This is only one example of our VUZ's contribution to the development and improvement of transport systems", says professor Ye.Kraskovskiy, rector of the Institute of Railway Transport Engineers imeni V.N.Obraztsov. "Our people helped in reconstructing the Moscow-Leningrad main line to handle train traffic with speeds of up to 200 kilometers per hour. The hydraulic vibration reducer they invented in the course of that assignment enabled high-speed trains to run smoother and significantly increased the mileage of the cars between repairs. Thanks to the creative collaboration of our VUZ with the October railroad a special train, the first in the country, was worked into the schedule to haul large-size containers 1300 kilometers in 24 hours. The economic effect of this measure is close to half a million rubles a year.

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## MINSK METRO OPENING ON 30 JUNE, AHEAD OF SCHEDULE

Moscow GUDOK in Russian 30 Jun 84 p 1

/Article by GUDOK correspondent-D. Sverkhunov: "The Minsk Metro is Operative!"/

/Text/ The residents of the capital of Belorussia had been impatiently waiting for this day - on June 28 the first phase of the Minsk Metro was put into permanent operation. Eight-odd kilometers of underground lines and eight stations were commissioned six months ahead of schedule!

Timed to coincide with the opening of the Metro in the hero city, a meeting was held on that same day at the Minsk terminal's Palace of Culture and Sports to commemorate the 40th anniversary of Belorussia's liberation from the German fascist invaders. The spacious hall is full of people. Seated in the front rows are the Metro builders, all in holiday mood and dress, many with decorations and medals. Speakers recollected how tough those eight kilometers had been, especially the tunnels under Yakub Kolas Square and the Svisloch river with its unstable bottom...

Neither, however, had come as a surprise. The local evening paper VECHERNIY MINSK, in a report on the start of the Metro project, had written as far back as 1977 that its builders would face difficult geological and hydrogeological conditions. It was surmised that the laying of more than half the route was contingent on lowering water levels by technical means.

The reality proved even tougher. In one sector a drive team came upon a huge boulder, in another spot - a real swamp. But the builders did not give up. Even the tunnels under the Minsk passenger and Minsk freight stations were dug without disrupting train traffic.

All these obstacles are now over and done with. Today the eight stations, radiant and resplendent, are taking in passengers. Two of them are unique: the "Moskovskaya" with its beautiful marble finish, and the "Oktyabrskaya", the only two-story station in the country. It was designed by the collective of the "Metrogiprotrans" nstitute.

A mass meeting was held yesterday at the "Lenin Square" station of the Metro dedicated to the completion of the first phase of the Minsk Metro. Taking part in it were First Secretary of the CPBe Central Committee N.N.Slyun'kov, other members of the CPBe Central Committee, Belorussian government leaders, party, war and labor veterans and Metro builders. Participants were taken for a ride on the underground avenue.

Today, on June 30, 1984, at six in the morning, the Minsk Metro went into permanent operation.

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## ALMA-ATA METRO FIRST PHASE DESIGN WORK COMPLETED

Moscow IZVESTIYA in Russian 4 May 84 p 6

[Report by IZVESTIYA correspondent M. Bayzhanov: "There Will Be a Metro in Alma-Ata"]

[Text] The design stage of the first phase of the Alma-Ata Metro has been completed. This important assignment was carried out by specialists from the Moscow institute "Metrogiprotrans" in creative collaboration with five institutes based in the capital of Kazakhstan.

To coordinate all preparatory work for the construction of the underground transport line a department was organized at the Alma-Ata city soviet of people's deputies to exercise control over the designing and construction of the Metro. Its chief, N.Ploshay, recounts:

"The construction of an underground line, as everybody knows, is a complicated and costly enterprise. In our city of over a million, though, traffic on all bus, streetcar and trolleybus routes, and most of them are many kilometers long, is very heavy. Specialists have determined that the problem of passenger transport can be resolved only with the aid of a Metro.

The first practical steps in this direction have been taken: projects are being developed to select the constructional, architectural and artistic aspects of the stations and the creation has begun of a production and technical base. The approved plan for the city underground railroad envisions it as consisting of three lines. The first section, eight and a half kilometers long, will have eight stations whose interiors will reflect the names they have been given: "Oktyabrskaya", "Kommunisticheskaya", "Baykonur", "Dostyk" ("Friendship"), "Almaly" ("Apple"), "Dzhetysu" ("Seven Rivers"), "Molodyozhnaya" and "Alatau"."

The construction of our Metro, N.Ploshay continues, is complicated by several specific factors - sloping mountainous terrain, seismicity and subterranean waters. That is why the line will be laid deep down, we will have to use the closed pit method in its construction. At the present time we are looking for the least costly

way to shift or reconstruct existing utilities systems and the road and transport network

The building of the Metro will be entrusted to the best drive and installation teams with rich experience in tunnel and gallery digging from the construction of the Big Alma-Ata canal, the largest in the republic. Local minerals will be used in the décor of the stations.

In the future the three lines of the Metro will link the industrial and residential zones of the city, all of Alma-Ata's rayons with each other and with the center. The underground expresses will quickly transport thousands of passengers from one end of the city to the other with only one train change in between.

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# TSARITSYNO PONDS INTERFERING WITH MOSCOW METRO CONSTRUCTION

Moscow MOSKOVSKAYA PRAVDA in Russian 3 Jul 84 p 1

[Article by V.Krakhotina: "Above Us - the Tsaritsyno Ponds"]

[Text] On the Zamoskvoretskiy radius of the metro the most difficult stage is the one between the stations of Lenino and Orekhovo. The tunnel here runs under the Tsaritsyno ponds.

The metro builders of Moscow long ago learned how to surmount water obstacles. They have crossed the Moscow river, the Yauza, canals and streams not once, but many times. The Tsaritsyno ponds at first did not foreshadow any special difficulties either. True, the geologists established that the ground here is sodden, silty, not easily drainable, but there are reliable methods available today to handle such problems.

Builders from Metrostroy's Construction and Installation Administration No.3 (SMU-3) arrived here in Tsaritsyno almost simultaneously with specialists from the Glavtonnel'metrostroy administration. Before beginning any earth-moving operations they froze the entire course under the ponds. This was accomplished by putting up a levee along the shoreline, drilling holes in it, inserting pipes therein and filling them with freezer fluid.

At first everything went according to plan, but when the driving of the tunnel began the Tsaritsyno project handed the builders their first problem. This had to be resolved quickly, accurately and reliably.

The initial plan was to transit the entire section from Lenino to Orekhovo with the aid of drive frames at a shallow level, but this was subsequently lowered by the master plan because almost as soon as the tunnels come out of the pond area the new line crosses several sidings of the Kursk railroad line.

The builders intended to traverse this knotty section of the line with the aid of a well-tried method - using special machinery to crush the rock. But when work began, the future operators of the line rejected the proposed method for fear that the ground would begin to bulge.

The builders then came up with a new solution - use the same drive frames to bore under the railroad. The stretch of tunnel under the tracks then had to be "elevated", and with it the entire route in the vicinity of the Tsaritsyno ponds. As a result of these changes the tunnels would have to be laid in the "surfacing" (or exudation) zone.

At this point yet another decision was adopted - to cap this stretch with a slab of reinforced concrete one meter thick, figuring that the mass of the slab would prevent the installations from "surfacing".

But very soon the builders were confronted by a new and more difficult obstacle. Long before the boring of the stretch was completed, when, in fact, only the first few score meters of the frozen course had been penetrated, water suddenly began to seep through at several points in the tunnels, from the top, the bottom, from all sides, so much so that cracks appeared in the insulating walls.

"The collective mobilized all available forces to pump sand and cement around the tunnels," recounts SMU-3 section head Boris Gennad'yevich Sosunov. "But though we blanketed them with sand and cement in amounts far in excess of any norms, the water still managed to find outlets for itself. By that time the frozen ground had begun to thaw. To prevent deformation of the tubings we put in braces, frames, installed metal boxes, but, of course, none of them could provide a cardinal solution to the problem."

The SMU-3 engineers and Metrogiprotrans designers jointly proposed and developed a project to erect an inner reinforced concrete sleeve with metal insulation along the entire circumference of the tunnels where they run directly under the ponds - from one shoreline to the other plus 20 meters in either direction.

This difficult job is now being carried out by highly-skilled specialists from a construction and installation subdivision of Glavtonnel'metrostroy. In all, they will have to weld and install 700 tons of metal, then lay about two thousand cubic meters of concrete between the cast-iron walls of the tunnels and the metallic insulation. Unlike the round tubings, the latter is rectangular in form.

"The creation of such a formidable inner insulation will reliably protect the tunnels from subsoil waters," says chief specialist of the Metrogiprotrans Institute's design department Tamara Alexandrovna Zharova. "It will also impart additional mass to the structure, so much so that the slab's thickness, originally set at one meter, can now be reduced to 60 centimeters."

On April 26, immediately after completion of the tunnels, but before starting on the reinforced concrete sleeve, the builders began work on the insulation assignment. This could not be done

quickly enough by L.Sevostyanov's team from SMU-3 working alone. Assistance was forthcoming from the collectives of SMU-1, SMU-5, SMU-6, SMU-7, SMU-8 and SMU-14 who delegated their best insulation teams to the project.

Each team was given a written assignment for 150-200 meters, and each achieved that goal on schedule. But the first to complete drainage of the tunnels were Zh.Getman's and V.Ziatev's teams, even though they had to work the most difficult stretches.

Every worker on the project is today doing his job with greater responsibility than anywhere or anytime before. Because he knows - the water here must not be allowed to pass.

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# CHARACTERISTICS OF VL85 ELECTRIC LOCOMOTIVE REVIEWED

Moscow GUDOK in Russian 11 Jul 84 p 2

/Article by GUDOK correspondent S. Makarov: "Electric Locomotive VL85: Pluses and Minuses"/

/Text/ The scientists and designers of VElNII*, together with the collective of the Novocherkassk Electric Locomotive Plant (NEVZ), have developed two experimental models of a new alternating-current locomotive for the Baikal-Amur Main Line (BAM). One of these is being operationally tested at the Bataisk depot. The two-section, twelve-axle, 45-meter long locomotive commands immediate respect by its very size. Also impressive is its power - over ten thousand kilowatts. Its tractive force in the one-hour workmode is 72 tons, efficiency in the extended mode - no less than 86 percent.

Our correspondent S.Makarov interviewed several Novocherkassk designers and Bataisk depot workers.

"What was the most difficult aspect in the creation of the new electric locomotive?"

"The requirement was to develop a locomotive that would confidently haul trains weighing ten thousand tons, would not be afraid of 60-degree frosts or Central Asian heat", replies NEVZ director V.Duvarov. "To this end we had to improve the carriage part, create powerful traction engines and introduce electronics."

"What is new in the design?"

"The VL85," explains VElNII deputy director for design work V.Sverdlov, "embodies a new engineering approach to the arrangement of the working parts: installed under each section of the locomotive are three two-axle bogies. Traction and braking impulses are transmitted from these to the body and back by means of inclined rods. The bogies are interchangeable no matter how the traction engines are suspended."

"What else distinguishes it from existing electric locomotives?"

"We consider the VL85 the pioneer of a new type of electric loco-

(*) All-Union Scientific Research, Planning, Design and Technological Institute of Electric Locomotive Building.

motive," replies VElNII director V.Yanov. "It is fifty percent more powerful than the serial machines, can function reliably under any and all weather conditions, even in a dust storm. It boasts a unique type of equipment arrangement. This consists of blocks assembled in a shop, then mounted on the locomotive. The VL85 utilizes many details from the eight-axle, alternating current electric locomotive."

"How do operators rate the locomotive?" - this question is addressed by the correspondent to Ye.Yakovlev, a locomotive engineer from the Bataisk depot with 30 years of experience. He has been driving the experimental VL85 since October of last year.

"A thoroughly modern machine. The designers have provided it with two sets of controls - automatic and manual, it can be coupled to another locomotive and operated by one crew. The recuperative braking system allows to take a heavyweight train down a gradient of twelve thousand without recourse to the train's pneumatic brakes.

The VL85 provides better working conditions for locomotive teams, the volume of the cab has been enlarged 25 percent, the field of view greatly expanded, the capacity of the heating system's air stove has been increased. The design of the control panel underwent significant changes. The engineer's easy chair absorbs vibration."

"Does the new locomotive have any shortcomings?"

"Of course it does. For example, the design of the sand-loading hatches is none too fortunate - you cannot see how the bunker is filling up, the only way to determine the fill level is by sound. There is no device to clean the windshields of the cab, the side mirrors are too small, they should be at least the size of those now installed on serial locomotives. There you have it," Ye.Yakovlev smiles, "our remarks cannot seriously compromise the new machine."

"How would you characterize it in terms of repairability? How reliable is the equipment?"

"We have driven our VL85 a little over fifteen thousand kilometers," says chief of the Bataisk depot Yu.Pokrovskiy, "but several inconveniences hampering technical inspection-2 and current repairs have already come to light. These stem primarily from the locomotive's extended length. Existing inspection bays, repair shops and servicing facilities are simply too small for it.

Consequently, those depots where the VL85 is to be based must reconstruct everything now. The lateral position of the sand-bunker lids is an inconvenience, they would surely serve their purpose better if placed at the top. Compared to serial machines access to apparatuses and internal equipment on the VL85 is much easier. The positioning of the traction transformer's motor pump is ill-conceived in that it hinders inspection of the terminal box".

"When will these shortcomings be set right by the manufacturer?"

"For the new machine to undergo a complete, comprehensive test it must chalk up a total run of 200 thousand kilometers. This will take about a year and a half, but even now we have by ourselves uncovered several flaws in the ventilation system, automatic controls, skid protection, the positioning of the instruments in the engineer's cab, and so on. All defects that come to light during testing are being duly noted. They will be taken care of prior to putting the VL85 into series production.

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## LAGGING MOSCOW METRO CONSTRUCTION PACE CRITICIZED

Moscow MOSKOVSKAYA PRAVDA in Russian 21 Jun 84 p 1

/Excerpt/ The Moscow gorkom of the CPSU reviewed measures aimed at ensuring the construction and commissioning of Moscow Metro lines in 1984-1985. During that period construction of the Zamoskvoretskiy line will be brought to completion, the Serpukhov radius will be extended to "Prazhskaya" station, the Kalinin radius - to "Tret'yakovskaya" station, thereby providing better transportation service to the residents of the city.

The bureau reminded the management of Mosmetrostroy, the Moscow Metro and a number of Mosgorispolkom main administrations of the need to liquidate the lag in the construction of several metro sections, ensure the timely delivery of needed materials and equipment, commission the new metro lines on schedule. The party committees of Metrostroy and the Moscow Metro have been advised to tighten their control over implementation of measures to accelerate the development of the Moscow metro, heighten management's responsibility for the commissioning of new lines on schedule and improve organizational and educational work in their labor collectives.

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## OFFICIAL NOTES SUCCESSES IN ZAPOROZHYE PORT PERFORMANCE

Moscow VODNYY TRANSPORT in Russian 31 May 84 p 2

[Article by Deputy Port Chief I. Petrov: "The River Gateway to Industry"]

> [Text] From a wheelbarrow to powerful gantry cranes, from a barge on a tow bar to modern cargo and passenger motorships, from temporary barracks to well-appointed building complexes--this is the route traversed in a half century by this collective. In order to evaluate the contribution of the port workers to the overall achievements of the sector, it is sufficient to say that in 3 years of the five-year plan they processed 1.5 million national economy cargoes above the plan, transported 450,000 passengers and 250,000 tons of cargo above plan, and obtained 300,000 rubles of above-plan profits. It is not by chance that, according to the results of work in the past year, the Zaporozhye port workers were presented with the Challenge Red Banner of the CPSU Central Committee, USSR Council of Ministers, AUCCTU and Komsomol Central Committee.

Recently the aspect of the Zaporozhye port has been showing increasingly clearly features of a "maritime nature." The port workers are boldly mastering the processing of vessels of the river-sea type with export-import goods, bound for direct railroad service. The advantage here is obvious--reloading at maritime ports is eliminated and the pressure is taken off the railroad.

Vessels of the Ukrainian Glavrechflot regularly call at the port with cargo from other countries. They transport reinforcing-bar steel, pipes, drilling and gas pipeline equipment from Italy, bauxites from Greece and Yugoslavia and metal from Spain and France. The continuous line from Savona to Zaporozhye operates precisely according to schedule. The volume of processing export-import cargo is constantly growing.

The fact that the Zaporozhye port workers, in the short time that has passed since the start of navigation, have switched from the railroad to the river a vigorous freight flow, and that work in this direction is continuing, is an eloquent illustration of the accord of related workers and the usefulness of uniting their efforts to solve problems of state significance. With the

present shortage of rolling stock, to free tens of thousands of cars a year is an attestation of the harmonious work of the allied industries.

Combined activity to accelerate the processing of means of transport is quite productive. The practical development of the experience of the Leningrad workers is its basis. Taking into consideration the 6-year interaction of the allied enterprises, the port workers came out as initiators of the work principle of a continuous schedule-plan.

Among the new partners is the Soyuzvneshtrans office. Its appearance in Zaporozhye is connected with the rapidly advancing transportation of goods for foreign trade. It accelerates (approximately two-fold) passage through the port of export-import goods, which now constitute a considerable portion of revenue items.

Mutual understanding in the area of contacts turns into mutual advantage. For a third of the navigation period, for example, the port makes a non-numbered estimate of car processing, which makes it possible to accelerate the process and avoid clerical delays. At the same time, the material incentive is clearly in operation: for every car unloaded without damages, the crane operator receives a reward. The port workers try to work with precision. But if required, they themselves repair the cars. There are cul-de-sacs at each freight area, where the equipment and materials necessary for this are available.

The port's collective was one of the first among the Ukrainian river transport workers to undertake the assimilation of the experience of the notable Il'ichevsk docker Anatoliy Baranovskiy. V. Snorkin headed the first consolidated comprehensive brigade on the Dnepr.

Formerly, work at the berths was entrusted to operations brigades. Each shift, they were newly formed from those port workers not engaged at the given moment. Selection of the members and brigade leader was random. V. Snorkin and his comrades quickly surpassed the results of the former brigades. In the comprehensive brigade, as compared with the operations brigade, the output per person increased by 9 percent.

At present, 90 percent of the port workers engaged in materials handling operations are working on the staff of 15 comprehensive brigades. Within the purview of each one is the entire berth front of the freight area. In its shift the brigade is sole master here. It carries out the processing of the vessels and cars, their cleaning out, clears the crane tracks, repairs the rolling stock, fleet and mechanization devices.

The port collective is not only occupied with freight. Every year over 3 million passengers are transported by the port's registered fleet.

The main concern of the port workers, however, is still freight. In the first quarter, one-fourth of the yearly volume of freight processing was carried out at the port. Thus, today the concept of "navigation" as work at the river from ice flow to freeze-up is a conditional one. Smoothness is yet another guarantee to the stability of the collective's success.

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CSO: 1829/314

## SAKHALIN SHIPPING CHIEF STRESSES NEED FOR CONTAINERIZATION

Moscow EKONOMICHESKAYA GAZETA in Russian No 35, Aug 84 p 14

[Article by S. Kamyshov, chief of the Sakhalin marine steamship line: "Joint Actions are in the Public Interest"]

[Text] The primary goods traffic of container shipments on our steamship line is on the Vanino-Magadan route, and is accomplished according to the most efficient scheme. About 100,000 medium-tonnage containers are transported here annually by means of a specialized line fleet--ships like the Moscow Pioneer, the Vasiliy Shukshin, and the Vlas Nichkov. During the current navigation period new transport ice-breakers of the Noril'sk class were received. In this way the fleet is growing, and containerization, unfortunately, is lagging behind.

At the Magadan directorate it involves only 12 percent of the total goods traffic. Because of the great labor intensiveness of registering freight and commercial documentation, the ships are moored in port for not less than four days. For example, in the port of Vanino in addition up to 18 copies of various papers are registered and 22 warehouse and freight payroll, inventory, and bookkeeping operations are carried out. Therefore the registration of documents today is an obstacle to the processing of ships in moorage.

The absence of separate planning for the transfer of cars from railroad transport to water transport and back in the port and at the Vanino station is a major defficiency in the operation of the fleet and of container-transport ships.

The dispatching of cars to the Vanino port for unloading and loading is carried out in a total daily volume without distributing the necessary number of cars for ferrying and for utilization of container ships to Magadan and ships with general loads. On individual days an excessively large number of cars with containers is dispatched to Magadan, but there are not enough of them with general loads and for loading on the ferry. As a result, the container ship processing front is overloaded. At this time the ferries and transport ships are standing idle, or the other way around.

The presence of a plan for the transfer of cars with a specific apportioning of daily car dispatching for loading on the ferry, cars with containers to Magadan, and ones with a general load will facilitate a reduction in idle time while ships wait for the arrival of freight and improve the port's work load as

well as eliminate the accumulation in port of freight with one destination. Such separate planning is a clear rhythm of operation for the transport junction and, finally, appropriate order. We understand the difficulties of railroad workers in organizing separate planning, but overcoming them turns out to be of profit to all the allied suppliers.

The volume of freight delivery by our steamship line's fleet with a transfer at the port of Vanino to points in the eastern sector of the Arctic is increasing with every year. This, perhaps, is the most difficult direction for us, since freight handling is conducted under difficult weather conditions. The navigable period is very short. Under these conditions the container is an indispensable resource.

The motor-ship transport ice-breakers that we have obtained, the Okha and the Kemerovo, are designed to deliver 560 large-tonnage containers in one trip and they have good loading equipment. In addition, the construction of a specialized transshipment complex, with a capacity of about 75,000 20-ton containers per year, in the port of Vanino is planned for the near future.

When it is put into operation we will solve the problem of full containerization of general freight at the Magadan, Arctic, and Uglegorsk directorates.

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PORTS AND TRANSSHIPMENT CENTERS

## SAKHALIN PORTS LACK ADEQUATE SERVICE VESSELS

Moscow VODNYY TRANSPORT in Russian 2 Jun 84 p 2

[Article by V. Talantov, chief of the Port Operations Service for the Sakhalin Shipping Company: "Give the Port Fleet a Sail!"]

[Text] There is no ship which, when approaching port, would not order a passenger launch so that the crew could go ashore after a long, difficult run. In addition, to serve the motorship, there must be a water barge and bunker-fueler, a bilge water collector and maneuvering tugs. It must be stated, however, that our port fleet has no such vessels, and those vessels that there are have long been obsolescent and have become practically unfit for operation.

The captains who frequent our ports constantly complain that they pick up a pilot from non-specialized boats, and that the sailors hoped in vain for the arrival of a passenger harbor launch--it is more often under repair than in operation. It is not difficult to imagine the indignation of the captain of a ferryboat which, twice a day, is moored without any help under icy conditions, due to which the mooring is delayed up to 8 hours and more....

The lack of a service-auxiliary fleet in the Sakhalin Shipping Company leads to unproductive idle times for transport vessels, and ultimately turns into millions in losses.

In order to understand why the port fleet copes increasingly poorly with the tasks posed, one must evaluate its qualitative and quantitative composition. For example, the average age of the sea-going tugs is 13 years, and some of them have been in operation since 1963-1964. The passenger launches have been in operation for almost 30 years. The port ice-breaker "Kh. Laptev" has been in service for a quarter of a century.

Working under conditions of shallow waters, in ice and standing in harbor basins that do not ensure reliable storm shelter, the port fleet is subject to considerable deterioration, but the metal for repairs is allotted according to the same norms for both the Western and the Far East basins, which have navigation conditions that are not comparable.

One must add to the above a lack of reliable back-up repair services in the ports of shipowners, which do not have at their disposal hoisting equipment,

and have an obsolete machine tool stock. For example, the lathes have been in operation for an average of 15 years, and the cutting tools--for 10 years.

The plants of the Far East Shipping Company meanwhile reduce the repair program for the port fleet every year. Deputy Chairman of the Mortekhsudoremprom All-Union Organization M. Levyakov proposed, in response to the requests of the shipping company...to write off practically all the vessels, without suggesting anything in exchange!

For over two years a fruitless correspondence has been carried on with the Mortekhsudoremprom All-Union Association concerning the delivery of a floating dock for Korsakov machine repair shops, which were recently turned over for operation, but have not been kept running at full capacity.

As a result, the shipping company has been forced to lay up some of the barges and to disperse funds to build up semi-cluster repair enterprises in a number of ports, in order to extricate themselves from this situation in some way or another.

The position of Glavflot [Main Administration of Shipping and Operation of the Fleet and Ports, USSR Ministry of the Maritime Fleet is also unclear to us. Instead of rendering assistance in repair of the port fleet, it obliges the shipping company to enlist in hauling operations cargo vessels which are taken away from other important routes. During inclement weather, the cargo vessels are converted to expensive floating warehouses in the harbor.

The port fleet problems have become more acute. This is well known in the ministry. For example, G. Gerasimchuk, chief of the PVFU [not further identified], reported last year that appropriate measures would be taken. However, according to the plan for ship supply in 1984, this is not perceptible. Moreover, the PVFU deputy chief announced that the tug with plan number 1496 has been eliminated from the supply plan for 1984.

If matters continue this way, then renewal, let us say, of dumb scows and towing craft will take 62 years!

It is time to devote most serious attention to the development of a repair base. There must be a solution to the problem of supplying a dock for Korsakov which could itself take on the repair of large port fleet vessels. The planned reconstruction of the slip operations at Krasnogorsk must be carried out with delivery of standard equipment. The machine tool stock at port workshops should be renewed and the construction of ships of design 16900 developed by the Leningrad TsPKB [Central Planning and Design Bureau], adapted for processing at unequipped shores, be begun.

It is expedient to give an assignment for designing shallow draft ice-breaking tugs with 500-800 h.p., with a range of 50-100 miles, which in winter can be used to service the Vanino-Kholmsk ferry crossing, as well as in mooring operations.

Without new vessels and a reliable repair base it is impossible to hope for the proper output for the port fleet. Not only the shipping company, but also the entire island area operations come out the loser.

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PORTS AND TRANSSHIPMENT CENTERS

## CHEREPOVETS PLANT LAMENTS POOR RAIL-RIVER COORDINATION

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 23 Aug 84 p 1

[Article by Y. Kulebyakin, deputy director of transport for the Ammofos association: "The Wharves are Empty"]

[Text] Cherepovets--Every year the Cherepovets Ammofos association increases production of mineral fertilizers for the country's agriculture. If in the first year of the current five-year plan chemists produced 346,000 tons of various mineral fertilizers, in 1983 they produced 382,000. Fulfillment of the plan is proceeding successfully now as well. But our successes could be even greater if difficulties did not arise because of the uncoordinated actions of various ministries in delivering raw materials--iron pyrite and apatite--to the association.

Cherepovets is situated on deep water river routes and is well linked to many rayons in the country. For this reason it was foreseen in designing and constructing the plant that iron pyrite and apatite would be delivered by combined railroad and water transport: apatite from the city of Kirovsk in the Murmansk Oblast by rail to Medvezhegorsk, and then by water from Medvezhegorsk to Cherepovets; iron pyrite by railroad from the Uchalinskiy integrated ore dressing works to the ports of Chaykovskiy and Togliatti, and further by river to our city. For this purpose an industrial river port with three wharves was built at the Ammofos association in 1977. The cost of the basic stocks of the port was more that 27 million rubles. It was envisaged that the maximum amount of raw materials would come through this port to the association. For this the MPS [Ministry of Means of Transport] had to provide shipment of 600,000 tons of apatite by means of special rolling stock, and 800,000 tons of iron pyrite per year. It would all seem to be clear--the transport conveyor would begin to operate according to the approved plans. But it is subsequently becoming clear that the MPS, because it lacks the necessary quantity of special "rotators", cannot transport that quantity of apatite from Kirovsk to Medvezhegorsk and does not "wish" to bring iron pyrite from the Uchalinskiy integrated ore dressing works to the ports of Chaykovskiy and Togliatti. As a result, we receive several times less raw material by water than was planned.

In five years the huge high-productivity processing capacity of the ports at the Ammofos association and the Medvezhegorsk port have not been used, and wharves and port workers are standing idle. And the losses that the enterprise incurs

in the transport of apatite and iron pyrite by railroad?! In the past winter alone 1,565 cubic meters of gas, worth almost 44,000 rubles, was expended on warming up cars with iron pyrite, and huge fines are being paid for the detention of cars caused by the difficulty of unloading undefrosted iron pyrite.

And what has not been undertaken to solve this problem! Inter-branch agreements were concluded for socialist competition between river transport workers and railroad workers; coordination councils of allied suppliers have been established to organize work according to continuous plans and schedules; meetings were conducted on various levels... More than once the association collective turned to higher organizations and to the October Railroad Directorate. And here is the result: in the 1984 April-May navigation period, the apatite transported by water amounted to 28 percent of the plan.

The management of October Railroad puts forth only one reason--an insufficient quantity of special rolling stock. Yes, such a reason does exist. A special resolution has been adopted that obliges USSR Gosplan and the Ministry of Heavy and Transport Machine Building to provide, in drafts of the 1985 plans, for the delivery of 300 special cars for the transport of apatite from Kirovsk to Medvezhegorsk. We will hope that this resolution will be fulfilled.

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## RAILCAR SHORTAGE STILL HAMPERING TALLINN PORT WORK

Moscow VODNYY TRANSPORT in Russian 2 Jun 84 p 2

[Article by O. Povetkin: "The Prospects Are Still the Same"]

> [Text] "Prospects for the Time-Being"--this was the title of an article published in VODNYY TRANSPORT on 29 March 1984. It touched upon a number of problems of the activity of the transport junction at the Tallinn Maritime Commercial Port. Included in this was the problem of prompt supply to the port berths of rolling railroad stock and enclosed cars.

An answer was obtained from the Department Chief of Export-Import Freight and River Transshipment of the USSR Ministry of Railroads A. Morozov: "With the aim of accelerating the off-loading of imported goods from the Tallinn Maritime Commercial Port," A. Morozov informs us, "measures are being taken by the Ministry of Railways Main Administration of Railway Traffic to direct to the Baltic Railroad empty enclosed cars and grain-freightcars. As a result, the four-month plan for hauling import freight has been fulfilled by 103.3 percent, and in March this indicator was 127.3 percent.

The Ministry of Railways Main Administration of Railway Traffic established constant monitoring for hauling imported goods from the Tallinn Maritime Port.

After having obtained this, it would seem, encouraging response, we got in touch with Tallinn, with the aim of corroborating it with fresh facts attesting to the efficacy of the measures being taken. Here is what we found out. In order to cope with their plans for shipping import goods to the receivers, the Tallinn longshoremen, in 27 days in May, had to load 227 cars with flour, 298--with paper and 175--with cocoa beans. In reality, these figures constituted 52, 111 and 149 cars respectively. In all, during this period, 447 cars were loaded and dispatched during this period, instead of 799 cars. The reason--a shortage of rolling stock.

Consequently, the general state of affairs at the port did not change, the yards and warehouses here are crammed to the limit, and the consumers are still sending telegrams with requests to send the goods to them more quickly.

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PORTS AND TRANSSHIPMENT CENTERS

DEVELOPMENT OF TIKSI PORT, FLEET

Moscow VODNYY TRANSPORT in Russian 7 Jun 84 p 2

[Excerpts from article by G. Simkin: "Loyalty to Traditions"]

[Excerpts] Tiksi is one of the most remote and distinctive outposts of the maritime fleet. Here there is the Northeastern Administration of the Merchant Marine, uniting the Khatanga and Tiksi sea ports, which have at their disposal dozens of ships capable of transporting loads to the most remote points. The Tiksi seamen transport thousands of tons of freight to the unequipped shore of Anabar. They carry out unloading in the stormy roads of Cape Schmidt. They implement link-up in the roads with sea and river vessels to transfer loads going to Upper Kolyma and Indigirka. They actuate the timber conveyer on the Tiksi-Yana line. They break through heavy ice toward Khatanga.

The Port--As Depicted by Chief of the Tiksi Marine Port Nikolay Zozul'

"In the fourth volume of 'History of the Discovery and Development of the Northern Sea Lane' I read: 'Construction of the Tiksi port was begun in 1933'. It was also mentioned there that the port was constructed by the Leno-Khatangskaya expedition under the direction of B.M. Mikhaylov. Memorabilia of this remarkable man are preserved in our museum. It is noted that in March 1934, the board of GUSMP [Main Administration of the Northern Sea Route] confirmed the port's name--Tiksi Arctic Maritime Port. In the same year, the first marine vessel visited it, after having completed a through crossing in one navigational period along the northern route from east to west. This was the ice-cutter 'Fedor Litke'. Following it the steamship 'Lena' entered the port. It brought barges with coal. Up to 1938 the port received several Lensk expeditions and carried out processing of marine vessels and transfer of the freight to river vessels. Its own electric power station, forge, repair shops, bath-house and bake-house appeared.

I came here many years ago from Odessa and found at the port quite primitive operations and several low-power cranes. In the war years the freight turnover of the Tiksi port reached 280,000 tons. Today the processing volume of national economic goods is several times greater.

The intensive development of the productive forces of Yakutiya posed the problem of increasing shipping to arctic points along the northern route.

In a short time the port has become a highly mechanized transport enterprise, meeting international standards. The level of comprehensive mechanization has exceeded 80 percent. It is equipped with powerful cranes and modern transfer equipment. Construction of the Eastern Transfer Complex has begun—this is the largest MMF [Ministry of the Maritime Fleet] construction project in the Arctic. Its first section has begun operation and it will be fully put into operation next year. This will make it possible to increase the processing volume of freight by 30-50 percent.

In the next few years the port will accept modern large-load marine vessels of the 'Noril'sk' type. The port's water area is to be deepened and an access canal laid. In our opinion, a LASH-ship transport system, under the conditions here, is the most economically advantageous. It guarantees stability of freight flows even in years with a serious ice situation. We are preparing for the new system and propose carrying out certain reconstruction of the port. This will make it possible to eliminate manual labor and fully mechanize transfer operations, which is important under the conditions of the Arctic, where hundreds of thousands of tons of goods must be unloaded during the brief navigational period."

The Fleet—As Depicted by Gennadiy Gerasimov, Captain of the Motorship 'Sadriddin Ayni'

"Not long ago, we, the Tiksi captains, were asked to express ideas on a new, multi-purpose vessel for Tiksi. The anticipated sharp increase in container transport in the Arctic made this subject an urgent one. The figures for the ship's specifications were designated and proposals were made for developing the range and the volume of shipping. During all this, the picture arose of an arctic container carrier with a high-power energy unit and with a reinforced ice rating, having strong crane operations, capable of unloading 20-ton containers. We believe that the future of the Tiksi fleet lies in them. The day is coming, and they will enter our bay.

We often recall Yu.N. Morozov, former chief engineer of the SVUMF [Northeastern Administration of the Merchant Marine]. In 1952 he, being senior mechanic, brought the first sea-going tug, 'Sever', to Tiksi. This was the beginning of a whole era—the tug-lighter era. Some 28 years later, Morozov also received at Navashino the first container carrier 'Sadriddin Ayni' on which I work. Along with Morozov there was always M.A. Osipovich, captain of a small supply ship and bearer of the Order of Lenin. He too began on tugs in the fifties. It was the tug of M. Osipovich that opened the new freight line from Tiksi to Pevek. It was he who began to lead, between the mouths of the arctic rivers, with a single tug, caravans of 4-5 lighters simultaneously.

This landmark in the development of the fleet has gone into the past, resembling the graveyard of old ships at Brusnev Island. The engineering documents of the last steam tug 'Murmanets' and its ship's wheel were long ago turned over to the museum. In Tiksi there is one special characteristic—you always live in expectation of great changes. In reality, every decade has been a special chapter in the development of our fleet. The first motorships arrived in

the bay in the sixties. Shallow-draft vessels were necessary, capable of crossing the bar sections of the arctic rivers. It was the Kaspar [Caspian Sea Shipping Company] that provided these to the northerners. Since then these "Baku natives" [ships] have become permanently based in the bay.

In the seventies there were changes again. A series of log-carrying ships of the 'Sovetskaya Yakutiya' type was constructed especially for Tiksi. The potentials for utilization of the fleet became much broader. The Tiksi seamen, having completed the arctic navigational period, began to leave for the waters of the Far East and work there until summer. We obtained almost free access to the bars of the Yana and Indigirka and Kolyma, and work in the Laptev, Vostochno-Sibirsk and Chukotsk seas. Now we are waiting for new LASH ships and powerful container carriers--those which I mentioned above."

> The fleet has changed and the people have changed. The veterans are leaving. The younger generation has taken up the baton of Arctic service.
>
> In my view, the master framework of our fleet of the next decade is being formed. Today we are thinking about new ships. The time will come, and the young people will take them to the arctic seas from our native bay of Tiksi.
>
> The fine traditions are continuing.

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## LENINGRAD PORT GRAIN THROUGHPUT STILL HAMPERED

Leningrad LENINGRADSKAYA PRAVDA in Russian 24 Jun 84 p 2

[Article under the rubric "Held Accountable": "Guard the Grain"]

[Text] Intensive work is being carried on in the Leningrad Commercial Seaport to load grain onto trains and send it to various processing enterprises. Many thousands of railroad cars are needed to do this. And although the fleet of them that the October Railroad has at its disposal is very impressive and even exceeds the norm, the assignment for hauling grain at the port was not fulfilled either last year or for the past months of this year.

In explaining the reasons for the situation which has developed, the Oblast Committee of People's Control commission identified many cases which illustrate convincingly that the established plans are breaking down primarily as a result of poor utilization of cars and the careless attitude of workers toward preparing rolling stock intended for hauling grain. In the past year alone almost five percent of all cars delivered to the port's docks needed cleaning and repair.

As an inspection showed, an especially bad situation has developed at the Noviy Port Station. It would seem it is not so very complicated to organize the inspection of empty grain cars before delivering them for loading in order to determine whether there are any cracks, whether the bodies are in one piece, and whether part of the freight has been left in the car. Nonetheless, frequently the inspections which are so necessary are not conducted, or if they are, they are done extremely irresponsibly. Consequently many cars are refused by workers of the State Grain Inspectorate as unsuitable for hauling grain, and as a result downtime occurs.

At the meeting of the Oblast Committee of People's Control where the materials of the inspection were discussed, special concern was expressed over the fact that at the Noviy Port Station cars with residue of previous loads, in particular grain, arrive frequently and the railroad workers tolerate these cases and do not take measures against the enterprises which permit such wastefulness. At the time of the inspection, 20 cars with load residue and without accompanying documents were standing idle at the Noviy Port Station. They have been looking for the owners of three cars since last year.

The People's Control workers mangaged to establish the addresses of a number of enterprises who dealt so wastefully with state property. The following are results of only a random inspection. In unloading five cars the Volosovo Mixed Feed Plant left about 12 tons of grain in them. Two cars arrived at the port from the Volkhov Mixed Feed Plant which according to documents were believed to be empty but which contained no less than 32 tons of grain! Two cars with 15 tons of grain in them arrived from the Milling Combine imeni S.M. Kirov and five cars with 83 tons of grain arrived from Grain Enterprise No 2.

The appropriate rules envision what to do in such cases, and only the low standards of the railroad workers can explain the poor condition of the rolling stock which arrives at the port's docks, the downtime and losses of grain which arise in connection with it, and ultimately, the underfulfillment of assignments. Quite a few signs and reports of such shortcomings have come in recently at the stations, rail divisions, and the procurator's office; the Leningrad newspapers have written about losses of grain en route more than once. Nonetheless, effective measures are being taken too slowly.

The Oblast Committee of People's Control has demanded that the managers of the October Railroad eliminate the shortcomings and violations disclosed in the inspection as soon as possible and call the guilty officials to account. Severe penalties have been announced against A. V. Solobuto, deputy chief of the railroad, V. M. Khor'kov, deputy chief of the Leningrad-Vitebsk Division, and V. V. Baluyev, deputy chief of the Noviy Port Station.

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PORTS AND TRANSSHIPMENT CENTERS

NEW UST-DUNAYSK 'PORT' BEGINS LIGHTER OPERATIONS

Moscow IZVESTIYA in Russian 14 Jun 84 p 2

[Article by IZVESTIYA correspondent F. Chernetskiy: "A Port Like No Other"]

[Text] Ust-Dunaysk--The lighter carrier "Anatoliy Zheleznyakov" dropped anchor at the place where the Danube flows into the Black Sea. Its arrival opened, as it were, a new page in the history of the country's youngest port, Ust-Dunaysk.

It is an original, one might say unique, port. They do not yet have regular docks or numbers of hoisting cranes, buildings, and warehouses. You cannot reach the port by rail or by motor vehicle; there are no roads across the river flat yet The only way to get there is by water, from the sea or down the Danube.

The famous steamship "Kooperatsiya", which has served its time, stands in the lagoon. All the port services are housed on it. Also in the middle of the water area are several mooring points, which the sailors call "barrels." They are secured to mooring anchors which are set in the bottom at a depth of 16 meters. The ships tie up at these "barrels."

That is how Ust-Dunaysk looks today. But it is operating at high intensity, picking up momentum, and already handles up to 2 million tons of freight a year.

So the lighter carriers appeared. Lighters can be compared with floating containers. Arriving from a distant region, the ship lowers into the water the loaded lighters it has been carrying in its womb, immediately takes on others, and sets off on its return trip across the ocean and seas carrying its latest cargo. The lighters they carry are formed into bunches -- up to eight in one chain -- and pushed upstream by tugboats. Later the lighters "roll" down the river from its headwaters to the mouth and are assembled at the port to wait for their mother ship.

This is the working principle of the lighter carrier transport line. And the port of Ust-Dunaysk, located at the meeting place of the river and the sea, is its connecting link. This line already stretches from Southeast Asia to the upper reaches of the Danube. It begins in Vietnam and, calling at ports in

India and Pakistan, ends at the city of Regensburg in West Germany. There are two large (45,000 tons displacement) lighter carriers working on this line, the "Yulius Fuchik" and the "Tibor Samueli".

The new lighter carrier "Anatoliy Zheleznyakov" is somewhat smaller. It takes on six lighters of 800 tons apiece. But in the next few months three more ships of the same class will drop anchor in Ust-Dunaysk, making it their home port. They will open up another lighter carrier line--the near east line. Like those already in operation, this line will be operated by "Interlikhter," the joint economic enterprise of Soviet, Bulgarian, Hungarian, and Czechoslovakian shipping companies.

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## RR WORKERS BLAMED FOR MEDVEZHYEGORSK PORT FAILURES

Moscow VODNYY TRANSPORT in Russian 7 Jul 84 p 1

[Article by G. Solodyannikov, chief of the Medvezhyegorsk Port, and T. Berezenskaya, party bureau secretary, under the rubric "Strengthen the Cooperation of Related Industries": "Who Can Help the Complex"]

[Text] For some years now we have been unsuccessfully trying to straighten out the planning and organization of shipments of apatite concentrate from the Kola Peninsula.

It is carried as a joint rail-water operation with transfer to ships in our port for the plants of Cherepovets, the Urals, and Sumgait. These shipments were planned in the following volumes: 1981 -- 700,000 tons; 1982 -- 850,000 tons; 1983 -- 1 million tons; 1984 -- 1.1 million tons; and 1985 -- 1.2 million tons.

In actual fact shipments totaled: in 1981 -- 651,000 tons; in 1982 -- 684,000 tons; and in 1983 -- 663,000 tons.

The reason? Apparently, our associates, the workers of the October Railroad, cannot or do not know how to organize the shipping of apatite concentrate in the planned volumes from the Apatity-II Station to the Prionezhskaya Station, the point where the shipments are transferred to water. Every month the railroad workers disrupt our plan for shipping this valuable raw material for the chemical industry and do not even fulfill those assignments which are established quarterly and ratified by the Ministry of Railways itself.

A unique, expensive complex for transferring freight has been built in the port. One car is unloaded in 4.5 minutes, while a ship with a load capacity of 5,000 tons is loaded in only 5 hours. The comprehensive port workers brigade has mastered the Perguba Transshipment Complex to perfection. All ships and cars are processed on time and ahead of schedule. The brigade, like the entire port on the whole, assumes increased obligations for plan fulfillment every year.

Nonetheless, as the navigation season begins, everything is repeated over again. The plan for the second quarter of this year was set at 345,000 tons; railroad workers managed to haul only 70,000 tons to us in April-May, while for the quarter as a whole they hauled only one-third of the planned amount.

The transshipment complex is on the verge of a shutdown, and the complex brigade is standing idle with no work. We have repeatedly appealed for help from various higher organizations, but as before the volumes they plan for us are unrealistic because the railroad workers are not taking effective measures to insure fulfillment of the plan on their part. Reams of correspondence where we are promised that measures will be taken have already been amassed in the port, but things are not moving ahead.

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## MINISTER ON OBSTACLES HINDERING TRANSPORT CONSTRUCTION

Moscow PRAVDA in Russian 11 Oct 84 p 2

/Article by USSR Minister of Transport Construction I. Sosnov: "By Thousands of Arteries--Routes of Technical Progress"/

/Excerpts/ The importance of transportation to our country is exceptionally great. Industrial and agricultural enterprises dispersed throughout our entire huge territory are tied through transportation into a unified national economic organism in which transport communications play the role of the economy's "blood circulation arteries." This is why in the "Basic Directions of the Economic and Social Development of the USSR in the Years 1981-1985 and in the Period up to 1990" transportation growth has been placed in a number of the most important tasks.

In short, there is much work--varied, complex, large-scale work. One can only cope with it by significantly raising the effectiveness and technical level of this production.

All of this also directly concerns us, the transport builders. Our sector has developed a program of activities for each year. We are trying to introduce at a more rapid pace the achievements of scientific and technical progress, improve management, and increase the level of the concentration of production.

Our industry's science is also not ignoring this creative search. Our institutes are working on improving technology and increasing the level of mechanization at the construction projects. Thus, we are making provisions for the wide use of geotextile materials when doing earthwork in the North. These are the most effective materials here. However, I will say right away that the domestic industry is not at present satisfying a tenth of the transportation builder requirement for these progressive and economical materials.

Northwestern Siberia is barren of quarries suitable for filling a roadbed. We must mainly use hydro-powered earthwork here. The industrial institute scientists are solving a difficult problem--how to increase the length of the hydraulic delivery of soil to a distance of more than 20 km as opposed to the traditional 5-6 km.

According to calculations, new technologies and progressive designs will permit a lowering of labor expenditures and construction time periods and will save a considerable amount of metal and cement. For example, the introduction of a new welded groove which has been created by scientific research institutes makes it possible to lower the labor intensiveness of work when constructing seaports by up to 10 percent and steel expenditure by more than 15 percent. However, I reiterate that this happens when one puts new ideas into practice. At the present time everything remains on paper. There is one reason for this: the Minmorflot/Ministry of the Maritime Fleet/ planning institutes are evidently not hurrying too much to obtain new and progressive equipment.

A great savings is realized by using the technology of rapidly installing concrete-cement and asphalt coverings with complex chemical admixtures and aggregates made of local materials as well as by-products during the construction of motor vehicle roads and airports.

However, in order to make really wide use of progressive technologies and materials as well as structures and high construction readiness parts, it is necessary to significantly speed up the tempo for renovating and technically re-equipping existing construction industry enterprises in the sector. We are now paying paramount attention to this matter.

One of the basic directions in increasing labor productivity and decreasing the proportion of manual operations is the building of special machines and mechanisms which would help to introduce the most efficient technology for road, bridge construction, and other specific types of work in transportation construction. Unfortunately, the machine builders are far from always effectively responsive to our needs. Therefore, the sector has been forced to organize the output of such equipment at its own machine repair plants. However, this, as the saying goes, is done under pressure. It seems that in order to thoroughly raise the level of special transportation construction equipment, the mature cooperation of our sector's production enterprises with the plants of Minstroydormash/Ministry of Construction, Road and Municipal Machine Building/, Mintyazhmash/Ministry of Heavy and Transport Machine Building/, and other machine building ministries is required. Thus, the joint production with Minstroydormash of a clearance excavator which can operate both on a railroad and on a motor vehicle road would be most welcome for the further electrification of railroads.

Cooperation is also required for the specific re-equipping of the basic machines series-produced by the domestic industry. An all-purpose machine, on whose framework one basic model with a wide collection of interchangeable working members would lie, is the most acceptable variation. A complete set of mobile road machines based on the T-158 tractor can serve as an example here.

To produce, unaided, specific transportation construction equipment, the timely delivery of complete part sets including compact reducers, transmissions, hydraulic equipment, and means of automation is required. Not being a machine building sector, Mintransstroy/Ministry of Transport Construction/, of course, is not in a position to supply its plants with the necessary collection of complete part sets. We are waiting for help from USSR Gosplan/State Planning Committee/ and Gossnab/State Committee for Material and Technical Supply/ in solving this urgent problem.

Questions of increasing the quality of construction and installation work, industrial production, and material and power fuel resource savings are constantly before the sector's scientific and engineering and technical personnel. Measures are being carried out to improve the designs and standardized documentation, including the development of progressive norms for the expenditure of raw materials, other materials, and fuel.

However, not everything here depends only on the transport builders themselves. Thus, the supply by metallurgists of low-alloy steel rolled sheet metal with a so-called pin hole causes a considerable economic loss. This is an intolerable defect, especially when constructing bridges. Because of it, dozens of tons of manufactured structures are wasted and the fulfillment of the plan, both of the plants and the builders, is ruined. The metallurgical industry will in no way manage the mass output of spiral-shaped, heat-hardened batch reinforced steel.

We have repeatedly requested Mintyazhmash and Minchermet/Ministry of Ferrous Metallurgy/ to speed up the production of high-grade cast iron tunnel casing tubings whose use saves 1,200-2,200 tons of metal for each kilometer of tunnel. However, the plants of these ministries are not hurrying to produce these materials in the required volumes.

Transport construction projects are experiencing an acute shortage of new efficient materials which increase labor productivity and improve work quality. For example, requirements for superplasticizers, chemical admixtures, and surface-active agents for the preparation of asphalt coverings are being poorly satisfied. The bridge builders are justly complaining about the lack of priming coats.

We have been waiting for a long time for modern shaft-sinking equipment, full-turn large-scale cranes on railroad tracks, power scrapers with a large-capacity bucket, powerful rippers, and cranes on caterpillar treads and pneumatic tires. It is time to equip construction projects with electrical pneumatic tools and other means of small-scale mechanization. Many transportation projects have spread into remote areas, in the north and east of the country, among tayga and polar tundra. Under these severe natural conditions, the lack of mobile timber-cutting machines for mechanizing the manual labor of clearing railroad and motor vehicle road routes makes normal work very difficult.

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## SPECIALISTS NEEDED FOR CONTAINER TRANSPORT SYSTEM

Moscow GUDOK in Russian 6 Jul 84 p 2

[Article by A. Smekhov, Honored Figure in RSFSR Science and Engineering, professor: "Personnel for the Container Transport System: The System Needs the Creation of a New Specialty"]

[Text] Moscow--It may be stated with complete certainty that no other direction of technical progress in transport in the last 20-25 years has received such vigorous development and dissemination as container and stack shipments. The active formation of the country's container transport system (KTS) has been the logical consequence of their large-scale and deep penetration into the economy. Its enormous advantages are well-known.

Nonetheless, the volume of such shipments on the roads not only is not increasing but in recent years is tending to decrease.

A number of objective causes and circumstances may be named to explain this "marking time." In the first place, there are the shortcomings of the technical base, the shortage of universal containers, especially large-capacity ones, packaging equipment, and means for mechanizing loading and unloading work.

It should also be kept in mind that in recent years, while the fleet of gantry cranes has increased and their qualitative characteristics have been improved, their output had declined. So there are definite reserves in railway transport from the standpoint of the capacity of the technical base.

It must be taken into account that the obstacles to further development of the KTS do not operate in railway transport only. For example, the question of insuring highly qualified cadres of specialists in this progressive shipping sphere is common to other sectors of the country's economy.

Powerful and independent structural subdivisions for managing container and stack shipping have been established in the transport ministries, Gossnab [State Committee for Material and Technical Supply], and many industrial ministries and departments. Pneumatic container transport on an air cushion with linear motors is being successfully developed; large-scale shipping of special containers is being implemented; and automatic control systems are

being introduced within the confines of the KTS. All these things determine the operating features of the sphere of container and stack shipping. Therefore cadres of specialists working in the KTS sphere must have special training.

Transport VUZes and VUZes of the Ministry of Higher and Secondary Specialized Education are not training these specialists. And every year the need for them increases. Railway transport must have more than 1,400 specialists with higher education for all levels of the container transport system -- from chiefs of large container terminals to managers of services and main administrations.

According to Ministry of Railways data, economists, lawyers, mechanical engineers, and other specialists who do not have the necessary training for such work are frequently appointed to vacant engineering positions in the field of container and stack shipping. It is easy to imagine how "efficient" the results of their activity can be.

Since 1980, MIIT [Moscow Institute of Railroad Transportation Engineers] and other transport VUZes have been training specialists in organizing freight and commercial work, or more precisely in managing freight and commercial work. This training is being carried on only within the limits of the specialization [spetsializatsiya] and not the specialty [spetsial'nost']. Legally this means that the diploma of the future engineer in the management of shipping processes does not indicate the actual field of his future activity, freight and commercial work. Therefore an overwhelming share of young specialists are assigned to the sphere of train traffic organization -- station duty officers and traffic controllers. This year, for example, of the 50 MIIT graduates who completed the course in the shipping and commercial work specialization, only two received passes which corresponded to the knowledge they had acquired. When assigning young specialists the personnel administration of the ministry and the personnel departments of railroads almost completely ignore the training they have received in shipping and commercial work.

With respect to this problem, the creation of a new specialty would be a fundamental solution which fully meets the needs of transport and the national economy. We will not specify the title of the specialty. It can be either "Container Transport" or "Management of Container and Stack Shipping." That is not the point. It is essentially important that upon receiving the appropriate diploma an engineer trained in a given specialty be sent, by virtue of legal norms, to the particular field of his future activity -- organizing container and stack shipping.

At MIIT, preliminary work on preparing a draft syllabus for the new specialty "Container Transport" has been completed. Consultations on this question conducted with participating main administrations of the Ministry of Railways and management personnel of Gossnab, which is the head organization in the field of container-stack shipping in the country, have had a favorable response. In our opinion, the new specialty should be an interdepartmental one. This is a specialty which is extensive in terms of the scope of the young engineer's activity. And opponents' arguments regarding its narrow direction are completely groundless.

A specialist in the field of organizing container and stack shipping must certainly possess indepth knowledge in the field of managing shipping processes and coordinating the work of various types of transport and technical means of the country's unified transport system. Such a specialist must be able to skillfully orient himself in highly specialized problems. This includes not only the field of the management and economics of container and stack shipping, but also technical means of stack and container transport, freight studies and transport law, and comprehensive mechanization and automation of loading and unloading work in contemporary types of container transport. It is natural that both sociopolitical and the fundamental sciences should have a proper place in the syllabus of the new specialty.

The young specialist, armed with a knowledge of contemporary branches of science and engineering and of specialized disciplines, is extremely necessary to the rapidly developing sphere of container shipping. Completion of the formation of the country's unified container transport system is linked to this in the quantitative and qualitative senses.

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INTERSECTOR NETWORK DEVELOPMENT

## RIVER FLEET CONTAINER SHIPMENT FACES PROBLEMS IN NORTHWEST

Moscow VODNYY TRANSPORT in Russian 12 Jul 84 p 2

[Article by VODNYY TRANSPORT correspondent A. Gundorov under the rubric "Strengthen Cooperation among Associated Sectors": "The Disgraced Container"]

> [Text] Arkhangelsk--Certain positive advances have occurred on the country's railways in recent years. But many other sectors of the national economy complain of the shortage of rolling stock. Hundreds of enterprises and organizations are suffocating from the lack of railroad cars. The most efficient way to solve this complex problem -- actively switching freight from railroad mainlines to water routes -- has been determined. Representatives of the Norilsk Metallurgical-Mining Combine, the Arkhangelsk Seaport, and the Northwestern River Shipping Company adopted precisely this solution at a conference which took place in Leningrad back in December 1982 under the aegis of USSR Gossnab [State Committee for Material and Technical Supply].

The protocol which was developed noted that experimental shipping of freight in containers from the Leningrad Industrial Center via Arkhangelsk by river and sea transport without the participation of railroads had given positive results. It was further proposed that each interested party take a number of measures aimed at increasing shipping efficiency.

The time allotted to eliminate bottlenecks and prepare well for the 1984 navigation season has passed. We must give due credit: the partners managed to accomplish a great deal. They have acquired new equipment in a short time, replenished the container supply, concluded well thought-out agreements with consigners, and so forth.

But the transport conveyor has already misfired alarmingly in the beginning phase of the navigation season: containers which according to specialists' calculations should continuously circulate between Norilsk and Leningrad lie unmoved for long times on the docks of sea and river ports. According to data of the Arkhangelsk office of Norilsksnab, more than 200 large-capacity containers intended for Leningrad have been amassed in the Arkhangelsk Port terminal, while at the Leningrad River Port there were more than 300.

"According to the protocol of USSR Gossnab for this navigation season, freight traffic volume of 1,200 containers in each of both directions must be incorporated on the Dudinka-Arkhangelsk-Leningrad line," says Yu. Kovlishenko, chief engineer of the Arkhangelsk Norilsksnab Office. "The start of the navigation season arouses anxiety for its successful finish -- the Northwestern River Shipping Company river transport workers are not managing; they are upsetting the work rhythm. Two re-equipped Volgo-Balt steamships were to begin working in May. But Baltiyski ships, bulk carriers which can only take half as many containers on board, came on the line. Simple calculations show that they are not solving the problem of full ingoing and outgoing shipping.

"There is a radical solution," believes Yuriy Aleksandrovich. "Switch the new container carriers which the Northern River Shipping Company received recently to the shipments. The STK-1005 and the STK-1006 made a trip apiece to Leningrad on an experimental basis and demonstrated their indisputable superiority over the Baltiyski ships. With the same load capacity, they take up to 70 containers into the hold and onto the deck, almost triple the number that Baltiyski ships carry. Dock workers have become convinced of the convenience of conducting freight operations on them. But whether these ships will continue to carry containers in the future is unknown," advised Yu. Kovlishenko.

"We would agree tomorrow to use the STK-1005 and the STK-1006 for containers," V. Pirogov, the senior engineer of the Northern River Shipping Company, assures without much hesitation. "But with the one condition -- that they would be guaranteed a load on the way back from Leningrad."

We might wonder: what is the reason for this reservation? After all, are not more than 300 containers ready to be shipped, and will their number not significantly increase in the third quarter?

"There is kvas, but not for us," answers Vladimir Sergeyevich evasively. And with regret he explains: "We are not given containers in Leningrad. Our STK's have returned from there half empty. It was good that a chance load of marble aggregate happened to turn up or they would have had to return completely empty. Why should we work at a loss?"

A reasonable argument. But still how did such a paradoxical situation become possible -- there are containers available but they cannot be hauled. It turns out that religiously observing departmental interests, Leningrad port workers flatly refuse to load the northerners' ships, justifying their actions by the fact that containers shipped on Northern River Shipping Company ships are not counted in the port's plan. So why work for someone else's account? When they see one of their own native Baltiyski ships, then they will pour it on. And again we have a paradox: an unadapted bulk carrier is busy shipping containers while the specialized container carriers transport half marble aggregate and half air.

Another hidden reason has been explained. If ships of the Northern Shipping Company are going to deliver containers, then the Northwestern Shipping Company will fail to fulfill the plan for introducing new equipment where "container freight traffic volume" is written in red. In a word, the departmental uniform may unravel because the Northwestern river transport workers adhere so firmly to the container policy, even though life has made it perfectly obvious that they will not be able to handle the full volume of shipping alone. It is clear that it is cheaper and more advantageous for a specialized fleet to carry 20-ton ISO [International Standards Organization] containers, as the river transport workers' partners in maritime transport are doing. The time has come to straighten out the situation which has developed in the Ministry of the River Fleet. Situational considerations cannot be allowed to prevail over state interests any more.

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## HEAVY-LIFT TRANSPORT DIRIGIBLE IN DEVELOPMENT

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 20 Jul 84 p 4

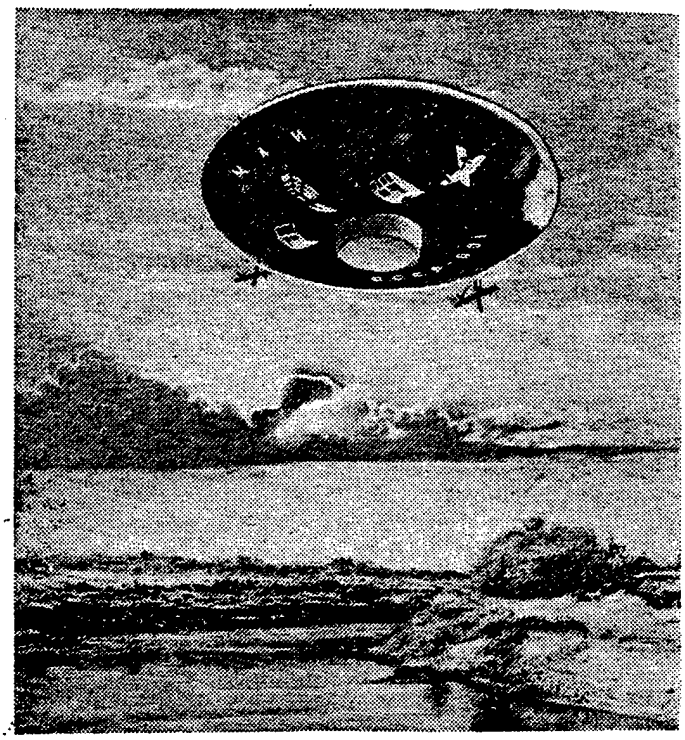
[Article by V. Lagovskiy under the rubric "Creativity of Young People": "'Flying Saucers Above the Taiga"]

[Text] A strange vehicle hovered over the clearing -- an enormous disk, tapering to the edges. Exactly like a "flying saucer." Suddenly an opening appeared in the lower part of the vehicle and a 40-meter cylindrical platform was lowered on cables. It hardly touched the ground before it clutched the ground with its pneumatic suckers. A ladder descended and bulldozers, excavators, and trucks began to creep down from the platform on it. Then the "saucer" sailed up to the already unloaded platform, drew it inside itself, and gaining altitude quickly, disappeared beyond the horizon.

This is not the plot from a science fiction film. These aircraft are dirigibles of a new design developed in the Moscow Aviation Institute [MAI]. And at the present time their creators have a model and a mock-up.

In 1975 Yuriy Ishkov and Sergey Putintsev, two students of Sergey Mikhaylovich Yeger, the head of the department of planning and design at MAI, came to him with a proposal which was daring for its time. They proposed that Sergey Mikhaylovich, a man committed to airplanes with all his heart who had developed more than one reliable machine at the Tupolev Design Bureau, take up dirigibles. At that time specialists still thought that lighter-than-air craft were a dead-end branch of aviation and to design them was not a serious matter. But most probably the talent of the designer is primarily the ability to see what is promising and to rise above established ideas. Sergey Mikhaylovich spotted the prototype of the transport of the future in the sketches and ideas of the students.

"The scope of thought, the boldness of the plans, and the maturity of decisions of these still young people struck me," says S. Yeger. "They proposed building dirigibles with load capacities of 500, 1,000, and more tons. And this was attractive. After all, such gigantic dirigibles made it possible to solve problems of freight delivery, especially superheavy and bulky freight, in the developing regions of the North, Siberia, and the Far East."



What should the slow-moving sky vehicles of the new generation be like? What material should they be made of? What gas should they be filled with? These and many other questions became the subjects of term papers and theses for students whose scientific supervisor was the Hero of Socialist Labor and the laureate of the Lenin and State Prizes, Professor Sergey Mikhaylovich Yeger.

"We did not begin our work from scratch," says Yu. Ishkov, who graduated from MAI, remained in the department, and now supervises the dirigible construction sector. "In the 1920's and 1930's, giant dirigible were built which lifted 50-80 tons, and enthusiasts of aeronautics proposed many original plans and ideas which the level of technical development of the time could not embody."

"Then why did you dwell on such an uncommon shape of dirigible? After all, in order to build a gigantic disk, all the know-how of the pioneers of dirigible construction must be put aside."

"We were guided by a basic criterion: to insure the shipment of the maximum amount of freight with the least expenditures of capital and energy," explains Yu. Ishkov. "In order to lift 1,500-2,000 tons of freight, the classical cigar-shaped dirigible must be in the neighborhood of 720 meters long. A disk with the same load capacity can have a diameter of 300 meters. In the former case only a tough, and that means heavy, design guarantees the necessary strength; in the latter case a light inflatable casing of plastic is adequate."

The young engineers proposed stretching this metallized membrane on a frame reminiscent of a gigantic bicycle wheel with a rim, spokes, and a hub. Inside the "hub" is also a freight compartment with a platform lowered on cables, an original discovery of the designers. And on the outside are four circular stories of areas with control rooms, cabins for the crew, and passenger compartments for 100 people.

But it turns out that the disk differs to its advantage from other shapes not only in strength and realibility. Its resistance to the air flow is the same on any side. Therefore the disk is simpler to control in a side wind. During ascent it creates lift, which increases the load capacity. In landing the disk does not need to be moored to a tower and continually turned downwind, like the classical cigar. The freight platform from under which part of the air is pumped out during landing holds the "flying saucer" firmly in any wind.

But all the advantages of dirgibles of such immensity would have meant nothing if the young designers had not conquered the danger from which many craft of past years have perished -- ice formation. The large surface rapidly accumulated tons of ice and dirigibles lost their "buoyancy" from this and fell. It is possible that ultimately this compelled the MAI specialists to turn to a method of creating lift that is quite rare in dirigible construction -- using hot air.

"At the dawn of aeronautics special burners which were heavy and dangerous were used to warm the air," says S. Putintsev during the conversation, "while engines were used as well, for forward movement. Gas turbine motors made it possible to combine these two processes and use the hot exhaust from the turbines to inflate the casing. Air which has been heated to 200-300 degrees automatically solves the problem of ice formation."

The designers did not reject helium, the classical "filling" of previous dirigibles. But they only left as much of it as was necessary to balance the actual weight of the design. And the exhaust gases of four sustainer engines like those on the TU-114 attached to the support rim of the "wheel" "lift" the freight. In order to bring the craft down, all that is needed is to open the upper valves and let out the hot air.

Today the MAI designers already know to the smallest detail what their "Thermoplanes" will be like. They have even developed the technology for manufacturing them. They have determined the appearance of the future plants and calculated the flight technical data as well. The supply of liquified natural gas which the engines from the TU-114 can work on enables a 300 meter "saucer" to go 5,000 kilometers non-stop at up to 200 kilometers an hour. And the cost of shipping each of the 1,500 tons on board will be one-fifth to one-sixth of the cost by plane and less than one-tenth of the cost by motor vehicle.

"This is not the only advantage of the gigantic dirigibles," says S. Yeger. "Their size and the shape of the freight compartments make it possible to haul complex and superheavy machines and aggregates already assembled. This means blocks of gas pumping stations, oil and chemical complexes, ready-to-install nuclear reactors, and dwellings for gas workers and geologists. In a word,

all that equipment which today requires organizing whole transport expeditions by sea, river, and highway to haul. It is difficult to imagine how much dirigibles can reduce the time periods necessary to put this equipment into operation and increase the quality and reliability of construction."

The young MAI designers have daring plans before them. They are designing dirigibles with the fantastic load capacity of 3,000 tons and dream about equipping them with nuclear power plants. And for the time being I received an invitation: in a year to go for a spin in the first "flying saucer," an experimental model with a still-modest diameter of several dozen meters. Intensive work on it is being conducted in a subdepartment of the dirigible construction sector.

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## RED TAPE HINDERING ACV DEVELOPMENT, PRODUCTION

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 10 Jun 84 p 2

[Article by KOMSOMOL'SKAYA PRAVDA correspondent V. Sinenko under the rubric "We Study a Problem": "A Rough Landing"]

> [Text] Tyumen-Poshkar-Ola-Moscow--Esteemed editors!
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> I consulted with my comrades in preparing to write this letter, so therefore allow me to address you on behalf of all the workers of the Tazovskiy Arctic Sovkhoz, whose work is related to the tundra: reindeer breeders, hunters, animal experts, drivers, and the director of the sovkhoz.
>
> Our farm is engaged in reindeer breeding. The herd is 150-200 kilometers, and sometimes even more, from the settlement. And for this reason, the problem of lacking special equipment adapted to roadless conditions and our thin topsoil is especially crucial to us.
>
> All our indicators depend on the condition of the pasture lands. Believe me, it is very sad to look from a plane at the Yamalo tundra and see it all torn up by caterpillar tracks. And despite the fact that we use all-terrain vehicles and tractors only in the snow, the same sad fate is awaiting the Tazovskiy and Gydanskiy peninsulas.
>
> We have been hearing about all-terrain vehicles on an air cushion for some years now. These machines are badly needed. Where are they? When will we actually see them here?
>
> Andrey Gorchakovskiy, all-terrain vehicle driver, settlement of Tazovskiy, Tyumen Oblast.

The helicopter banked above the settlement, rumbling deafeningly and rocking slightly, and landed on the little raft amid the sloppy, slurping mess of water and mud. And from this moment it was already evident that for the author of the letter and his comrades, the question of an all-terrain vehicle on an air cushion is far from an idle one.

The arctic tundra must be made habitable. And it is not for nothing the geologists work there: who knows, perhaps grandiose discoveries are ahead. And the prospects for agriculture! Take their sovkho A basic herd of 14,000 reindeer, a fur farm and a fur workshop. Meat, valuable fur, milk, and 1,500 quintals of fish per year. And this is only a small share of what this land can produce with careful and skillful treatment.

Andrey Gorchakovskiy tells how one of the old residents in the settlement acquired a Zaporozhets -- it was brought by barge from Salekhard. But the automobile was bought merely for prestige -- the owner could not go any further than his own street. A "funny" story. But Andrey does not smile; he shows us a journal with the vehicle they have been dreaming about for a long time on the cover. And together we already imagine it floating smoothly over the earth without cutting the reindeer moss to shreds, crossing the bankless Taz, its arms and tributaries, and numerous lakes and ravines without stopping even at the swampy mire.

The situation which has developed is no laughing matter. A booster pumping station had to be delivered for the Tyumen builders from Sibkomplektmontazh at the Lyantorskiy Oil Field. It weighed 400 tons! That cannot be moved in a suitcase. They sailed as far as possible on the Tura, Tobol, Irtysh, and Ob'. Then they came to the shallow, meandering Pim River -- and came to a standstill. They had to spend the winter in Surgut. And no one knew what to do after that. There was only one thing left to do -- dismantle the unit and transport it that way. And that is an enormous loss of time and resources.

It was at that point that the builders appealed for help to Gay Vasil'yevich Zinov'yev's creative group, which was working on problems of air cushions, at the West Siberian Branch of the All-Union Scientific Research Planning and Design Institute of Petroleum Machine Building. By a miracle the group had not yet disbanded -- it was held together only by their ardent faith in the enthusiasts' idea and the kindness of the managers. This kind of developmental work was not in the institute's work profile.

Scientists and designers went at the work in concert. And a miracle was performed. A platform on an air cushion was put together under the unit, the fans started up, which forced air under a flexible enclosure, and a huge block frozen in the bank was first lifted and then, using only four 75 horse-power tractors, smoothly and gently floated across the roadless tundra straight to the prescribed place.

And having shown their competence, the group of enthusiasts transferred to the Sibkomplektmontazh Association of the Minneftegazstroy [USSR Ministry of Construction of Petroleum and Gas Industries]. The first Komsomol-young people's special design bureau in the country for developing transport-installation vehicles on air cushions was created and called Truboprovodtransmash. Along with developing new models, actual output is being produced -- platforms and ferry boats which are used in building up oil and gas deposits in northern Tyumen Oblast.

We will not touch on the internal problems of designers. We will try to answer questions posed by readers. Unfortunately Minneftegazstroy announced directly: "We are not supposed to try to solve a transport problem. Our task is to provide oil and gas for the country." Equipment is produced in meager quantities for the truly internal needs of the oil and gas fields. Moreover, the vehicles they are working on at the Tyumen Special Design Bureau arenot self-propelled.

Self-propelled all-terrain vehicles are being designed at the Mari Polytechnic Institute. The fairy tale that Andrey Gorchakovskiy dreams about has become reality there. But the manager of the student design bureau Docent Stanislav Fedorovich Kirkin suddenly frowns, remembering all those offices where with an inventor's ardor and impatience he first took the drawings of their creation some six years ago, and where they admired them and politely referred him somewhere else.

The first of their snow-going, air-cushion amphibian vehicles, the "SAVR-1," differed in that the driver himself could select the mode of travel -- either on skis or in the air at a speed of up to 70 kilometers per hour. To conduct further development work they needed the support of a reliable client. So the paths of the inventors led to Tyumen. Allies were found in the Glavtyumen'neftegazstroy [Tyumen Main Administration of Machine Building for Oil and Gas Industries] and Sibrybprom [possibly Siberian Fish Industry Enterprise]. No, they did not begin to clap their hands there when the tired and already discouraged enthusiasts crossed the threshold of the esteemed organizations. And they discussed and studied the idea there. But people were found, managers who saw real usefulness in the idea, not simply project-mongering. Neither the burden of responsibility nor the known rate of risk frightened them. The student design bureau was guaranteed long-term financing.

Several types of vehicles were created during this time -- the SAVR-1M, the SAVR-2, and the SAVR-3. More than 6,000 letters -- begging, demanding, and inquiring -- were received from all corners of the country. On the requests of unknown clients, 1,500 sets of sketches were distributed. For developing new technology, the special design bureau was repeatedly awarded VDNKh SSSR [Exhibition of Achievements of the National Economy of the USSR] medals and diplomas of exhibits of NTTM [scientific-technical creativity of young people] and the best models were exhibited in the United States, France, Canada, and the FRG. Nonetheless the work has as yet progressed no further than exhibits. There is no one to manufacture the machines. Their introduction is tied up in interdepartmental correspondence.

I have heard it said that "the air cushion is the technology of the future." Is this so? The Institute of Comprehensive Transport Problems of USSR Gosplan [State Planning Committee] has determined the efficient types of ground transport means and ships on air cushions and conducted a survey of Union and republic ministries and departments, a number of the largest enterprises and organizations, and territorial planning organs on the need for this equipment. The responses were not long in coming. The Union Minneftegazstroy, Mintransstroy [Ministry of Transport Construction], Mingazprom [Ministry of Gas Industry], Minmorflot [Ministry of Maritime Fleet], Gosstroy [State

Committee for Construction Affairs], Minvodkhoz [Ministry of Land Reclamation and Water Resources], Minsudprom [Ministry of Shipbuilding Industry], Minugleprom [Ministry of Coal Industry], Mingeo [Ministry of Geology], Mintsvetmet [Ministry of Nonferrous Metallurgy], the ministries of Civil Aviation and Communications, the Main Administration of Geodesy and Cartography of the USSR Council of Ministers, the Minkhimmash [Ministry of Chemical and Petroleum Machine Building], Minleskhoz [Ministry of Lumber Industry], and the RSFSR Minrechflot [Ministry of the River Fleet], Minavtotrans [Ministry of Motor Vehicle Transport] of the RSFSR and the Ukrainian SSR, RSFSR OSVOD [possibly All-Russian Water Rescue Society], and many others responded -- a list of company blanks signed by important leaders would take up several pages. They all need air-cushion equipment a great deal! The USSR Ministry of Agriculture alone is prepared to buy tens of thousands of vehicles. The geography of possible users stretches from the Baltic Sea to the Pacific Ocean.

Types of machines have been determined and clients are known. But. . .

"The trouble with the air cushion is that it finds itself in an interdepartmental no-man's land," says the deputy director of the Institute of Comprehensive Transport Problems of USSR Gosplan, Doctor of Technical Sciences Serafim Sergeyevich Ushakov. "According to the institute's data, about 5,000 vehicles are already needed today and the future need will increase to 43,000 units per year. In our opinion, the USSR Ministry of the Automotive Industry should assume a leading role in the production of ground transport means on air cushions, using existing capacities and technology as well as aggregates and assemblies of motor vehicles and motorcycles already in series production."

Nonetheless, the chief of the administration of design and experimental work of the Minavtoprom, A.I. Titkov, has already expressed in print his sharply negative attitude toward such equipment, referring to research which was conducted in the sector in . . . the 8th Five-Year Plan.

Life has demonstrated that the wheel and even the track cannot handle the tundra, and furthermore, the track is even contraindicated in summer time. "In order to come up with with something really original and new in engineering, in the first place, one must succeed in finding virgin soil in a completely worked field and then be bold enough to tread on it." This statement by enthusiasts from Yoshkar-Ola is not contrived; it has been experienced. Who is surprised by a diesel engine today? No one. And yet there was a time, and many people can still remember it, when the adherents of the more common steam engines threw barbs at it, spurned it, and crossed it off. It took fighting, setbacks, victories, and disappointments. But ultimately progress won out.

The air cushion is riding a carousel of bureaucracy. And if the arguments about it are translated from technical to conversational language, they will sound something like this. Ship builders: "the vehicle has a propeller, well then, aviation must think about manufacturing it." Airplane builders: "the vehicles run on rivers and on dry land -- this is a sacred matter for river transport workers and automobile builders." Automobile builders: "the machine

has no wheels." And so forth. At the same time, no one is objecting to cooperation; all the clients are prepared to allocate any resources.

"Show more independence on all levels, search boldly, if necessary take a justified risk on behalf of increasing the efficiency of the economy and the people's well-being -- this is what we expect of our management personnel," noted Comrade K.U. Chernenko at the February 1984 Plenum of the CPSU Central Committee.

What can Andrey Gorchakovskiy do? Obviously, wait until people are found who nonetheless want to get this difficult work moving. And helping him do this is completely in the power of USSR Gosplan.

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