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# USSR Report

TRANSPORTATION

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11 May 1984

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## CIVIL AVIATION

### MINISTER BUGAYEV ON AEROFLOT ACHIEVEMENTS, PROBLEM AREAS

Moscow IZVESTIYA in Russian 10 Mar 84 p 2

[Interview with B. P. Bugayev, minister of Civil Aviation, by A. Illesh; date and place not specified]

[Text] The successful development of the nation's economy requires the efficient operation of all types of transport including air transport. Now, with the coming of spring, our aviation (both passenger and freight), which serves agriculture and forestry, geologists and builders, faces a particularly large number of problems... And the spring mail contains more and more letters to the editor concerning the extremely varied work that aviators perform in the air and on the ground.

Today the IZVESTIYA correspondent's questions are answered by B. P. Bugayev, minister of Civil Aviation.

[Question] Boris Pavlovich, to what extent have the positive trends characterizing the national economy in 1983 been manifested in your branch?

[Answer] Last year, we instituted a system of measures that made it possible to improve the organization and increase the efficiency of civil aviation. We carried more than 109 million passengers and 3 million tons of cargo and mail that had to be delivered promptly. More than 106 million hectares of forest and farm land were treated from the air.

Airplanes and helicopters perform over 100 different kinds of work in the national economy. And one of the most important among them is the struggle to increase the yield potential of the fields. Aviators have assisted greatly in the construction of mighty gas pipelines including the Urengoy-Pomary-Uzhgorod mainline. I would also like to mention the part that aviation plays in the health service--in rendering emergency aid to people when such help can only come from the sky. Last year, aviators flew more than 70,000 medical missions and carried over 270,000 patients and physicians.

Generally speaking, the totals for 1983 suggest a confident outlook for Aeroflot in the fourth year of the five-year plan.

However, as Konstantin Ustinovich Chernenko, general secretary of the CPSU Central Committee, observed at the voters' meeting in the capital's Kuybyshevskiy Electoral District: "...what we have already achieved is only

the beginning of a large-scale effort. We have a great many urgent matters that need to be dealt with. We can and we want to make more rapid progress. We can and we must be much more energetic in resolving the problem of developing the economy on an intensive basis. After all, it is only on this basis that we can more completely satisfy the material and spiritual needs of the people."

All the foregoing also applies in full measure to our branch's activity. We must go further and bring about far-reaching qualitative changes in the work of aviation. The introduction of new equipment and technology, the utilization of the know-how of the best workers in the branch, reliance on progressive science — these are the factors that comprise the "reference point" of Aeroflot's forward movement.

[Question] Today, all branches of the national economy are trying to conserve, to be thrifty in their use of materials and energy...Aeroflot has a large airplane and helicopter fleet and probably consumes no little amount of costly fuel.

[Answer] That is indeed so. Just imagine, in just a few summer days we consumed more fuel than in the entire year of 1940. This is an indication of how the wings of civil aviation have grown. At the same time, a most rigorous conservation effort made it possible to save five million tons of fuel. In other words, aviators fly on economized fuel 5 days out of the year.

Literally every aviator is involved in the effort to conserve fuel. Last year, our pilots performed two percentage points more flying work and expended significantly less kerosene than in 1982. How is this possible? A major effect is produced by flying gas turbine engine aircraft at lower speeds, by using special towing vehicles on the ground, and by making the airways as straight as possible....And of course it also involves the broad introduction of the most sophisticated and economical equipment. Industrial ministries together with civil aviators are hard at work on resolving this problem which was posed by the 26th Party Congress.

[Question] Aeroflot is a gigantic international aviation company. What has been noteworthy in Aeroflot's international traffic and what are the plans for its further development?

[Answer] Airplanes bearing our logo are well known abroad. The airships today carry out regular flights to 95 countries throughout the world. Last year, four new routes were inaugurated: Tbilisi-Dresden, Tashkent-Berlin, Moscow-Ouagadougou, and Moscow-Buenos Aires. Flights to Teheran, Baghdad and Aleppo have been resumed. Our relations within the framework of the CEMA Permanent Commission for Cooperation in Civil Aviation have undergone further development. The basic responsibility of the commission is to develop coordinated measures for making the operation of air transport more effective and for increasing the profitability of carrying passengers and cargo. Scientific and technical cooperation with socialist countries developed fruitfully in the previous year. In our view, this cooperation is of great practical significance.

On the other hand, the year 1983 was characterized by a considerable increase in the complexity of the political situation throughout the world. Under the pretext of the incident (inspired by U. S. special services) involving a South Korean aircraft, the U. S. Government closed down Aeroflot offices in Washington and New York. Under pressure from the U. S. Government, the governments of a number of other capitalist countries declared a boycott of our flights; provocations against foreign Aeroflot offices and personnel became more frequent. Nonetheless, the boycott was a total failure. Aeroflot's international relations continue to develop. As confirmation of this fact, I shall name new intergovernmental air traffic agreements. These agreements have been concluded with the Republic of Maldives, Kenya, Togo, and Upper Volta. Such agreements now exist with 102 countries throughout the world.

[Question] What new equipment does Aeroflot have now or will have in the future?

[Answer] First of all, new aircraft of Czechoslovakian manufacture--the An-28 and the L-610--have been developed for local airlines. Our pilots have already evaluated the new, 180-passenger versions of the Il-62M and Tu-154. In the offing, there are models which we hope will make a substantial contribution to the fulfillment of the Food Program.

[Question] The mastery of civil aviation pilots is widely known. Many world records have been set by people wearing the elegant Aeroflot uniform. There are memorable instances of courage and the highest piloting proficiency that they have demonstrated in critical situations....

[Answer] The professional prestige of our specialists is indeed high. And it was fully confirmed by a unique operation carried out in the Arctic under the direction of Zh. Shishkin. I refer to the air cargo drop to SP-25. Chief test pilot M. Kuznetsov, the commander of the Il-76 transport plane, and the entire crew did an excellent job of coping with their unique mission which consisted of dropping the necessary cargo to the wintering party on the ground from an altitude of 45 meters without parachute and from 150 meters with a parachute with sniper-like precision. Or there is another story that was recently written up in IZVESTIYA. It involved a Georgian administration crew which in the face of the difficult conditions posed by one unextended landing gear succeeded in effecting an excellent landing of a heavy aircraft at Vnukovo Airport. Sh. N. Dzhvarisheysvili, commander of the Tu-154, did an excellent job at that time. Other examples could be cited. But the risk with passengers on board is the exception. It must be the exception. Without taking anything away from the pilots, I would like to say one thing: in aviation there is the expression--flights without flight accidents or even the prerequisites for them. This is the principal indicator of truly first class work by all services. After all, behind every accident there is someone's dereliction and sometimes simple slipshodness and reluctance to perform one's professional duties at the requisite level. Civil aviation carefully analyzes every miscalculation and this analysis becomes the subject of general discussion. The work of courageous pilots, navigators and other aviation specialists justifiably receives high praise. But rewards for many accident-free years are no less important. After all, our major concern is the strictest observance of flight safety. For example, A. Kaledin, the commander of an Il-86 ship in the Moscow Transport Administration and a deputy to the USSR Supreme Soviet, has for many years demonstrated excellent proficiency as a pilot.



[Question] The struggle for labor discipline, to which the party attaches a great deal of importance today, is closely linked to a thrifty attitude toward public wealth, to the businesslike use of every state kopeck...What is being done in this direction?

[Answer] The Ministry of Civil Aviation is devoting top priority to these questions. In this area, there is something we can take pride in, as the saying goes. But I believe that it is better to concentrate our attention on the unresolved questions. Unfortunately, despite the measures that are being taken, mismanagement, wastefulness and the falsification of reports still flourish. Alas, beautiful words are uttered and higher pledges are made but in actuality we occasionally still encounter a serious discrepancy between actions and words.

What, for example, were the declarations of the former managers of the Dnepropetrovsk Aviation Enterprise worth? In words and on paper, the would-be managers called for economies in all matters great or small while they personally slipped their hands into the state's pocket. Instances of flagrant mismanagement have been uncovered in the West Siberian and Uzbek administrations. Naturally the wrongdoers have been severely punished. But punishment is not the only issue involved. It is extremely important to create within the collectives such a microclimate, such a businesslike working atmosphere that would exclude the possibility of abuses altogether.

[Question] Letters received by IZVESTIYA still not infrequently contain complaints about certain Aeroflot passenger services. They particularly complain about passenger traffic in the summer—a time when a great many people take their vacation. What measures, minister, are being taken to eliminate the queues at the ticket counter and to see to it that people would not have to spend their time sitting around airports?

[Answer] The readers raise an important problem that is of serious concern to all of us. One answer to the problem posed by the peak period is to try to abandon the tradition of having students and pupils finish their academic year at the same time. Everyone knows how difficult it is to get from one end of the country to another on a specific day, e. g., the first of September. I realize that this question is open to debate but in our view, it merits attention. The second possibility (and we are already using it) is to transfer aircraft in conformity with passenger flows. These operations must be performed in a way that anticipates the flows. The bottlenecks are then eliminated more quickly. There are also a number of recently tested ticket selling forms such that a passenger arriving for his Black Sea vacation will already have his return ticket in his hands. We also plan to develop other forms of service. But this, as you understand, is a most complex problem can cannot be resolved in its entirety. After all, airports have a certain capacity; their potential, like the number of their runways, is limited. Here is the root of the problem. Generally speaking, the ground services must be "pulled up" to a significantly higher level. Large airport complexes must be built and rebuilt. (Many of them were built tens of years ago and therefore lag behind today's demands). Such a vast effort will clearly require not only the efforts of thousands of specialists but considerable material expenditures as well. Nonetheless, such a global program is the demand of the times and we must carry it out.

But the readers are naturally more interested in what is being done now rather than what will be in the future. This year, we will continue to expand ticket sales facilities which during the intensive summer period will operate directly at the major enterprises. We are opening five new air service agencies. In addition to the existing centers of the automated "Sirena" system in Moscow, Minsk, Kiev and Kuybyshev, we are planning to open similar centers in Leningrad, Volgograd and Lvov. This will undoubtedly improve air service.

[Question] We know that Aeroflot delivers us "from point to point" at jet speeds. Many of our difficulties begin on the ground...Why is this the case?

[Answer] It is indeed true that the modern speeds of the aircraft do not always "jibe" with the working speed of the ground services. We have already spoken about rush hour at our airports and of ways of reducing it to a minimum. Let us examine this question from another angle. When aircraft become all-weather aircraft, the significance of the airport will basically be reduced to the simplest terms—to seeing to it that a passenger arriving at the airport with his ticket boards his plane without losing a single minute. Such is the airport of the future. Of course it will also have to provide maximum comfort, but I repeat that the most important consideration is that the passenger board his plane without delay.

[Interviewer] In the name of IZVESTIYA readers, I would like to wish all civil aviation workers success.

[Answer] Thank you. That is all the more pleasurable because many of them are our passengers and they will have the opportunity to enjoy all of our best innovations.

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## CIVIL AVIATION

### MANAGEMENT PROBLEMS AT KARAGANDA AVIATION ENTERPRISE INVESTIGATED

Moscow VOZDUSHNYY TRANSPORT in Russian 13 Mar 84 p 2

[Article: "Ambition"]

[Text] Under this heading, on 10 December 1983, our newspaper published correspondence describing the unseemly work methods of certain representatives of the leadership of the Karaganda Aviation Enterprise. Today we are reporting the measures that are being taken to remedy the situation.

N. Kuznetov, chief of the Kazakh Civil Aviation Administration: On 30 December 1983, a joint sitting of the council of the Kazakh administration and the presidium of the republic committee of the trade union of aviation workers discussed critical material published in VOZDUSHNYY TRANSPORT on 10 December 1983 under the heading "Ambition." It is stated in reply that the correspondence precisely describes the situation that developed at the Karaganda Aviation Enterprise upon the introduction of the brigade method of labor organization, the psychological climate and the faulty work style displayed by some administrators and directors of social organizations.

As a result of lax organizational and political education work by G. Yurgenson and I. Khesin, former commanders of the aviation enterprise, and by K. Chernyshov, deputy commander for political education work, unhealthy phenomena were observed in the collective in 1982 and 1983.

The negative activity of a number of executives downgraded the role of the collective in resolving production and social problems. Hence the conceit and rudeness of S. Zuyev and D. Kaynarbayev, the inactivity and the indifference to anything new.

It must be admitted that the staff of the department for the organization of labor and wages [OOTIZ] and the shipping organization services of the Kazakh administration also made a number of errors in preparing to make the transition to the brigade method of labor, did not carry out sufficient methodological and explanatory work on the advantages of the brigade method and did not provide competent assistance once these errors had surfaced.

Since the publication of the material, the Karaganda Aviation Enterprise has been visited by T. Madigozhin, first deputy chief of the administration; A. Shishkin, deputy chief for political education work; A. Kertsgur, chief of the shipping organization service; and Ye. Mikhaylov, chief of the department for the organization of labor and wages. A meeting of shipping organization personnel was held; all remarks and proposals by aviation workers were carefully studied; a methods conference of shift chiefs resolved all issues relating to the introduction of the brigade labor method in each shift. Talks were also held with flight personnel, with ATB [aviation technical base] personnel and with the heads of services and subdivisions on work style and methods.

At a sitting of the party committee, S. Zuyev was sternly reprimanded for shortcomings in work relating to the communist education of members of the collective and for rudeness, indifference and inattentiveness to the requests of aviation workers. He apologized to members of the party committee for his actions and assured them that he would never again be rude and tactless to his subordinates.

V. Fedorova, chief of the OOTiZ, was reproached for her tactless behavior at a meeting with ATB personnel. K. Chernyshov, deputy commander for political education work; G. Dorokhov, deputy commander of a flight sub-unit; and Paul', deputy commander for ground services, were removed from their posts and replaced by honest, energetic specialists. A. Zholdybayev, who gave a good account of himself in command positions at the Tselinograd and Semipalatinsk aviation enterprises, has assumed his duties as commander of the Karaganda Aviation Enterprise.

By order of the Kazakh administration, S. Zuyev, acting commander of the Karaganda Aviation Enterprise, was given a stern reprimand for serious shortcomings in work relating to the introduction of the brigade labor method and for tactlessness toward subordinates.

Ye. Mikhaylovna, chief of the administration's OOTiZ, and S. Krivonos, deputy chief of the shipping organization service, who headed one of the administration's commissions, were reprimanded for deficient preparatory efforts to introduce the brigade labor method and for failure to provide competent assistance to the aviation enterprise.

A. Shishkin, deputy chief of the administration, and A. Kertsgur, chief of the administration's shipping organization service, were sternly notified of the lax effort of political workers and executives of the Karaganda Aviation Enterprise during the introduction of the brigade method. They were directed to render effective assistance to the collective in reinforcing the progressive work form and in establishing a healthy moral climate.

The attention of T. Madigozhin, first deputy chief of the administration, was called to serious shortcomings in the work style and methods of leaders of subordinate services and to the need to step up the effort to eradicate these shortcomings.

Measures are being taken to prevent the shortcomings manifested at the Karaganda Aviation Enterprise from happening when the brigade form of work is introduced in other aviation collectives.

Yu. Sakhnenko, chairman of the Kazakh Republic Committee of the Trade Union of Aviation Workers:

The Presidium of the Kazakh Republic Committee of the Trade Union of Aviation Workers discussed the correspondence entitled "Ambition" (VOZDUSHNYY TRANSPORT, 10 December 1983) on the incorrect style of introduction of the brigade form of labor organization in the shipping organization service at the Karaganda Aviation Enterprise.

The shortcomings indicated in the article did in fact take place.

Sh. Baybakushev, chairman of the trade union committee, was reprimanded for serious omissions and for deficient monitoring of the introduction of the brigade form by the combined trade union committee of the Karaganda Aviation Enterprise.

The presidium of the republic trade union committee outlined specific measures for fulfilling the decree of the USSR Council of Ministers and AUCCTU "On Measures for the Further Development and Heightened Effectiveness of the Brigade Form of Organization and Stimulation of Labor in Industry."

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## CIVIL AVIATION

### PROFILE OF TASHKENT AVIATION PRODUCTION ASSOCIATION

Moscow PRAVDA in Russian 24 Jan 84 p 6

[Article by A. Gorokhov, special PRAVDA correspondent: "Ships from Winged Yards. Reportage from the Association imeni V. P. Chkalov"]

[Text] Coincidences do happen in life. The collective of the State Scientific Research Institute of Civil Aviation received the enormous IL-76 transport plane that bore the number 76473 on its fuselage. Recently, a short time before this expedition I had chanced to fly to the North Pole region aboard this plane. And during the flight, as I became acquainted with the winged ship that still smelled of the factory so to speak, I suddenly realized that this was the very plane I had been shown when I visited the Tashkent Aviation Production Association imeni V. P. Chkalov.

A sign warned: Caution, aircraft under current! Ramil' Khakimov, an installer of oxygen equipment, waved his finger in warning. Ramil' is 28 years old; 11 of these years he has spent at this plant. He and his comrades have been entrusted with an important task: the crew's life support systems.

Brigade leader Akhmadzhan Babadzhanov flew a TU-16 bomber during his army service. He later completed an aviation technicum. Now he builds airplanes. This is what he had to say:

"We have wonderful jobs. Our work is interesting and very important. Everyone would love to work at our plant..."

Naturally, it takes more than one or two days to understand the reasons why young (and indeed not only the young) specialists want to become "Chkalovites." Let us note that it took an entire working shift for Yu. Kulakov, deputy secretary of the association's party committee, and myself to make a hasty inspection of only a few of the shops.

The reason is not only that the "Chkalovites," as they themselves justifiably believe, build the best airplane in the world, which demands high quality production and collective responsibility.

And the reason is not only that the association annually commissions tens of thousands of square meters of housing and that practically every young family has the opportunity to obtain an apartment within a year.

Nor is the sole reason that the plant food services combine serves 7,000 persons in an hour or that this combine also offers ethnic cuisine.

Nor is it only because the plant has the "Kristall" rest home in the mountains, a holiday hotel at Issyk-Kul or because the aircraft builders' Palace of Culture and Technology is the pride of all Tashkenters...

What then is the reason? It is probably a combination of all the above. G. V. Novozhilov, general designer, twice Hero of Socialist Labor, and Lenin Prize winner, who heads the Experimental Design Office imeni S. V. Il'yushin, said the following: "The creative ties of our collectives have become even closer with the development and improvement of a sophisticated cargo plane. In a short period of time, the Tashkent aircraft builders have succeeded in mastering the series production of an aircraft that substantially improves the quality of Soviet transport aviation."

It is difficult to compare the shop where they make the wing for the "Il" with anything. The wing of a modern aircraft is an extremely complex device that not only keeps it aloft but that also contains tens of tons of fuel (more precisely, the fuel is stored in tanks and cells within the wing). Wing mounts include slats and flaps—everything that is called mechanization and that enables a 170-ton vehicle to take off with ease and to land in a limited space.

Valeriy Kiyashchenko, the brigade leader who together with his brigade produces tail units and flaps, probably arrived at the best comparison: "When I first came here for the first time 18 years ago, I thought I was at a space port..."

We have had repeated occasion to use the comparison with space. For example, when we observed engineer Valeriy Kalashnikov preparing the habitable "Atmosphere" chamber for operation or when we saw the welders putting on something that looked just like spacesuits. The workers then entered the chamber through an air lock; air was then pumped out of the chamber and replaced with dried argon. Then they began welding small components made from titanium alloys.

In a few tens of years, aircraft construction took a truly cosmic step forward. And everything where the Tashkenters are concerned began in the Moscow suburb of Khimki where the construction of an aircraft repair plant was launched in June 1932.

Today the plant's young people can get an idea of those difficult times only from photographs and documents collected by the Museum of Military and Labor Glory and from the accounts of veterans. It is difficult to picture such a thing. Something of this nature must be experienced personally...

On 30 December 1936, Valeriy Pavlovich Chkalov was appointed chief pilot of the young enterprise. Antonina Aleksandrovna Danilova, a native Muscovite and museum curator who had once hired Chkalov, showed us a historic document: an excerpt from the minutes of the 9 September 1937 sitting of

the Central Executive Committee of the USSR. It states: "Satisfy the petition of workers and employees and the People's Commissariat and assign the name of Comrade V. P. Chkalov, Hero of the Soviet Union, to the plant."

What are other noteworthy features of the prewar years, the time when the future giant of industry was still forming? The plant remodeled the ANT-9 passenger aircraft into the "Krokodil" propaganda airplane and performed the important government assignment of building the first air cushion craft that was developed by Professor V. I. Levkov. And, of course, another noteworthy fact is that the plant began preparation for the series production of the two-motor PS-84 passenger airplane which was later renamed the LI-2 after the plant's chief engineer Boris Pavlovich Lisunov, who was in charge of putting the "Douglas" purchased from the Americans into production.

It must be said that the "Chkalovites" succeeded in doing that which the most powerful airplane companies—Fokker (Netherlands) and Mitsubishi (Japan)—that purchased similar licenses could not. They had to rework the blueprints, convert dimensions to the metric system, and redo calculations. This work was performed by a group headed by Vladimir Mikhaylovich Myasishchev who was later to become a major Soviet aircraft designer. The result was that in January 1941, the regular production of the PS-84 began. Pilots referred to it as a plane that "practically flies itself."

Not far from Filevskiy Park in Moscow, there now lives the man who managed the plant in what was probably its most difficult time—from February 1939 to 1947. His name is Afanasiy Mikhaylovich Yarunin, a retired major general engineer; holder of five Orders of Lenin; an old party member; one of the first three party organizers of the Central Committee of the All-Union Communist Party (of Bolsheviks) at aircraft plants. At the end of January, Yarunin will be 80 years old. Nonetheless the veteran's memory has faithfully preserved many details of those heroic days. And among them, like a splinter in a troubled heart, is the war and evacuation.

Afanasiy Mikhaylovich recalls: "People's Commissar Shakhurin called me in and told me: the government has decided you are going to Tashkent. I flew out of Moscow on the 16 November 1941, on the same day that the last of 25 trains left. The trains carried equipment, people and a two weeks' supply of food. We arrived at our new place. The winter was hard. We were greatly assisted at that time by the republic party organization...."

On 7 January 1942, the plant produced its first airplane on Uzbek soil. There is no need to describe what a holiday this was for fraternal peoples united in the face of great danger!

"Our contribution to Victory," A. M. Yarunin states, "took the form of more than 2000 LI-2's built in Tashkent...."

The enterprise that has begun its second half-century unquestionably has a glorious history and traditions. Labor dynasties have already developed here: 41 Kuznetsov-Chernyshov's, 26 Ivanov's, 23 Shestakov-Dabayev's.

"The Tashkent plant, which has of late been associated with the development and production of heavy machinery, initially the 'Antey' and later the



IL-76, continues to develop" states V. N. Sivets, general director of the association; Hero of Socialist Labor; and Lenin Prize winner. "New production facilities, shops and sectors are being established. For 10 years, we have been assembling the IL-76 cargo plane. In the course of its operation, it has been improved and modified even though the improvements and modifications are very noticeable. For example, a training version of the IL-76, which is called the 'basin of weightlessness,' has appeared in the village of Zvezdnyy."

We ask the general director about a small exhibit in the food services combine. It displays elegant baby carriages, summer cottage furniture, lamps, shopping bags and cannisters united by the common term "consumer goods."

"We are also developing this direction," explains Viktor Nikolayevich. "We are now erecting a new building for the construction of so-called consumer goods. Moreover, we do not classify our products as "primary" (aircraft) and "secondary" because it is not such a simple matter to produce a proper baby carriage as it might seem..."

In the central area of the head Tashkent plant, which in the warm season is beautified by numerous fountains and millions of roses, is a tall monument to the flier whose name the association bears: Valeriy Pavlovich Chkalov. Beside him on an eternal stand is the worker of the sky: the LI-2. They are truly guardians of a heroic history that summon us to a glorious future....

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CSO: 1829/215

## CIVIL AVIATION

### METROLOGICAL PROBLEMS PERSIST AT ULAN-UDE AVIATION ENTERPRISE

Moscow VOZDUSHNYY TRANSPORT in Russian 15 Mar 84 p 1

[Article by V. Solov'yev, VOZDUSHNYY TRANSPORT correspondent: "Returning to the Answer. Metrological Support of Production"]

[Text] Of late, the newspaper has repeatedly addressed problems pertaining to the metrological support of production. On two occasions (No 69 dated 9 June 1983 and No 103 dated 30 August 1983), criticism was leveled against the Ulan-Ude Aviation Enterprise. In response, the enterprise commander reported the following to the editors: "With the aim of correcting the existing situation with regard to the metrological support of the aviation enterprise's services and of bringing proper order to recordkeeping, testing, recording and certifying existing monitoring and measuring instruments, the command of the aviation enterprise called upon the territorial Buryat ASSR LGM [State Metrological Laboratory] for assistance. (Here and beyond, the author refers to the Buryat Laboratory of the State Inspectorate for Standards and Measurement Technology of the USSR State Committee for Standards—abbreviated as LGN). The laboratory's leadership acceded to this request and assigned specialists to study the aviation enterprise's services. Aviation enterprise personnel participated in writing up the findings and specific corrective measures were articulated for 1983-1984. The territorial LGM appointed an experienced specialist to act as curator. A departmental metrological laboratory in Irkutsk was confronted with the question of organizing interaction with the territorial Buryat ASSR LGM. Considering the importance of the matter, the command of the aviation enterprise relieved the former ATB [aviation technical base] chief engineer of his metrological support responsibilities.

If one excludes lamentable "trifles"—the commander does not know the exact name of the organization under scrutiny; the former ATB chief engineer is relieved of his metrological support responsibilities—the reply is punctilious in all other respects. The close, downright friendly relations forming with the Buryat LGN are particularly touching and inspire hope that things will turn out right. A metrological idyll indeed! Unfortunately, the state inspectorate laboratory does not share the Buryat aviators' feelings. G. Ponomarenko's reply was signed on 22 September 1983 and literally on the eve of the reply—21 September 1983—a letter signed by A. Krasil'nikov, chief of the Buryat LGN, was mailed to the MGA [Ministry of Civil Aviation] and to A. Krasil'nikov, chief engineer of the VSU GA [East Siberian Civil Aviation Administration). The letter read as follows: "In September 1983, a

followup check was conducted at the Ulan-Ude Aviation Enterprise. It was found that the enterprise lacks metrological inspection facilities. Fifty-four percent of the measuring devices in operation are flawed. The shortcomings listed in reports on checks conducted by the Buryat LGN in January 1983 and VSU GA in February 1983 have not been eliminated.

Not one of the nine points listed in the plan for organizational and technical measures appended to the VSU GA inspection report has been carried out.

I request that measures be taken to organize an independent metrological service at the Ulan-Ude Aviation Enterprise. If measures are not taken, the materials will be sent to the procuracy."

Instead of a boring recitation of the inspection reports cited by the laboratory, we shall merely state that serious shortcomings were discovered at the beginning of the year by the Buryat LGN and later by a VSU GA commission in Ulan-Ude. ATB chief engineer F. Sedykh, who was responsible for metrological support, resigned; directives from the MGA remained in his files and were not conveyed to the leadership of the aviation enterprise. Testing stands have not been certified; the safety instruments and instruments used to record the expenditure of GSM [fuels and lubricants] have never been checked.

As the state inspectorate laboratory indicated: "The use of defective measuring devices cannot guarantee high quality of flights, the integrity of the cargo and the proper recording of the expenditure of GSM."

Based on the results of these checks, V. Glushkov, chief of the East Siberian Civil Aviation Administration, issued a special order containing the following lines:

- "1. Increase demandingness and personal responsibility of all chiefs of aviation enterprise services for metrological support.
2. For the violation and nonfulfillment of orders from the MGA and VSU GA regarding metrological support at the aviation enterprise, reprimand F. Sedykh, ATB chief engineer; reprimand D. Chaykisov, chief, Fuels and Lubricants Division, VSU GA; call the attention of G. Ponomarenko, commander of the Ulan-Ude Aviation Enterprise to serious shortcomings in the metrological support of production.
3. Correct indicated shortcomings. Report on execution prior to 15 April 1983."

As you see, the order demanded that matters be put right by spring of last year. However, nothing had been done in Ulan-Ude even by fall. What has changed since that time?

Let us consult yet another document: the annual report on the state of metrological support in the East Siberian Civil Aviation Administration in 1983. A. Krasil'nikov, the administration's chief engineer, reports changes in the direction of improved metrological support after the followup check by the Buryat LGN at the Ulan-Ude Aviation Enterprise. New people were

named to take charge of this area of the work; technical documentation was developed; means of measurement were tested; checking schedules were updated. Test stands in the ATB instruments laboratory were certified and certificates were issued. At the same time, plans for checking all measuring instruments at the aviation enterprise were not entirely fulfilled.

It is unquestionably true that there have been improvements in Ulan-Ude. Nevertheless, the process of positive change must be faster. Accordingly, the command staff of the aviation enterprise must try to bring about a decisive change in the collective's psychological attitude toward the metrological support of production. Only then will orders from higher up be carried out on schedule; only then will executors no longer submit unverified documents to the commander for his signature; and, what is most important, the question of increasing labor productivity, of conserving fuel and of guaranteeing appropriate flight safety will be raised to a new level.

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## MOTOR VEHICLES AND HIGHWAYS

### DIRECTOR ON ADVANTAGES OF TRUCK SHIPPING THROUGH USSR

Moscow SOVIET EXPORT in English No 1(148), Jan-Feb 84 pp 50-51

[Article by A.N. Nazarov, general director of V/O Sojuztransit: "Transit Cargoes Via Short-Cut Truck Routes"]

[Text] The volume of international cargo haulage by Soviet trucks keeps increasing from year to year. Short cuts across the territory of the USSR are most attractive to businessmen. And no wonder. Through haulage without transshipments means a faster delivery of cargoes from manufacturer to user, and a saving of packaging material.

Our association is the general carrier of foreign transit cargoes across the territory of the Soviet Union. In dealing with the practical problems involved in carrying out international cargo trucking, V/O SOJUZTRANSIT closely co-operates with the Sovtransavto administration of the Russian Federation's Motor Transport Ministry.

Sovtransavto truck trains can be seen today on the motor roads of almost all the European countries, Iran, Iraq, Afghanistan and Mongolia. Over a relatively short period--15 years--Sovtransavto has become a major international freight carrier with thousands of Soviet-and foreign-made trucks meeting foreign clients' exacting demands.

In 1982, the volume of transit cargo trucking across the territory of the USSR amounted to over 170,000 t. V/O SOJUZTRANSIT keeps studying the situation on the transport service market, establishes business contacts with foreign forwarding companies, charges competitive haulage rates, selects the optimum terms of carriage, signs all kinds of contracts and agreements, keeps its clients informed on the progress of transportation, collects freight, payments and carries out a multitude of other operations crucial for the success of the whole business.

Most of our short-cut transit routes go to Iran. For ten years now the Sovtransavto trucks have been delivering to the northern parts of Iran from Western European countries ever greater amounts of food, building materials, chemicals and other goods for the Iranian economy. In 1982, for instance, more than 7,000 trips were made to Iran from European countries, mostly from Denmark followed by the FRG, Finland, Holland, Belgium and Austria. The other suppliers include France, Sweden, Switzerland, Britain, the GDR and Poland.

The volume of the deliveries to that country of goods in standard 20- and 40-foot containers has been increasing at a rapid pace recently. For its part, Iran sends to Europe its traditional exports: dry fruit, fish, caviar, etc.

I'd also like to mention the transit truck routes to Afghanistan. We started trucking goods there just three years ago when the first batch of medicines was taken to that country from Bulgaria. And already in 1982 our trucks delivered 1,300 tons of fabrics, shoes, medicines, spares and other goods from Bulgaria and the FRG.

Our territory offers short-cuts, not only between Europe and the Middle East, but also between Finland, Sweden on the one hand, and Austria, Romania, Bulgaria, Yugoslavia, Greece and a number of other countries, on the other. More and more foreign clients use these routes to transport their foreign trade cargoes in transit via the territory of the Soviet Union. In 1982, for instance, 62 trips were made from Finland to Austria and 26 trips to Romania, Bulgaria and Greece across the territory of the Soviet Union.

The opening of a ferry crossing between the ports of Sweden and the Soviet Baltic Republic will cut the haulage distance further still and make the motor route from Scandinavia still more attractive to clients. Traffic along a new transit route--from Finland and Sweden to Iraq--is becoming ever busier. And the possibility of organising goods transportation to Syria is being considered.

A combined form of trucking, the Tracons, is coming to play an ever more prominent role in the framework of the Trans-Siberian Container Service. 20- and 40-foot containers, shipped from Japan, are carried to the Soviet Vostochny port and then proceed by rail to Vysoko-Litovsk (near Brest) where they are transhipped by specialised Sovtransavto trucks directly to the recipients' warehouses in many West European countries. In 1982, we carried over 7,000 20-foot containers in this way.

The general operator and carrier continuously concentrate on improving service quality. This is achieved through cutting delivery time, guaranteeing absolute safety of goods, providing timely and exhaustive information to clients and introducing new transit routes. The reliability of the truck routes passing across the territory of the USSR and good business-like co-operation between Soviet and foreign partners give us grounds to hope that transit goods trucking will make further progress.

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## MOTOR VEHICLES AND HIGHWAYS

### VAZ OFFICIAL EXPLAINS ZHIGULI SPARE PARTS SHORTAGES

Alma-Ata AVTOMOBIL'NYY TRANSPORT KAZAKHSTANA in Russian No 1, Jan 84 p 45

[Article by VAZ technical director M.N. Arshatov: "The Question of Spare Parts"]

[Text] Among the many reasons for a car to be "laid up," the most unpleasant for the owner of a Zhiguli is when parts for the valve gears, and primarily the camshaft itself, go out of production. Premature wear of the universal joints of the drive shaft may mean problems as well, because like the camshaft, they cannot be immediately found. At times they are not even available at the special automobile centers of the VAZ [Volga Motor Vehicle Plant].

All this worries auto enthusiasts, and the question "will the established situation with regard to spare parts change for the better?", among others to which they request the reply of the editorial staff, is the fundamental one. But the VAZ manufactures automobiles. It has also taken on itself the service of Zhigulis, and there is therefore no one better to answer the question that interests all auto enthusiasts than the specialists at the VAZ. The readers' attention is called to the answer of the VAZ's technical director, M.N. Arshatov, to the question of auto enthusiast K. Tabyldiev of Mangyshlak.

Present production capacities for spare parts at the VAZ and its allied suppliers do not allow the demands of the ever growing fleet of Zhigulis for the engine parts mentioned to be met. Nonetheless, every year these parts are shipped in significant quantities to special auto centers and automobile maintenance stations. In 1982, shipments to plants doing automobile repair and servicing in our country included: 134,200 camshafts, 1,384,700 rocker arms, 456,000 pistons, and 201,000 timing chains.

In 1983 the plan was to send more of these parts to special auto centers and automobile maintenance stations than in 1982: 10,000 more camshafts, 100,000 more rocker arms, 150,000 more pistons, and 135,000 more timing chains.

The VAZ is taking active measures for the buildup of production capacity and for raising the quality of output, in order to better the supply of spare parts for the fleet of cars. For example: An additional automated line for the production of 92,000 camshafts has been purchased and will be installed in 1983-1984, and with a view to increasing camshaft wear resistance, a new chemical-thermal treatment, proven to be highly effective, was adopted in January 1982. At the present time, work is being conducted on the development of a technology for chilling the cams of the camshaft. The production capacity freed when the new models and vehicle modifications were put into quantity production is also being used for the manufacture of spare parts that are in increased demand.

At the same time, these measures undertaken by the VAZ are insufficient for a radical improvement of the supply of spare parts. The USSR Council of Ministers required a number of ministries to guarantee that production capabilities for rebuilding worn out parts, units, and assemblies for passenger cars be brought into action in the years 1983-1987.

There is a stipulation to organize the rebuilding in large volumes on an industrial basis of parts, units, and assemblies that are in increased demand. At the same time as it improves the supply of spare parts to the fleet of cars, rebuilding will provide greater economy of labor and material resources.

The above-mentioned measures for adopting rebuilding and for the development of production capabilities, as well as initiation of quantity production, principally of the new car, VAZ-2108, will allow a substantial reduction in the years 1983-1987 in the shortage of spare parts in increased demand.

Note from the editors: Judging by this answer, the spare parts situation will change significantly for the better. Auto builders are taking active measures so that the question of "where to get camshafts and universal joints" will be removed from the agenda. But this, of course, requires some time...

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## MOTOR VEHICLES AND HIGHWAYS

### DETAILS OF NEW URAL-5557 TRUCK FOR AGRICULTURAL USE

Moscow ZA RULEM in Russian No 2, Feb 84 p 4

[Article by A. Romanchenko, chief designer, Ural Automotive Plant, and G. Krestovnikov, laboratory head at NAMI and candidate of technical sciences: "A Ural Truck for the Countryside"]

[Text] Participating in meeting the challenges set forward by the Food Program for motor vehicle builders, the Ural Automotive Plant imeni 50-Letiya SSSR, working together with NAMI [Central Scientific Research Institute of Motor Vehicles and Motor Vehicle Engines], developed the Ural-5557 industrial transport vehicle with good off-road capability for agriculture and prepared for its production.

A number of scientific and design problems had to be resolved in order for the new Ural truck to satisfy its designated purpose more fully and, ultimately, guarantee high productivity combined with fuel economy when hauling agricultural freight under varying road and field conditions. One of the main problems was insuring reliable work with a trailer unit, a good connection with agricultural and loading machinery to support a composite technological unit. Ecology and scientific farming made their demands: the vehicle must minimize compaction and destruction of light ground and the fertile layer of the soil.

How were these problems solved in the design of the new dump truck?

Series-produced assemblies and composite units from the series of full-drive Ural trucks already in production were used extensively to make it easier to organize production of the Ural-5557 and insure its reliable work.

Taking account of experience with the use of Ural trucks and the specific features of agricultural hauling, we established the load capacity of the truck at seven tons and the same amount more for the trailer. Thus, a rig consisting of the Ural-5557 and the standard GKB-8551 trailers can haul 14 tons of freight. For regular work under hard road and field conditions the 5.5-ton GKB-8535 trailer is recommended. In this case the load capacity of the rig is 12.5 tons.

The Ural-5557 is equipped with a KamAZ-740 diesel engine (210 horsepower). It has a preignition warmer and electrical fuel spray for uninterrupted operation during the winter; the cooling system uses TOSOL-A40 antifreeze.

The vehicle has a double-disk clutch, which is more easily controlled using a hydraulic booster. A KamAZ-141 gear box is used, on which is mounted a power take-off mechanism with one or two hydraulic pumps that drive the dumping unit. Equipment for applying mineral fertilizer and other devices are also mounted on it. The driver controls all this equipment from a control panel in the cab.

The transfer case unit has three shafts and two stages with constant engagement of the front axle through an interaxial assymmetric cylindrical differential with forced interlocking. Disc joints of different angular speeds are used in the drive system of the front wheels.

The engine with its systems and the power train are almost completely standardized with units of the Ural-4320 diesel (see ZA RULEM, No 5, 1980). Thanks to its large power reserve and rational selection of gear ratios the truck has a broad range of speeds, from 2 to 75 kilometers an hour. This enables the truck, on the one hand, to operate very efficiently on roads (with and without a trailer) and, on the other, to move together with harvesting machines. The new truck has excellent traction features: it can climb grades of up to 50 percent (26.5 degrees) without a trailer and up to 27 percent (15 degrees) with one. The vehicle is fairly economical.

The broad-gauge tires of the Ural-5557 are not as high as the ones on the base model. Therefore the new truck has a lower center of gravity, which means better stability when carrying light freight. The centralized regulation system makes it possible to maintain air pressure in the tires at from 0.35 to 0.1 megapascal (3.5-1 kilogram-force per square centimeter). Rolling resistance can be reduced by increasing pressure, which promotes fuel economy; by lowering pressure the destructive effects of the wheels on the soil can be lessened. We should note that selecting the optimal air pressure improves the off-road capability and traction capabilities of the truck in difficult road and field conditions by 30-60 percent. In addition, in the case of isolated punctures the system refills the wheels with air. Therefore the design did not include a place for a spare tire and increased the capacity of the bed by more than 15 percent.

Compared to the base model the Ural-5557 has a stronger frame, rear suspension, and front axle coupling units. The bed and its hydraulic cylinder are mounted on the topframe, which is flexibly connected to the main frame at the forward fastening points.

For unloading the primary sides of the tractor and trailer open downward, while the upper sides are raised up by a mechanical drive unit, which forms a broad opening for dumping the load. Tests showed that this design virtually eliminates losses of agricultural products being unloaded and prevents their falling under the wheels. The driver can monitor the loading process through the latticed upper sides from both the front and the back. Packing around joints prevents loss of loose freight while moving.

The dumping bed of the truck can be replaced by an implement for applying mineral fertilizer. The Ural-5557 is capable of traveling across a field at up to 30 kilometers an hour during this operation.



A great deal has been done to make the work of the driver-machine operator easier. The interior of the cab is improved. Servo mechanisms and an electrical keyboard hydraulic system to control raising and lowering the bed of the truck and trailer and to close their sides considerably reduce the physical exertion he experiences. This is especially important during intensive seasonal work.

Comprehensive testing and evaluation of its technical level have demonstrated the excellent features of the new truck. This has been achieved by purposeful configuration, optimal specific power, and use of a number of assemblies that have already been tested under the most difficult working conditions.

Using the Ural-5557 with a standard trailer in place of the widely used ZIL-MMS will significantly increase the labor productivity of drivers, especially under difficult road and field conditions, and it will reduce fuel consumption.

Agriculture will receive the first batch of Ural-5557's this year, in 1984.

#### Technical Specifications

General information: wheel formula -- 6 X 6; equipped weight -- 9,160 kg; load capacity of tractor -- 7,000 kg (5,000 kg under difficult road conditions); load capacity of trailer -- 7,000 kg (5,500 kg); maximum speed -- 75 km/hr; fuel capacity -- 210 liters; standard fuel consumption at 50 km/hr -- 30-31 liters per 100 km.

Dimensions: length -- 7,693 mm; width -- 2,500 mm; height at cab -- 2,665 mm; height at lip of bed -- 3,555 mm; loading height on floor of bed -- 1,495 mm; loading height for upper sides -- 3,155 mm; base of front and middle axles -- 3,525 mm; base of rear bogey -- 1,400 mm; gauge -- 2,020 mm; road clearance -- 340 mm; angle of bed tipping (left and right) -- 50°; tire size -- 1200 x 500 x 508 or 1200 x 475-508 mm.

Engine: type -- four-stroke diesel; number of cylinders-- 8; working volume -- 10,850 cm<sup>3</sup>; power -- 210 hp/154 kwt at 2,600 rpm.

Transmission: clutch -- dry, double-disc; gear box -- five-stage with synchro-mesh units for 2nd, 3rd, 4th, and 5th gears and a power take-off mechanism; transfer case unit -- two-stage with interaxial differential and synchronous power take-off; main gears -- double; gear ratio -- 8.05.

Control: steering -- with hydraulic power; standard brake -- with pneumohydraulic drive and drum mechanisms; auxiliary brake -- engine; parking and reserve brakes -- mechanical drive.

Power train: suspension of front wheels--dependent, on transverse polyelliptical springs and telescope shock absorbers; suspension of rear wheels -- dependent, balanced, on transverse springs.

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## MOTOR VEHICLES AND HIGHWAYS

### PLANNED DEVELOPMENT OF AUTO SERVICING FOR PRIVATE SECTOR

Moscow AVTOMOBIL'NAYA PROMYSHLENNOST' in Russian No 12, Dec 83 pp 1-4

[Article by Z. P. Rodionova and candidates of technical sciences V. K. Tolkachev and Yu. N. Frolov, Automotive and Automotive Engine Scientific Research Institute: "Automotive Service and the Prospects for Its Development"]

[Text] The system for the technical servicing and repairs of transportation equipment, which belongs to the population, was developed extremely intensively during the years of the 9th and 10th five-year plans. Nevertheless, the significant annual growth in the pool of cars, which belongs to the population, requires an accelerated solution for the tasks which are arising during this process. Therefore, the need to further expand the network of technical service stations, increase the volume and types of services that are provided by automotive services, etc., was pointed out in the "Basic Directions for the Economic and Social Development of the USSR During 1981-1985 and for the Period Out to 1990". The experience which has been acquired; an analysis of the work results of enterprises; and the research, design and technological work, which has been performed, permit the directions in which these tasks must be performed to be defined completely. These directions are the expansion of the automotive services production technical base, an increase in the amount and types of services provided, an increase in their quality and standards of servicing the population, and an improvement in the supply of spare parts.

In 1970, the country's automotive services had more than 900 technical service stations, workshops, shops, and guarantee points. The technical service stations were basically three- and five-bay ones which were insufficiently equipped with garage diagnostic equipment and had a limited listing of services provided. They were not sufficiently profitable and the quality of services provided by them, and the servicing standards were low. The level of satisfaction of the population's requirements for automotive services was 21 percent. Therefore, primary attention in the 9th and 10th five-year plans was devoted to the development of the production and technical base of automotive services: New technical service stations were built, and operating ones were reconstructed and technically reequipped. The largest percentage of the technical service stations, which were put into operation, were 11-, 15-, 25-, and 50-bay ones which were equipped with modern garage and diagnostic equipment. Thanks to the measures that were adopted, there were 2,085 stationary and mobile technical service stations, workshops, shops and guarantee points

with 17,264 bays in automotive services and a significant number of pay parking spaces by the beginning of 1983. As before, however, automotive services are not completely satisfying the population's needs for services. From this comes the need to further expand its production and technical base by completely assimilating the capital investments that have been allotted, using credits from the USSR Stroybank, creating mobile mechanized construction columns, and using light metal designs. The rational siting of technical service stations by regions, the coordination of their construction plans by the various ministries and departments, the reconstruction and expansion of existing technical service stations, and the building of specialized enterprises or sections to repair bodies are important reserves.

When speaking about the services which are provided by the automotive service system, it is necessary to point out that their volume increased more than 17-fold during the period 1970-1982 and 2.5-fold when calculated for one automobile. The nomenclature of services (the rust preventative treatment of bodies, subscriber services, consultation services for determining the cost of emergency repairs, etc.) has been considerably expanded. This growth, however, has basically occurred by increasing the number of workers: They have increased sixfold at a time when labor productivity has only increased 1.9-fold. Consequently, the intensification of production is becoming a very important reserve for raising the efficiency of automotive services. In particular, it is necessary to master new technologies and types and forms for servicing automobiles -- such as body work using stands for straightening bodies, the panel method of repairs, rust prevention treatment, the selection of paints from single pigment enamels, overhaul of units and assemblies, and the restoration of worn out items. It is also necessary to expand travelling servicing in accordance with a preliminary listing, technical help on roads, subscriber servicing, etc.

A special role belongs to the system for controlling automotive services. The fact of the matter is that at the present time automotive service enterprises are under the jurisdiction of different ministries and departments: the Ministry of Automotive Industry, the RSFSR Ministry of Motor Transport and the specialized republic Avtotekhhobsluzhivaniye organizations which are included in the Lithuanian, Uzbek and Estonian ministries of consumer services. Evidently, the time has now arrived to concentrate all of the country's automotive service enterprises in a single state body which would pursue a unified technical and economic policy on questions concerning the production, sale and maintenance of transport items belonging to the population and which would concentrate the material, labor and financial resources that have been allocated by the socialist society for satisfying the Soviet people's needs, into a single complex. Centralized control will insure a unified and scientifically sound approach to the development of automotive services, consolidate research and direct it toward improving labor productivity and the technical level of production and toward solving the following problems.

There are more than enough problems in automotive services. For example, 80 percent of the workers in technical service stations are now employed in manual labor. The shortage of stands for straightening bodies, drying and

painting chambers, and stands for mounting and unmounting tires and balancing wheels, and washing machines is being felt. There is no equipment in the technical service stations for electric welding in a shielding gas environment and for painting in an electrostatic field and few specialized mechanized instruments. The existing diagnostic equipment is being used ineffectively. The tasks of controlling production are also being resolved slowly. Thus, a dispatching service has not been provided in the major part of the technical service stations, and where it exists, its workers have no dispatching terminal or special documents which would permit the receipt and issuing of an automobile to be registered with a minimum expenditure of time. In a number of cases, shop workers are not provided with the necessary service forms and records. This lowers the quality of the operations that are performed by them. The work replacement coefficient of enterprises is still low.

The listed problems and many others, that have not been mentioned here, require a very rapid solution. This requirement is another reason in favor of centralization and the establishment of a single system for controlling automotive services. During the 11th Five-Year Plan, it is necessary within the framework of this system to equip the operating technical service stations with more modern equipment and mechanized instruments, expand the use of diagnostic equipment, increase the effectiveness of its use and of metrological support, build capacities for the production of non-standard equipment in amounts that would satisfy the requirements of the technical service stations, carry out the specialization of large technical service stations for repairing automobile assemblies, use more widely the straight-line flow method for repairing bodies and restoring items that wear out rapidly, organize the work to develop standard technologies for technical service stations and especially for new models of automobiles, and complete the development and introduction of standard technologies for repairing bodies including the use of the panel repair method. Centralization will also insure the further expansion of the scientific forecasting work of the Avtotekhobsluzhivaniye system and the work to correct the norms for the technical servicing and repair of new model passenger cars. It will also insure the development of the necessary standards and other technical guidance materials which insure the conducting of a unified technical and economic policy.

A very important direction in the development of automotive services is an improvement in the supply of spare parts. As native and foreign experience shows, a unified system is also needed here-- a system for supplying spare parts, materials and automotive accessories with a far-flung goods network of mechanized bases and warehouses and a single automated control system. Such a system began to take shape during the years of the 9th Five-Year Plan and at the present time it includes the supplying of spare parts to the special automotive centers and service stations of the AvtoVAZ, Moskvich and AvtoVAZ production associations and the republic specialized organizations of Avtotekhobsluzhivaniye. On the whole, the system is coping with the tasks which have been placed upon it to supply the pool of 10 million automobiles with spare parts, supplying 10,000 types of spare parts for 30 automobile models.

With each year, the enterprises of the branch increase the output of spare parts. Thus, output increased by 50 percent during the period from 1976 to

1981, and it will grow another 24 percent in 1985 when compared to 1981, including VAZ by 21.4 percent, AZLK by 30 percent and AvtoZAZ by 25-30 percent. However, it is not economically advisable to solve the problem of spare parts, especially spare parts in high demand, by only increasing the output of new items -- because of the scarcity of metals and the limitations on production capacities. The main direction for solving it is to increase in every way possible the amounts of worn-out assemblies and items, especially bodies, that are rebuilt, In order to realize this, the production associations of the Ministry of Automotive Industry are organizing the repair of automobile engines and assemblies at large technical service stations. However, a psychological reorientation of the automobile owners is also required. The fact of the matter is that the deficit, which is being maintained at the present time, engenders a desire to acquire spare parts as a reserve. This aggravates their shortage even more and hinders the elimination of the scarcity by the automotive and other branches of the industry which produce spare parts for automobiles. At the same time, the building and storage of a reserve are not very effective for automobile owners since it is difficult to guess which of the items will break down. In addition, a questionnaire survey, which was conducted by a branch of the Automotive and Automotive Engine Scientific Research Institute, showed that a stockpile of items valued at 100 rubles for the VAZ automobile decreases the average period of its idle time by three days a year all told and for the ZAZ automobile -- six days. Nevertheless the majority of automobile fanciers continued to create stockpiles for themselves -- only 13.3 percent of those questioned did not have them. The others kept them as follows: 63.1 percent -- up to 100 rubles, 15 percent -- 100-200 rubles, 5.1 percent-- 200-300 rubles, and 3.5 percent -- more than 300 rubles.

In order to improve the supplying of spare parts to automotive service enterprises and automobile owners, it is necessary to expand the warehouse system. That is why it was stipulated in the 9th Five-Year Plan that mechanized warehouse centers of the leading automobile plants that produce Moskvich and Zaporozhets cars and of the Ichevsk Machine Building and Ufimskiy Engine Building plants -- warehouse centers which have been built according to modern designs -- and 21 modern mechanized central republic supply bases in the Avtotekhnobsluzhivaniye system equipped with electronic computers and connected by teletype with the warehouse centers of the leading plants, be commissioned. However, the delay in the latter's commissioning does not as yet permit the effective replenishment of lowered stocks of spare parts to be arranged by means of timely deliveries from the warehouse centers of the leading plants.

Improving the supply of spare parts is impossible without decreasing the level of above-norm stocks and their involvement in the economic turnover: First, the use of spare parts is worsened with an increase in stocks above the required amount because those, which are lying unused in one place, cannot be used in another where there is a need for them; second, the turnover of stocks is slowed down and this leads to a worsening in the supplying of automobile owners with spare parts from the "frozen" material resources, a worsening in the use of storage areas and a lowering of the economic indicators of the material technical supply system's activity. Meanwhile, the above-norm stocks have still not been reduced to the minimum. In addition, the above-norm stocks



are growing at an outstripping rate not only with respect to the amount of funds allotted for spare parts but also with respect to the pool of automobiles and the amount of personal services. Although all of this testifies to an improvement in the support of automobiles through a growth in the amount of deliveries of spare parts to automotive services, it also points out the need for adopting urgent measures to control stocks and to introduce scientifically sound methods for managing them.

A calculation of the stock norms for the entire nomenclature of spare parts (8,494 items, including 3,278-- for the VAZ, 1,908--for the AZLK, 1,711--for the GAZ, and 1,597 -- for the ZAZ), which are being produced by industry at the present time, supplied to automotive service and trade enterprises and also stored in the warehouses of the central republic bases and technical service stations, has been made by a branch of the Automotive and Automotive Engine Scientific Research Institute together with the VPO logistics service workers and those of the republic Avtotekhobsluzhivaniye organizations as one of the measures to decrease the level of above-norm stocks. Instructions and other norm materials, which prescribe the procedure for accounting and monitoring the actual availability of spare parts in technical service station bases and warehouses according to their volume and nomenclature, have also been developed. This work is the beginning of the introduction of an automated logistics control system and is intended primarily for obtaining and distributing spare parts between consumers.

Another one of the ways to improve the supplying of spare parts to automobiles is to improve the trade in them. The following procedure seems most advisable. It is necessary to sell spare parts, whose production is not limited by production capabilities, through services at a technical service station and by means of sales through the technical service station network and sales points. The replacement of those, which are limited, should occur only through technical service station services.

During recent years, the sale of spare parts, automotive accessories and automobiles through the stores and trade points of the technical service stations has been expanded in the Avtotekhobsluzhivaniye system. At the present time, many of the republic's trade ministries are continuing to transfer the function of commerce in automobiles, spare parts and automotive accessories to enterprises in the Avtotekhobsluzhivaniye system. In our opinion, it is advisable to do this in two stages. During the first stage, one should concentrate the entire selling of spare parts in the Avtotekhobsluzhivaniye system in those republics where the necessary conditions exist-- a sufficient number of stores and sales points. During this, it is necessary to place the central republic supply bases at the wholesale fairs on the same footing as the wholesale bases of the union republic ministries of trade and to provide them credits and financing under the conditions which have been given to the wholesale bases of the republics' ministries of trade (i.e. according to trade turnover). During the second stage, it is advisable that the union republic ministries of trade and the consumers' cooperative societies transfer to the Avtotekhobsluzhivaniye system the network of stores, which belong to them, with the corresponding amounts of trade turnover, numbers, wage fund, maximum appropriation limits, economic stimulation funds, and their own working capital norms.

In conclusion it is necessary to point out that the accelerated solution of the primary tasks in expanding the production and technical base of auto services, increasing the amount and types of services and improving their quality and standards for servicing the population and also the improvement in supplying spare parts in the Avtotekhhobsluzhivaniye system will permit the important social and economic tasks, which were posed by the 26th party congress and which were defined more concretely in the decree of the CPSU Central Committee and the USSR Council of Ministers "On Further Expanding and Improving the Population's Personal Services", to be successfully carried out.

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## RAIL SYSTEMS

### DEPUTY MINISTER ON ER-200 EXPRESS TRAIN SERVICE

Moscow IZVESTIYA in Russian 22 Jan 84 p 1

[Article by A. Blokhnin: "Flying Over the Rails"]

[Text] On March 1 regular runs of ER-200 express trains between Moscow and Leningrad will begin. These are capable of speeds of up to 200 kilometers an hour. How are the railwaymen preparing for this major event? The story is told by Deputy Minister of Railways B. A. Morozov.

[Question] Boris Alexandrovich, what is the greatest technical difficulty to be overcome in breaking the 200-kilometer speed barrier on rails?

[Answer] It is difficult to single out any one specific element. In an undertaking like this the reliable, comprehensive resolution of all problems is what counts. As you know, the ER-200 train itself was created by the rail-car builders of Riga several years ago. It passed all tests, but up to now could not be put into regular service because of the technical condition of the tracks. These are currently being upgraded to handle high-speed traffic. Reliable newly-designed switches are being installed; on many sections the rails are being replaced. In all, 200 kilometers of rails between Moscow and Leningrad will be renewed this year. The embankment will be fenced off along almost the entire line.

A special commission meticulously checked out the condition of the overhead contact system. The wires must be stretched literally string-taut, otherwise even a harmless sag (by today's standards) can result in the wire snapping as it is hit by the pantograph of a train zooming over the rails at well-nigh the speed of a plane.

[Question] Won't such an unconventional speed be a tiring, unpleasant experience for the passengers?

[Answer] Quite the contrary. I have myself travelled at such speeds on numerous test runs. You are gripped by an exhilarating feeling of flight--flight on land!

The first high-speed expresses, due on the line in the beginning of March, will cover the distance between Moscow and Leningrad in 5 hours 20 minutes,

by the end of the year we hope to lower that to 4 1/2 hours, and next year-  
to four!

The various phases of the battle for speed reflect the need to further improve all dispatcher control, signal and automatic block systems. The inauguration of high-speed train traffic will entail a qualitative change in the jobs performed by the men on the line and the maintenance and repair crews in the depots. A program has been approved for switching to the mechanized maintenance of the roadbed. What this means is that the track-walkers and repairmen will be replaced by defectoscopic, truing, sleeper-processing and ballast-laying machines.

All these measures to allow the movement of passenger trains at speeds of up to 200 kilometers per hour will also ensure a sharp increase in the speeds of all other traffic, including freight trains.

[Question] Will high-speed traffic be introduced on other railways?

[Answer] Such tests are being conducted on the Moscow-Kiev and Moscow-Brest lines. There is a crying need for high-speed express trains on lines linking the cities of Siberia and the Far East.

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## RAIL SYSTEMS

### MORE ON ER-200 MOSCOW-LENINGRAD HST SERVICE

Moscow PRAVDA in Russian 3 Feb 84 p 6

[Article by V. Chertkov: "The Flying Express"]

[Text] The electric train now being readied at the Moscow locomotive depot of the October Railway for regular service on the Moscow-Leningrad-Moscow run will travel faster than some planes - 200 kilometers per hour. The flying express will cover the distance between the two cities in about five hours, with one stopover in Bologoye.

It is assumed that the HST will begin regular runs once a week as of March 1. The streamlined blue and white train will give its passengers a ride as smooth as if it had wings. They will settle comfortably into reclining chairs that swivel at window level (to experience the sensation of "flight over the rails"). The railcar builders of Riga, the engineers, designers and workers of many plants, depot specialists and experts from several institutes introduced quite a few novelties into the outfitting of the first express train in the country to devour distance at such lightning speed.

These include the ventilation system, special bogies, pantographs, special springs and suspensions that do away with jolts and bumps", says chief of the October Railroad's Moscow department L. Ya. Tolstosheyev. "The overhead contact system had to be reinforced, of course, and new switches are being installed, all to maintain the required speed. The automatic block systems have been put under the strictest supervision - the express will run along a "green street" all the way. In short, it is a huge effort, and along about the middle of February we should be able to do some trial runs, "tune-ups", so to speak, that will pass judgment on the performance of all departments in preparing for the inauguration of high-speed train traffic."

I learn further that the officials of the Ministry of Railways and its local subdivisions who are responsible for the reliability of the roadbed traversed almost the entire line on foot checking its readiness to handle the flying expresses. These, by the way, will soon be joined by two daily trains which do 160 kilometers per hour.

The HST will be departing at midday. En route passengers will be offered tea or coffee. The train has a rest car with a restaurant and bar. If you feel like a quick snack, one will be readily provided, if there is no hurry, you can pass a pleasant hour or two at a table. Carpet runners, soft lighting, and air conditioning are everywhere.

The ER-200 express will be driven by experienced, specially-trained locomotive engineers. A former electric train engineer myself, I have had occasion to take part in trial runs and sit at the control panels, and I confess to having experienced an incomparable feeling of flight over the rails. The roadside trees and shrubs bend to the ground, to open the window of the locomotive is to get your ears stuffed the way it happens at high altitudes, not every bird manages to get out of the way in time.

... Only a split second ago there was this speck on the horizon, and now it has grown into a hurtling train, and in another flash it is gone.

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## RAIL SYSTEMS

### RAILWAY MINISTRY PLANS WIDESPREAD USE OF 'TRANSPORT' COMMO SYSTEM

Moscow GUDOK in Russian 9 Feb 84 p 2

[Article: "New Radio Communications System", under rubric: "Official Section"]

[Text] The collegium of the Ministry of Railways has reviewed the question of the development and broad utilization by railway transport of the aggregate radiocommunications system "Transport". This system is being developed by enterprises and organizations of the Ministry of Railways, the Ministry of the Communications Equipment Industry, the Ministry of the Electronics Industry, and the Ministry of the Electrical Equipment Industry, in accordance with an overall coordinated plan. The components of the communications complex include stationary, transportable and portable stations for train, station, operational repair, and other types of radio-equipment.

Thanks to the utilization of the latest achievements in radio and electronics technology and the maximum consideration given to the specific function of each type of communications equipment, the units being developed are more reliable than the existing ones, and their operation will facilitate the introduction of more advanced technologies, speed up production processes, and heighten the effectiveness of production.

In 1982-1983 production got under way of the new portable radiostations intended for workers of marshalling yards, railcar and track technical maintenance shops, repair units servicing the electricity and power, signal and communications departments.

At the same time the collegium noted that the use of radiocommunications by the Transcaucasian, Central Asian, West Kazakhstan, Volga, Southeastern, Azerbaljan and some other railroads and transport enterprises is inadequate, new radiostations are not being put into operation quickly enough, the technical servicing and preservation of radiocommunications equipment are not getting the attention they deserve.

The collegium drew up a plan for the broad introduction of the "Transport" radiocommunications system in the period up to 1990 and determined the procedures for putting newly-arrived radioequipment into operation, replacing obsolete train radios by two-band radiostations of the ZhR-UK and "Transport" models, primarily on lines handling double and heavy-load trains. Approval was given to the training of radio engineers and technicians to oversee the large-scale adoption of new radioequipment by the railroads.

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## RAIL SYSTEMS

### OCTOBER RAILROAD ADMINISTRATION PERFORMANCE SCORED

#### Railroad Chief Petrov Fired

Moscow GUDOK in Russian 8 Mar 84 p 3

[Text] A. S. Petrov, longtime chief of the October Railroad, has not provided for the necessary direction of the railroad's work and for the carrying out of the collegium's decisions and the ministry's orders and instructions for the elimination of deficiencies in operational activities and for strengthening the railroad's economy. He has permitted displays of personal indiscipline and flagrant violations of the standards of conduct. Such an attitude toward the performance of service obligations contradicts the demands made of cadres and cannot be tolerated.

By order of the ministry, A. S. Petrov has been released from his duties as chief of the October Railroad for not having safeguarded the portion of work entrusted to him and for having permitted serious deficiencies in personal conduct.

#### Other Officials Reprimanded

Moscow GUDOK in Russian 18 Mar 84 p 2

[Unattributed article: "'Delays Again'"]

[Text] A. Reshchikov, a reader of our newspaper, has sent the editorial office a letter about instances, in which he has taken part, of delays of passenger trains arriving at Moscow Station in Leningrad. A paragraph was published in GUDOK No 282 for 1983 under the title "Delays Again". As N. Aleksandrov, the deputy chief of passenger service of the October Railroad, informed the editorial office, B. Gromov, chief of the Leningrad-Moscow department, was issued a reprimand for deterioration of the functioning of the traffic schedule of passenger and suburban trains. An order has been issued by the administration of the October Railroad to take the necessary organizational and technological steps to improve passenger transportation in this department.



### New Chief Appointed

Moscow GUDOK in Russian 18 Mar 84 p 3

[Text] By order of the Minister of Railways, Comrade Gennadiy Matveyevich Fadeyev has been appointed chief of the October Railroad and released from his duties as chief of the Krasnoyarsk Railroad.

Comrade G. M. Gadeyev was born in 1937, and is a CPSU member. He graduated from the Khabarovsk Institute for Railway Transport Engineers in 1961. He has been involved in leading work since 1963 as the chief engineer of a station; the deputy chief and chief of a section; the chief of the Nizhneudinsk, Tayshet, and Krasnoyarsk departments; and the first deputy chief of the East Siberian Railroad. He has been chief of the Krasnoyarsk Railroad since 1979. Comrade Fadeyev is a highly qualified specialist in railway transport. He enjoys deserved authority, participates actively in socio-political life, and is a member of the bureau of the Krasnoyarsk CPSU Kray Committee and a deputy of the Krasnoyarsk Kray Soviet of People's Deputies. He has been awarded the Orders of Labor Red Banner and "Mark of Quality", as well as a medal.

### Minister Konarev Instructs Leadership

Moscow GUDOK in Russian 21 Mar 84 p 1

[Article by unidentified GUDOK correspondent, Leningrad: "The October Railroad: Taking Up the Slack"]

[Text] The October main line is one of the main links in the country's railway network. How is its collective coping with the large and responsible tasks set for it? There was a thorough discussion of this at a conference of railroad, service, and department directors held in the administration of the October Railroad.

Speaking to those assembled, Minister of Railways N. S. Konarev observed that in recent years the level of operational work on the October Railroad not only has not increased, but has diminished. Such important indexes have worsened as the turnover of railcars and locomotives, a lower-than-planned-level section speed, and a chronic maintenance of a larger-than-standard rail-car park. As a result, the railroad has not fulfilled its basic indexes of tasks for 1983 and the first 2 months of the current year.

One of the chief causes of these deficiencies has been a reduction in inspection and fastidiousness and a lack of responsibility for the business being carried out on the part of a number of directors of the railroad and its services and departments.

GUDOK has already reported that the leadership of the October Railroad has been replaced. G. M. Fadeyev has been appointed chief of the railroad. At the present time, the minister emphasized, the main line's collective and its leadership must direct all their efforts toward putting an end to the

slackness that has been allowed and meeting the level of the requirements placed upon railway transport by the decisions of the 26th CPSU Congress and the subsequent Plenums of the party's Central Committee. It is necessary to develop more broadly the creative initiative of the railway workers and to make the best use of the experience of the better collectives to attain high efficiency and work quality in every subdivision, section, and workplace.

Greater tasks confront the collective in the matter of improving passenger transportation. Previously there have been complaints about the breakdown of the traffic schedule of suburban trains and about unsatisfactory passenger service at terminals and stopping points.

The October Railroad has made far from complete use of its internal reserves for production development and improvement of labor and living conditions for the workers. It is taking an unpardonably long time to resolve the question of construction of preparation points for railcars used to haul such goods as raw material for mineral fertilizers, forest products, and paper.

The minister noted that the necessary fastidiousness, principled conduct, and business-like attitudes are not being displayed in the resolution of such important questions as construction of housing for railway workers and improving their labor and living conditions. In the railway network, the experience of the vanguard enterprises that are making broad use of their opportunities to build housing and similar residential structures economically is well known. Unfortunately, this experience has found no application on the October Railroad.

The task is for every director and every executive to acquire a Leninist work style, to display socialist enterprise and initiative, and to make the best use of material and moral stimuli to raise work efficiency and quality.

The minister expressed confidence that the October Railroad's collective, which is celebrated for its remarkable revolutionary, combat, and labor traditions, will successfully carry out the tasks confronting it and will enter the ranks of the vanguard in the near future.

In the work of the conference took part V. N. Lobko, secretary of the Leningrad CPSU obkom; V. A. Morozov, chief of the CPSU obkom transport and communications department; and L. A. Khodchenkova, first secretary of Leningrad's Kuybyshevskiy CPSU raykom.

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## RAIL SYSTEMS

### VOLGOGRAD'S 'METRAM' UNDERGROUND LRT SYSTEM TO OPEN IN 1985

Moscow IZVESTIYA in Russian 30 Jan 84 p 2

[Article by A. Chemonin, IZVESTIYA correspondent, Volgograd: "The Tram Subway: A New Form of Transport Is Being Created in Volgograd"]

[Text] In recent days, Volgograd residents have been calling the IZVESTIYA correspondent's office frequently with questions connected with the impending opening of the local "subway." It will be different in many respects from those in other cities, and therefore merits having something said about it. The more so because in the future, the new form of transport will spread--by way of illustration, they are preparing to build a system like this one in Tallin--and here there have been many problems that have required early solution.

Thus, in Volgograd a rapid underground tram line is being built, the first in the USSR. It closely resembles a metro. The planners have called it a metrotram. But this word is not gaining currency among the population, and is used only by the press. Recently I heard from the underground workers: metram. Short and simple. But I decided not to use it in the newspaper immediately, and to get advice from linguists. It's completely natural, they said, that so elastic a language as Russian would reject a word with a double "tr." It's hard to pronounce. Metram, of course, is more "acceptable," but here we are not the judge, but the language itself. Time will show what's best....

It is clear that the new city "drayman" cannot be without a name. However, what is this system like?

The basic difference from a metro is that a tram type of car, rather than a railway type, will move underground at high speeds. The electrical feed is also conformable. At the underground stations, metram's lower platforms can also easily be altered to those of a metro at comparatively small additional expense if the need arises. Metro would be a luxury for today's Volgograd. But it's the right time for metram.

What is worrying the Volgograd residents in connection with this? First, changes in the routes of city transport after metram opens.

Some propose to keep all previous transport connections of the city's central part. Others call for revising them. Indeed, the intersection of metram lines, where metram comes out onto the surface, and existing tram and trolley routes will complicate the work of transport and create a dangerous situation for people. So several regular tram routes may be cancelled. There are also other arguments in favor of this.

I had occasion to become familiar with a complicated project of Moscow's State Institute of City Planning. It is correcting the city's transport map on a rational basis. Rebuilding? Yes, it cannot be avoided. Transfers of passengers from one type of transport to another? They will also exist. But such is evidently the lot of cities with a million residents. Muscovites also do not avoid transfers if they reduce the time en route.

It is thought that the ispolkom of the city Soviet of People's Deputies will make the right decision in this regard. These are questions of local significance, so to speak. But there are also problems far removed from the city dimension that require great attention.

Volgograd's metram will be rolling by the end of this year. Then will ensue a half year of familiarization with the new type of transport, the training of technical and administrative personnel, a re-equipping of the lines with other equipment and an electrical feed.... The rapid underground tram should be taking passengers in the summer of next year.

Three underground stations on the first line are now ready to be turned over: "Pioneer," "Komsomol," and "V. I. Lenin Square." They are spacious, and equipped with escalators capable of handling high passenger volumes. Their architectural design is contemporary. The route is almost ready. The contact network, the builders say, also will be ready on schedule.

And everything can generally be ready on schedule if the departments on which the normal work of the enterprise depends look after it in timely fashion. But metram will be transferred to the RSFSR Ministry of Municipal Services, which has no experience in operating it. It would seem that the ministry should long ago have set about preparing for mastery of the new enterprise. But on the contrary, it is delaying modernization of the rolling stock and the re-equipment of the present cars for rapid underground movement, for which there is different technical equipment.

Metram requires a new service organization with different, previously unfamiliar regular assignments and new service personnel. New specialists are also needed. For example, the station guard, the escalator operator, and the tram driver are of an entirely different class. They must be prepared and trained. Who will train them, when, and with what money? There is also complete vagueness regarding wage rates. All things considered, it is clear that the cost of one standard hour of work underground and at the new speeds should be different from what it is at present, but how? The financiers will not agree to equalize wages to metro standards, but they recognize the difference between existing and future standards. Resolution of these

questions also depends on the efficiency of the RSFSR Ministry of Municipal Services and on the timeliness of the efforts of the State Committee for Labor and Social Problems.

A big future is ready for metram. This means that this first example of the system must be regarded with appropriate responsibility.

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## RAIL SYSTEMS

### RAILWAYS COLLEGIUM SCORES MANAGEMENT FOR CONDITION OF RAILCARS

Moscow GUDOK in Russian 23 Mar 84 p 2

[Unattributed article in the "Official Department" column: "Complete Safety for the Railcar Park"]

[Text] The collegium of the Ministry of Railways has considered the question of railcar park safety on the Baltic and Donetsk Railroads. It was noted that on these railroads, the necessary work is not being done for prevention of damage to railcars, and the state of railcar park safety continues to be extremely unsatisfactory. In 1983, 9,600 freightcars were damaged during loading, unloading, and shunting. Among these were 111 refrigerator cars. Thereby, transport was dealt a large financial blow, and freight-carrying resources were considerably diminished. The state of railcar safety has not improved in January and February of this year.

A considerable number of railcars are damaged because of violations of the rules of shunting work, loading conditions, and the fastening of freight. It has been determined that at the Yasinovataya, Krasnyy Liman, Debal'tsevo, Shkirotava, Radvilishkis, and a number of other classification yards, the established speeds for railcar linkups are exceeded during shunting. The railway plan and profile have deviations from the norms, and many railcar delay mechanisms are maintained unsatisfactorily.

A great many railcars are being damaged on the access tracks of the Zhdanov and Makeyev metallurgical plants, the Azovstal' Plant, the Slavyansk Ceramic Combine, the Druzhkovskiy Machine-building Plant, the Baltic GRES, and other enterprises, and in the Riga, Zhdanov, Kaliningrad, and Tallin seaports, where the rules of loading and unloading work are often flagrantly violated and the requirements of state regulations are not met.

Many instances of concealing damage to railcars, delayed investigations, superficial inspection, and incorrect evaluation of damage cases have been established.

The directors of the railroads, services, departments and enterprises, and the inspection apparatus have not taken the necessary steps to stop violations and prevent damage.

The collegium also noted that there are also serious inadequacies in the maintenance of railcar park safety with a number of other railroads and departments, especially on the October, Alma-Ata, Northern, Volga, and Gorkiy Railroads and in the Kharkov, Ulyanovsk, Orsk, Borzna, Rostov, Baku, Tayga, and Irkutsk departments. In 1983, the number of damage cases involving refrigerator cars increased, and first and foremost on the October, Moscow, North Caucasus, Southeastern, and Far Eastern Railroads.

The Main Administrations of Railway Traffic, Freight, Railcars, Lines, and Signals and Communications have not demonstrated sufficient fastidiousness in carrying out the decisions of the collegium and the orders and instructions of the Ministry of Railways to improve the operational state of the railcar park and the prevention of damage to railcars.

The collegium has defined specific measures to improve railcar park safety and has made it incumbent upon railroad directors to take steps for the broader dissemination of the initiative of the Moscow enterprises and of V. F. Sokolov, an engineer at the locomotive depot of the Moscow Classification Yard, and of the experience of the collectives of Chelyabinsk Oblast and of the South Urals Railroad in maintaining railcar safety.

Reprimands have been issued to Comrades Plotnikov and Novikov, the first deputy chiefs of the Baltic and the Donetsk Railroads respectively, for unsatisfactory organizational work in maintaining railcar park safety, for the large number of instances of damage to railcars, and for their incomplete accounting for them.

The first deputy chiefs of the October (Comrade Surodin), Alma-Ata (Comrade Shukolyukov), Northern (Comrade Panasyure), Volga (Comrade Chebotarev), Southern (Comrade Guryev), Gorkiy (Comrade Pogrebnyy), and Krasnoyarsk (Comrade Tatarintsev) Railroads and the chiefs of the Kharkov (Comrade Zybin), Ulyanovsk (Comrade Birsan), Orsk (Comrade Kokurkin), Borzna (Comrade Kurchenko), Rostov (Comrade Fel'dman), Baku (Comrade Azadov), Tayga (Comrade Polovoy), Leningrad-Moscow (Comrade Gromov), Yaroslavl' (Comrade Kharchenko), Rtishchevo (Comrade Skrebnev), and Irkutsk (Comrade Komarov) departments have been cited for serious deficiencies in the maintenance of railcar park safety. They have been warned that if a radical improvement is not achieved in this regard in a very short time, they will be held strictly accountable.

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## RAIL SYSTEMS

### BRIEFS

**NEW ELECTRIC LOCOMOTIVE--Dnepropetrovsk--**A model of a new locomotive from the Dnepropetrovsk Electric Locomotive Plant successfully passed its testing at the Dokuchayevskiy Dolomite-Flux Combine in Donetsk Oblast. It is the start of a second generation of domestic industrial electric locomotives. The enterprise's shops and design bureaus are now preparing series production of these powerful tractors which will be used to remove ore from open mine pits up to 350 meters deep. It is not necessary to lay contact roads for them in the mine terraces; the machine has an independent power source--a 2,000 horsepower diesel unit. This decreases preparatory work time at the GOK's/mining and concentration combines/ and increases labor productivity of the miners. Depending on the terrain slope, the electric locomotive will haul a train loaded with 1,400-3,400 tons of mined material. [By I. Manevich] [Text] [Kiev RABOCHAYA GAZETA in Russian 12 Feb 84 p 4] 8524

**EXPANSION OF KHARKOV METRO--Kharkov--**The inhabitants of Kharkov are already accustomed to the metro. Its first line, connecting the central part of the city with the industrial area, is operating without a hitch. The metro builders have undertaken to put into operation this summer, a year ahead of schedule, the first sector of the subway's second line which is now under construction. It will connect the Saltovskiy housing area, where hundreds of thousands of laborers and white collar workers live, with the center of the city and the industrial area. The sector under construction crosses the Kharkov River. A covered tunnel, elevated on tall supports over the river floodplain and the highways, has been built for this purpose. In comparison with an open metro bridge, such a solution has an important advantage--trains will not be exposed to the effects of precipitation and temperature drops. The second line will become fully operational in 1985. [SOTSIALISTICHESKAYA INDUSTRIYA correspondent A. Vyatkin] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 28 Feb 84 p 4] 8524

**NEW RAILROAD TUNNEL CONSTRUCTION--**At the institute Lenmetrogiprotrans/Leningrad Planning and Surveying Institute for the Construction of Subways and Transportation Facilities/ they have begun working up planning documentation for future railroad tunnels in the Caucasus. The Leningrad tunnel builder specialists are well-known in our country. The Lenmetrogiprotrans engineers are not only involved with the development of subway routes for the city on the Neva. The Baykal-Amur Railroad tunnels, where many technical innovations have been used, have been constructed and are being constructed now according



to their plans. The collective recently completed the plan for a new two-way railroad tunnel to be built in Makhachkala. Their next project is a mountain-pass tunnel 23 km long. It will be constructed on a Caucasian mountain-pass railroad which the institute Kavgioprotrans/Caucasian State Planning and Surveying Institute of the State Industrial Committee for Transportation Construction, USSR/ is now designing. [By M. Tarasov] [Text] [Leningrad LENINGRADSKAYA PRAVDA in Russian 28 Feb 84 p 2] 8524

ADDITIONAL BAM SECTION OPERATIONAL--Tynda--On the eve of the USSR Supreme Soviet elections, train passenger traffic has opened on the Khani-Chara sector of the Baykal-Amur Railroad. The first train with passengers arrived in Chara on the night of 3-4 March. It left on the return journey early in the morning. The railroad line, which serves the Tynda temporary operations department, has become 144 km longer. Its total length is now 630 km. [GUDOK correspondent I. Krasikov] [Text] [Moscow GUDOK in Russian 5 Mar 84 p 4] 8524

CZECH-PRODUCED ELECTRIC LOCOMOTIVES--A group of staff members from the electric locomotive plant of the Czechoslovakian association Skoda is working on the creation of a locomotive with asynchronous, traction motors. Plans call for the first models to be built in the current five-year plan. They will start the production of third generation machines--more reliable in operation and requiring less expenditures for maintenance and repair. The new locomotive will begin operating on a three-kilovolt d.c. The power of its traction motors will be 2,600 or 3,700 kilowatts. The maximum speed will be 120 km per hour. [By K. Mironov] [Text] [Moscow GUDOK in Russian 14 Mar 84 p4] 8524

TESTING OF CARRIER CAR--Voroshilov Oblast--Final tests have begun of the special purpose railroad carrier built at the Stakhanovskiy Railroad Car Construction Plant. It is intended for hauling extremely large loads weighing more than 300 tons. The new carrier car, which is convenient to use, has two sections which can uncouple easily, allowing it to be used more widely. [PRAVDA UKRAINY correspondent A. Zharkikh] [Text] [Kiev PRAVDA UKRAINY in Russian 15 Mar 84 p 3] 8524

CSO: 1829/211

## MARITIME AND RIVER FLEETS

### MINISTER BAGROV ON RSFSR RIVER FLEET 1983 SUCCESSES, PLANS FOR 1984

Moscow RECHNOY TRANSPORT in Russian No 2, Feb 84 pp 4-5

[Article by L. Bagrov, minister of the RSFSR river fleet: "To Increase the Efficiency of Transportation"]

[Text] In the complex national economy of our country, water transport plays a large role. It connects many units of the developing economy together. That is why the rivermen of the Russian Federation have done everything to increase the efficiency of river transport. In 1983 alone, their socialist obligations envisaged the delivery of 7.5 million tons above plan along with a cargo turnover of 3 billion ton kilometers. It should be said right away that we accomplished this high goal! This great labor victory of the ships' crews, the personnel of the shore enterprises, and the organizations of the Ministry of the River Fleet [MRF] is the real contribution of the toilers in the water basins to the business of strengthening the power and prosperity of our great country.

It is desired especially to cite the work of the Ob-Irtysh United Steamship Company which was established only a year ago. This collective, under the difficult conditions of a build-up and complicated hydrometeorological conditions, successfully fulfilled the plan according to two indicators. It increased the tons of freight hauled by 8.4 percent compared to 1982, and the cargo turnover, by 9.5 percent. It thereby fulfilled the delivery of all freight to the oil and gas regions and even over fulfilled the established assignment by 300,000 tons. It may be said at once that the decision to organize the steamship company was correct, and the young collective passed a serious test with honor. It also is necessary to note the labor contribution to the common cause of the personnel of the Volgotanker, Kama, Pechora, North West Siberian, and the Volga United Steamship Companies.

The crews of the motorships "Volgo-Don-237" of the Kama Steamship Company (Captain Boris Mikha lovich Kobelev), "OT-2010" of the Western Siberian Steamship Company (Captain Vladimir Petrovich Cherepanov), "ST-762" of the Volga United Steamship Companies (Captain Vladimir Nikolayevich Yablokov) the "Semen Morozov" of the Volgo-Don Steamship Company (Captain Vladimir Alekseyevich Serobabin), and the Volga diesel-electric ship "Sovetskiy Soyuz" (Captain Boris Andreyevich Belodvortsev) bore with honor the banner of initiators of competition and successfully coped with all the intensive obligations.

Little has been done beyond the past navigation season. But certainly something must be said about what we expect in the 1984 season. In prospect for the Ministry of the River Fleet is the hauling of 524 million tons of national economic cargoes with a cargo turnover of 261 billion ton-kilometers. This far exceeds the 1983 assignment.

Another feature of the impending navigation season will be the fact that in the spring, summer, and fall we must increase freight haulage every month - not by 2.2 percent, but by 5.7 percent because it is impossible to count on such an early opening of the rivers in the European part of the Republic as there was in the spring of 1983, and the period for work of the fleet is likely to be the multiyear average.

So, right now, everyone must consider and critically evaluate what is to be achieved, must see to everything that still has defects and to all the unutilized potentials for improvement, and on this basis determine ways for further developing our transport sector and for developing measures which will unconditionally assure the fulfillment of the state plan for the delivery of freight and passengers.

For us rivermen one of the most complex questions is the state of affairs with the flow of cargoes. Despite the very important decisions which were adopted obliging the managers of the steamship companies and ports and the chiefs of the corresponding administrations of the ministry, Gipprorechtrans [State Institute for Planning River Transportation] and the TsNIIIEVT [Central Scientific Research Institute on the Economics and Operation of Water Transport] to radically reorganize their work on surveying and drawing freight traffic into river transport, the situation on this is still, for the time being, unimproved. So, after three years of the present Five-Year Plan, of the 34 million-ton total growth in haulage, 27 million tons are construction cargoes and only 7 million tons are the cargoes in the rest of the list. It is necessary to correct this situation and, what is more, not to allow that which took place in 1983, when, among 15 items on the planned list, only seven were fulfilled. Practically for us there is not a single steamship company which has fulfilled the assignment for the whole list of shipments.

Only by a total underestimation of the importance of this matter, along with a continuing misunderstanding of the problem by the managers of the steamship companies and the administrations of the MRF, can the fact that in 1983 the plan for the haulage of salts was not fulfilled by 60,000 tons, of slag by 16,000 tons, and of fluxes by 27,000 tons be explained.

In 1983, iron pyrite, coal, timber, and metals were slowly delivered into our transshipment ports and grain cargoes were not presented for shipment in the full planned amounts. I will not be contradicted and I will name the figure - in the eastern ports alone more than 12 million tons of freight planned for transshipment were not received.

We fulfilled the assignment for transportation in through-service, mixed, railroad and water communications by only 87.8 percent. About 76,000 loaded and 42,000 empty rail cars were not delivered to river ports and this led to much fleet idleness.

At the same time, however, such large ports as Osetrovo, Khabarovsk, Poyarkovo, Krasnoyarsk, Tobolsk, Yaroslavl, and several others constantly underfulfilled the monthly norms for the unloading of rail cars. What is more, our every third port unloaded a railroad train in an untimely manner and allowed delay in its processing.

There was an especially complex situation in the port of Osetrovo. Despite constant assistance in providing workers, the managers of the steamship company and the port repeatedly allowed an accumulation of rail cars which frequently led to the intervention of the directive bodies.

Such was the situation in the 1983 navigation season. In the future we must not allow more, similar occurrences. It is necessary to make a radical change in the work with shippers and receivers, to set up close contacts with them, to assign to this sector our most competent and energetic specialists, and constantly to try to find new, active flows of freight.

No less important in our economic work is the necessity to improve the utilization of the cargo fleet. By the decree of the directive bodies, it has been specified that the gross productivity of our cargo fleet as a whole be increased in 1985 by 6 percent relative to the 1980 level. For three years the growth of gross productivity should have been 3.6 percent. The actual gross productivity grew by only 1.5 - 2 percent compared to 1980, hence the planned assignments were underfulfilled. What conclusion follows from that?

It is necessary that the managers of the steamship companies once again critically examine the results of the utilization of the fleet and radically restructure the work of the operational management to increase responsibility for fulfilling the indicators of productivity. In the impending navigation season we are obliged to bring gross productivity up to a level exceeding that in 1980 by 4.8 percent.

The personnel of our ports have assured fulfillment of the assignments and socialist obligations for the volume of transshipment work and the output of nonmetallic construction materials. Work has continued on improving the interfacing of different kinds of transportation on the basis of the method, favored by the CPSU Central Committee, of the Leningrad transport workers which permitted reducing the layovers of the transiting fleet at the berths of ports by 1.2 percent, and of rail cars, by 2.4 percent, relative to the established norms.

An initiator of socialist competition is the enlarged consolidated brigade of the port of Novosibirsk, led by Anatoliy Dmitriyevich Slobodyannik, which fulfilled the plan ahead of schedule and fulfilled the increased socialist obligations for 1983.

Under the leadership of Laureates of the State Prize, Valentin Yakovlevich Tayurskiy and Viktor Ivanovich Zablotskiy, the brigades of the ports of Osetrovo and Rostov achieved great successes in speeding up the processing of ships and rail cars.

All the same, the work of the ports still is not satisfying the growing demands. Frequently the collectives of port workers are not fulfilling the chief work indicator, the reduction of layovers for processing in the fleet; hence there are unavoidable losses. The above-plan idleness of the fleet in the ports and at the berths of clients in 1983 alone amounted to more than 22 million tonnage days. There are serious deficiencies in the technical operation of loading equipment.

There are great potentials for improvement in a more regular pace of feeding the fleet into ports and to clients' berths for processing. On this matter something has been done. For instance, the control of the pace of shipment has been strengthened, and work on scheduling was improved. The above-plan idleness of the fleet awaiting processing was reduced by a factor of almost two compared to 1980. However, the fact that the figure itself is 13 million tonnage-days and is exactly as much as the fleet lost in above-plan idleness speaks for itself.

The operational management of the fleet therefore, should turn attention to the circumstance of sending ships off without a forecast of the situation regarding processing at the destination.

In the 1983 navigation season there was a significant growth in lost cargo in the Volga United, Amur, and White Sea-Onega Steamship Companies.

It is apparent that the managers of these companies must study the situation in this sector of operations and take additional steps for securing cargoes and strengthening the struggle against plunderers.

An important condition for improving the quality of transportation and the security of cargoes is the development of containerized and packetized cargo transport. Definite work in this direction is being done by the steamship companies together with the shippers and by elements of USSR Gossnab. Plans for deliveries in containers have been completed and the transport of cargoes in packetized form has grown. The proportion of this kind of transport is very small and the rate of its growth is insignificant. On the average, in the Ministry of the River Fleet, the idleness of containers has exceeded the norm by almost three days.

Much has been done in our steamship companies to improve the organization of passenger transportation, to develop the material and technical basis, to strengthen labor and production discipline, and to raise the standards of serving river tourists. There are still large deficiencies, however, in the organization of passenger transportation. Disruptions of the schedules of the ships are being allowed. Especially many complaints are being received from the public on the operation of ferries and the transport of passengers on small rivers. During the past two years of the Five-Year Plan, assignments in passenger miles have not been fulfilled.

In the impending navigation season the transportation of passengers must increase to 106 million persons. Providing for the projected growth in this transportation next year and especially in the distant future is possible only by a rapid renewal of the fleet along with an improvement in the use of the existing motorships.

With the modern intensity of fleet movements, the efficiency of its work, in many respects, depends on the technical condition of the waterways, ship-passing structures, and on the degree of reliability of navigation aids.

In 1983 the Konstantinovskiy integrated hydraulic development on the Lower Don river was put into service. The locks for the ships are working more stably and reliably. All the same, in some basins and especially in the Obsk-Tazovsk inlet, at Irtysh below Omsk, and on the Upper Lena there were cases when the depth was not maintained.

Because of weak labor and production discipline, in some subdivisions of our waterways establishment the navigation aids for ship passages are unsatisfactorily maintained and this sets up the prerequisites for emergencies.

It is necessary to dwell especially on the matter of the economical consumption of fuel resources. Many of our steamship companies and enterprises, and also the majority of captains and engineers on the ships, understand the circumstances and they plan and carry out measures for reducing the consumption of fuel and electrical energy.

The assignment in 1984 for saving diesel fuel for the RSFSR Ministry of the River Fleet has been set at 107,000 tons. It is necessary right now to work out measures for sharply reducing fuel consumption. An increase in a servicing or auxiliary fleet should be considered simply intolerable. The empty running of ships must be reduced, optimum speeds must be used and the level of the engineering operation of the machinery must be raised.

The industrial enterprises of our ministry, on the whole, have carried out the past winter's ship repair in an organized manner and have put a large part of the fleet back into operation in a timely fashion. The 1983 plan for standardized net production, with a growth in the productivity of labor of 4.6 percent compared to 1982, and the balance of profits and costs has been fulfilled.

But along with this, in some steamship companies, in preparing for and carrying out ship repair, serious deficiencies were allowed as a result of which the schedules for placing part of the ships into operation were disrupted. These cases were in the Volgotanker, Lena United, Amur, Yenisey, and a number of other steamship companies.

Crucially important in the timely and high-quality preparation of the fleet for navigating in 1984 is spreading the experience of the leading collectives and the initiators of socialist competition such as the collectives of the Krasnoyarsk and Gorodets ship repair plants and the crews of the Western Siberian Steamship Company. We must spread these valuable initia-

tives more widely and quickly to all our enterprises and include the fleet more actively in carrying out repair work. It is necessary to develop additional measures for raising the level of the engineering operation of the fleet and reliability in the operation of the motorships. The planned maintenance of shipboard equipment must be strictly carried out as also must be motor cleaning, dry-docking, routine examinations and checks, and other operations recommended by the normative documents. It also is necessary to staff the on-shore production sections completely.

Such activities of the Ministry as new ship construction require most intent attention.

In 1984 it is planned to build self-propelled and nonself-propelled tonnage in an amount significantly exceeding the 1983 assignment.

For the solution of this complex problem it is necessary to constantly improve the organization and the technology of shipbuilding, to actively introduce measures for reducing manual labor, and to broaden the brigade method of work.

Now, about the situation in the field of capital construction. Here we are still unsuccessful. The managers of such steamship companies as Volgotanker, Amur, Yenisey, the Volga United, Kama, and several others are not fulfilling the plan for the most important development facilities for river transportation and are carrying over to the end of the year the introduction of production facilities and dwellings.

In 1984 the ministry is faced with assimilating up to 700 million rubles of capital investment including 142 million rubles in construction and installation work. Construction should be completed on the port of Khabarovsk, on a number of facilities for the transportation exploitation of the Cheboksary and Lower Kama GES, on the buildings for the professional and technical schools for 960 students in Irkutsk and Omsk, and on many others.

The board of the Ministry recently considered the matter of scientific and technical progress in river transportation and subjected the managers of the Engineering Administration to sharp criticism. These are the managers who weakened exactingness for steamship companies, institutes and design bureaus, and did not provide for a sharp change to raise the level of organizational operations to form a unified policy in the sector.

All this indicates, on the part of the managers of steamship companies, enterprises, institutes and design bureaus, large omissions in and underestimates of the value of raising the quality of scientific research and of accelerating the introduction of the achievements of science and technology into production.

The organizations and subdivisions of the MRF are making a large contribution to the development of the Food Program. In 1983 forty new facilities for trade and public supply were put into operation. From our subsidiary farms the tables of the rivermen received 2600 tons of meat, about 13,000 tons of milk, and 11,000 tons of potatoes.

The condition of worker supply, however, is far from fully satisfying demands. The commercial servicing of the fleet is being expanded extremely slowly, and the network of stores and departments for receiving orders and selling foodstuffs, semifinished, and culinary goods on the grounds of the industrial enterprises is being weakly developed. Attention has been reduced on the development of a network of workers' dining rooms. So, here there is much work ahead.

At a Republic conference convened in Gorkiy, the results of the 1983 navigation season and the problems of river fleet workers in providing for the safety of navigation were considered. It is necessary that the appeal of the participants of this conference; namely, "The River Fleet - A model of order and high discipline", reach into the heart of every toiler on the blue river roadways. Discipline, a state of being well organized, and high conscientiousness in every riverman are the necessary conditions for successfully solving the problems confronting water transport.

As a combat program in the struggle for the achievement of the new limits, the rivermen of the Russian Federation took the decisions of the December 1983 Plenum of the Central Committee of the Party and of the ninth session of the tenth convocation of the USSR Supreme Soviet. The toilers of the blue river highways developed a broad socialist competition for the fulfillment or over fulfillment of the 1984 assignments and for an above-plan fulfillment of the productivity of labor by 1 percent and a reduction of costs by 0.5 percent.

To fulfill the targeted goals is the obligation of every worker in the collective.

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## MARITIME AND RIVER FLEETS

### DEPUTY MINISTER ON SUCCESSES OF SOVIET SHIPBUILDING

Moscow SOVIET EXPORT in English No 1(148), Jan-Feb 84 pp 8, 10-12

[Article by V.I. Smyslov, deputy minister of the USSR Ministry of the Shipbuilding Industry: "Soviet Shipbuilding: Rich Experience, Modern Trends"]

[Text]

Soviet shipyards simultaneously build ships of more than 100 types. These include seagoing and river transport vessels, fishing and fish processing ships, tug-boats, ice-breakers, floating cranes, docks, technical craft for the study and utilization of the ocean, launches and boats.

The shipbuilding industry's engineering facilities produce all sorts of standard ship-board equipment including marine diesels, steam and gas turbines, steam boilers, auxiliary and deck gear, fixed- and variable-pitch screws, rotating-blade vertical-axis propellers, propeller shafts, cargo cranes and air conditioners. Our instrument-making factories manufacture navigational aids, fish detection equipment for fishing vessels and automatic control systems.

The Soviet shipbuilding industry uses the latest equipment such as programme-controlled gas and plasma cutting machines and robot manipulators. The number of automated production flowlines, mechanised bays and ships, numerically controlled machine tools and devices keeps growing. Economic-mathematical decision-optimization methods and electronic computers are commonly used in production process control and in designing.

The Ministry's research institutes are busy improving ship forms, screw propeller and steering complexes, hull design, ship-board power plants, developing new structural and finishing materials, preventing corrosion, and reducing noise level in ship spaces.

The Soviet shipbuilding industry has accumulated rich experience in constructing a wide variety of ships and other floating craft, including unique ones having no precedent elsewhere in the world. In 1959, for instance, the world's first nuclear-powered ship, designed by Soviet specialists, was put into service. With a propulsion system's power rating of 32,340 kW (much higher than that of other ice-breakers) and extraordinary endurance, the Lenin nuclear-powered ice-breaker could pilot ships through very heavy ice. Along with the Arktika and Sibir nuclear-powered ice-breakers rated at 55,125 kW each, built in the seventies, the Lenin has made it possible to prolong the navigation season in Arctic waters.

Soviet designers have developed high-speed hydrofoils, the river-going Raketas and Kometas and the sea-going Kometas, which have increased the speed of passenger transportation 2—3 times. A total of over 750 such hydrofoils have been built, and some 150 of these were purchased by shipowners in 20 countries.

In the early 1960s the USSR built its first universal large-deck dry-cargo ships. The almost complete removal of the underdeck "pockets" and, consequently, of the horizontal cargo travel in holds has made it possible to speed up cargo handling operations by one-third. More than 150 such ships, of a 13,000—16,000 t deadweight, have been built. They are used by the Soviet merchant marine and by foreign shipping companies which bought more than 50.

Soviet designers have developed mixed (sea-river) navigation dry-cargo ships and tankers. These ships, with a carrying capacity of 2,000—4,000 tons, take cargoes from inland ports of the European part of the USSR straight to West-European and Mediterranean seaports without transshipment.

Large freezing stern trawlers rated at 1,470 to 5,145 kW constitute the core of the Soviet fishing fleet. Working together with refrigerating transport vessels, these have made it possible to fish in remote parts of the ocean using deep-water pelagic trawls.

In the seventies, Soviet shipyards started building roll-on ships, with an ingeniously-designed bow ramp. These ships are powered by a 36,750 kW gas-turbine power plant with a waste-heat recovery steam-turbine circuit which makes them extremely economical. It was then, too, that we started building ecologically clean double-bottom and double-side tankers, with special water-ballast tanks; ore-oil carriers of a 100,000 t deadweight; self-lifting and semisubmersible floating drilling rigs; and many other ships and floating structures of sophisticated designs.

All Soviet-built ships are noted for their excellent seaworthiness, rugged hulls (it would be appropriate here to remind the reader that Soviet specialists pioneered new welding methods and new extra-strong steels in shipbuilding), and a rational degree of automation. While developing them, designers pay special attention to provisions for sailing safety.

In the current five-year period (1981—1985) the Soviet shipbuilding industry is tackling and solving a number of crucial economic problems connected, in particular, with improving the country's transportation system, increasing food production, and developing oil and gas extraction on the continental shelf.

The keel has been laid for a 55,125 kW nuclear-powered ice-breaker and lighter-carriers of two types—diesel- and nuclear-powered—for delivering 70 LASH-type lighters to the mouths of Siberian rivers and to Arctic ports. Universal cargo ice ships are on the drawing boards.

Passenger hydrofoils have been modernized. The new-generation "winged expresses" are distinguished by a higher standard of passenger comfort and better seaworthiness. The construction of side-skogged hovercrafts will be continued.

Self-lifting drilling platforms with extra-long drill pipe strings and semisubmersible arcticized drilling rigs intended for operation in the ice-free parts of the northern seas will be built with a view to increasing oil and gas production on the shelf. We shall start making drilling ships and standard modules of stationary oil and gas derrick platforms' upper structures.

International division of labour is of utmost importance in building sophisticated modern ships. Therefore, we promote co-operation with shipbuilders and standard equipment suppliers in many countries, particularly with our opposite numbers in the CMEA member-states. Five-year plans for the mutual deliveries of ships and standard equipment are being co-ordinated. And many research and development jobs are being carried out as part of multilateral and bilateral co-operation.

Soviet shipbuilders are active in the International Test Tank Conference (ITTC), the International Marine Organization (IMO) and the International Organization for Standardization (ISO).

We promote scientific and technical co-operation with shipbuilding organisations in capitalist countries. Over the past few years, foreign firms held more than 20 seminars and symposiums with Soviet specialists attending. Long-term agreements on carrying out joint research projects have been signed with firms and national shipbuilding organisations of several countries.

To conclude, the Soviet shipbuilding industry is making various ships and floating structures which are up to international technical and quality standards. This is confirmed by the growing demand for Soviet ships on the part of shipowners of other countries, including those with highly developed shipbuilding industries of their own.

## MARITIME AND RIVER FLEETS

### SUDOIMPORT DIRECTOR ON SALES OF SOVIET VESSELS ABROAD

Moscow SOVIET EXPORT in English No 1(148), Jan-Feb 84 pp 3-6

[Article by O.S. Kropotov, general director of V/O Sudoimport: "Sudoimport-- 30 Years on the World Market"]

[Text]

SUDOIMPORT, Moscow, is well-known to businessmen, shipbuilders and shipowners in 80 countries. Our association does regular business with over 800 firms. V/O SUDOIMPORT, which first confined itself to import trade only, is now known on the world market as a major exporter of ships and shipboard equipment as well. Since 1960, the association has exported large-tonnage ships of a 2.5 million ton total deadweight. These go to many countries. Foreign clients have actually been supplied with over 2,600 dry-cargo vessels, bulk carriers, tankers, hydrofoils; technical and auxiliary craft: floating docks, tug-boats, suction-tube dredges, launches; fishing and fish processing ships: trawlers, refrigerators, etc.

V/O SUDOIMPORT promotes in every way mutually profitable trade, as well as scientific and technical links, with socialist countries and actively participates in the further deepening of the CMEA countries' economic integration. Trade with socialist countries constitutes two-thirds of the association's total commodity turnover.

This impressive result has been achieved largely through a steady deepening of specialisation and co-production. V/O SUDOIMPORT has signed, for 1981-1985, a number of multilateral agreements on specialisation in, and co-production of ships, shipboard machinery and radio equipment, etc. In the course of fruitful joint work there has emerged a clear-cut pattern of the CMEA countries' specialisation in shipbuilding and shipboard equipment manufacturing. This has made an extensive exchange of ships and shipboard equipment items possible.

Here are a few examples. At various times, the Soviet Union supplied socialist

countries with large sea-going vessels: the Baltika-type ore carriers of a 38,000 t deadweight each; tankers of an up to 16,300 t deadweight each; the Dnepr-type general cargo and container carriers (deadweight about 15,000 tons); the Zoya Kosmodem'yanskaya-type coal and ore carriers (deadweight about 50,000 tons). Besides, SUDOIMPORT has exported to those countries floating docks with a 12,000 ton capacity, floating cranes with a lifting capacity of up to 300 tons, a large number of sea-going and river hydrofoils and suction-tube dredges of various capacities. At the receiving end, we get ro-flow and ro-ro ships from the GDR; ferries, refrigerators, ocean-going trawlers and shelf-exploring ships from Poland; large series of sea-going and river craft, floating cranes, tugs, etc., from Hungary, Bulgaria, Romania and Czechoslovakia.

Under the agreements signed, the Soviet side has undertaken to meet the socialist countries' needs for sea-going and river ships' communication equipment and for

some other items of shipboard equipment. Socialist countries co-operate on a large scale in the sphere of shipboard instrument-making. Thanks to such co-operation Bulgaria, for instance, launched the production of marine electronic gear.

V/O SUDOIMPORT is doing extensive trade with firms of industrialised capitalist countries—Austria, Britain, Finland, the FRG, Greece, Japan, the Netherlands, Norway and others.

Our association has agency agreements with many foreign firms. These agreements provide not only for the sales of the association's export wares in a respective country, but also for the export of various services such as maintenance, personnel training, business information and advertising. SUDOIMPORT's agent firms include Matreco (Sweden), Koneisto (Finland), Interservice (Yugoslavia), H. Albert (FRG), Emecc Trading Ltd. (Canada), and others.

While carrying on active co-operation with its traditional trade partners, the association seeks to make new business contacts on new markets. For instance, we have started supplying Baltika-type fishing trawlers to Australia, Mauritania and New Zealand; sold a Soviet-built ro-ro ship of a 4,600 t deadweight to Brazil recently; and a number of oil and debris skimmers to Italy and Finland. These ships are giving a fine performance in many ports of Bulgaria, the GDR, Cuba and Poland, too.

Shipboard equipment ranks prominently on SUDOIMPORT's export list. We supply our foreign clients with a wide range of marine diesels rated at 16.9 to 15,876 kW (23—21,600 hp), diesel generators, compressors, deck gear, navigational aids, pumps, galley equipment, etc. Shipboard equipment is exported to over 35 countries, including all the CMEA member-states, Austria, Finland, France, the FRG, Italy, Japan, the Netherlands, Singapore and Yugoslavia.

V/O SUDOIMPORT puts much emphasis on improving the technical servicing of the ships and shipboard equipment it exports. Every year it sends top-notch technicians to the client countries to help install and adjust this equipment and put it into service. Under contracts with the buyers of Soviet equipment, we send our experts abroad for long periods to help build and test ships and put them into service. The association offers facilities for training foreign personnel in the USSR.

V/O SUDOIMPORT has set up consignment warehouses and servicing centres in Bulgaria, Cuba, Finland, the FRG, the GDR, Italy, Japan, Poland, Yugoslavia and other countries to guarantee urgent spare parts supply and to improve the servicing of the ships and shipboard equipment sold.

For many years now, V/O SUDOIMPORT has been offering every co-operation to the buyers of Soviet ships and other craft in capitalist and developing countries, keeping them supplied with spares and sending its experts there. This co-operation is extended to firms in over 30 countries—Britain, Finland, the FRG, Greece, India, Italy, Japan, Morocco, the Netherlands, Sweden, Tunisia, Turkey...

Recently, the association has moved into a relatively new form of activity, that of repairing foreign ships at Soviet shipyards.

Our export is also assisted by advertising. In 1983, for instance, the association arranged an exhibition of Soviet radio navigational aids in a number of socialist countries. There experts could see Soviet instruments offered for sale in actual operation. On many occasions, boats competing in the Danube regattas (Yugoslavia) were powered by Soviet outboard motors. A Soviet-made oil and debris skimmer was demonstrated in action in Helsinki port for representatives of municipalities and port services of Finland and other countries.

Readily using the advantages offered by the international division of labour, V/O SUDOIMPORT buys ships of various types and purposes from many countries. V/O SUDOIMPORT's activities are part of the overall effort aimed at carrying out the tasks confronting the Soviet national economy. Helping to increase the energy potential of the USSR is an important aspect of our work. Specifically, the association imports the equipment necessary for oil and gas prospecting on the continental shelf. To facilitate the fulfilment of the Food Programme of the USSR, V/O SUDOIMPORT purchases food-carriers, fishing vessels, vegetable carriers, grain re-loaders, fertilizer carriers, pumping plants, and other equipment.

Shipboard equipment and spares figure prominently on the association's import list. These are used at Soviet shipyards and also for the repairs of the ships we import.

One of SUDOIMPORT's important lines of business is ship repair. We place orders for that in 25 countries.

Our association has signed many ship export and import contracts covering the 1981—1985 period, and is now negotiating for 1986—1990.

In 1980, the association was granted the Gold Mercury international award. This reaffirmed V/O SUDOIMPORT's reputation of a reliable business partner, backed, by the modern Soviet shipbuilding industry.

## MARITIME AND RIVER FLEETS

### OFFICIALS PRAISE ADVANTAGES OF SOVIET-BUILT SHIPS

Moscow SOVIET EXPORT in English No 1(148), Jan-Feb 84 pp 15-18

[Interview with V.F. Zabortin, general director of the Kherson Shipbuilding Association, V.A. Yelemyanov, director of the A.A. Zhdanov Shipyard (Leningrad), V.D. Chistyakov, director of the Moscow Shipbuilding and Ship Repair Yard, and Z.N. Archaidze, director of the Poti Ship Repair and Shipbuilding Yard, by SOVIET EXPORT correspondent O. Gladky: "Reliability and Profitability: The Chief Merits of Soviet Ships"; date and place not given]

[Text]

*Correspondent: Our magazine has on more than one occasion dealt with your shipyards' work for export, and specifically described the ships built in Leningrad, Kherson, Poti, Moscow. Nevertheless, could you kindly remind the readers of the milestones in the history of your respective shipyards, and say a few words about the new vessels you can offer SUDOIMPORT's trade partners.*

**V.F. ZABOTIN:** To date more than seventy ships of our make have been exported. Their total displacement is over one million tons. We started producing for export in 1965, when SUDOIMPORT supplied the Bezhitsa-type dry cargo ships to the world market. These ships were distinguished by extra-large decks, and their underdeck pockets were reduced to a minimum. As a result, their deck cranes could deliver cargoes to any point of the hold. There was one crane per two holds and horizontal cargo shifts across a hold were no longer necessary. The reason why I dwell in such detail on this design of long ago is that it well illustrates the main objective of our work: to build reliable

ships which bring their owners maximum profit. The Bezhitsa has proved quite popular on the foreign market—thirty-four of them have been exported to date. This was followed by the Dnepr-type dry-cargo motorships.

*Correspondent: I've seen these ships abroad—in Yugoslavia and Bulgaria. Shipowners say they are pleased with their economic efficiency. Gaston Ševeljevic, General Director of the Jadranska Slobodna Plovidba, one of Yugoslavia's biggest shipping lines, told me they use the Dnepr-type ships on routes connecting the Adriatic Sea with the coasts of the USA, East Africa and Australia... Dimitr Mikhailov, General Director of the Bulgarian Merchant Marine, stressed the profitability of Soviet ships. "Even in the present difficult situation on the merchant shipping market, when charters are hard to come by," he told me, "all our ships are kept busy and operate almost without any downtime at all. Soviet shipbuilders have succeeded in finding the optimum tonnage, and ships of this class are always assured of a job. A high degree*

*of automation, modern navigational aids, excellent seaworthiness—all this attracts clients."*

**V.F. ZABOTIN:** Yugoslavian and Bulgarian shipowners are our traditional customers. We have just sent to the Yugoslavian shipping line another Dnepr dry-cargo ship, their eighth. Altogether, 28 dry-cargo ships of this series have been exported to Britain, Bulgaria, Cuba, the FRG, Greece, Romania and Yugoslavia. The Dnepr is a traditional production item. Our customers like this type of motorship so much that orders for it keep coming in, although we had intended to cease its manufacture. This motorship, with a deadweight of 14,900 tons, is powered by a 8,525 kW diesel engine. Its bulbous forward end and its streamlined shape enable the ship to pick up a speed as high as 18 knots. Its double-wide hatches, which take up 75% of the ship's breadth, accept standard containers which can be shipped either in holds, or on hatch covers. The ships carry cranes and can, therefore, handle cargoes on their own. The power plant is attended to by one mechanic on duty when on the

go, and requires no attendance when the ship lies at anchor. This means a 20% reduction of the crew. There are comfortable single cabins for every crewman and a gym on board. In a word, the ship offers the crew healthy working conditions, every modern comfort and recreation facilities.

As I have already pointed out, we've been building the Dnepr for many years. This does not mean that all the while we have been adhering to the original design, without changing anything. Over the latter years we have increased the motorship's deadweight by 1,500 tons, improved the superstructure layout, adapted the holds for carrying American-standard containers and increased the container-carrying capacity from 320 to 458. Electric power plant's capacity has been raised by 25%. As you see, there are quite a few improvements on the original design. Besides the dry-cargo ships, we build for export the Nakhodka type tankers of a 29,500t deadweight. This tanker, too, features many improvements on the original design: a higher deadweight, more tanks, a modernized cargo handling system, inert-gas anti-blast tank protection.

**Correspondent:** *We wrote about this tanker in 1979. Its deadweight was 27,000 tons then. So, over the years you've increased it by 2,500 tons?*

**V.F. ZABOTIN:** Yes, and the same goes for the Dnepr. SUDOIMPORT has sold five tankers of this type to Greece's Athenian Tankers Management, a leading vegetable oil shipper. This firm has ordered three more tankers from us. Now we are building the first tanker of a new series which conforms to all the rules set by the latest international conventions on preventing oil spills and on protecting human life at sea. The new tanker will be more profitable than its predecessors thanks to its mechanised tank washing systems and to its isolated ballast tanks.

**V. A. YEMELYANOV:** You have mentioned Yugoslavia's Jadranska Slobodna Plovidba company. It has been using two ships of our make, too—one since 1980, and the other since 1982. These are the Neva ro-ro motorships noted for their profitability. These vessels are unparalleled in their class for design and cargo handling efficiency.

Its specifications are as follows: displacement, 10,600 tons; deadweight, 4,550 tons; net cargo capacity, 11,610 m<sup>3</sup>; main propulsion engine power rating, 4,483.5 kW; speed, 17 knots.

The motorship is designed to carry wheeled motor vehicles, 64 trailers (40'), palletised cargoes, 250 international-standard containers (20'). It may also carry 493 Lada-type cars and dry inflammable cargoes.

This ship is eminently seaworthy and easy to steer. It is equipped with passive stabilizing tanks and two forward-end transverse propulsion units which add to the ship's manoeuvrability in mooring.

The most ingenious design feature of the ship is its bow ramp with a 65t cargo-carrying capacity, capable of turning through 30° both ways. When on the go, the bow ramp is fully retracted into the hull. Such a bow ramp makes it possible to carry out loading operation on the either side and on the centre-line plane, to moor with either forward-bow or waist lines, to load cargoes up from, or to unload them onto berths of various heights. When a loader passes along a side-swung bow ramp it causes no list, which makes a continuous loading of heavy machinery possible. All these features of our bow ramp make the ships more universal and profitable. Thanks to the absence of stanchions in the hold and in the 'tween deck, cargo handling operations can be carried out much more quickly.

My colleague here, Director of Kherson Shipyard, has mentioned the changes they have made in the Dnepr design over the years. We've been working along the same lines. As we built the Neva-type series-produced ship we made changes in their design to meet the new standards set for the ships of this class by the Register of the USSR and by International Conventions. Specifically, we have added to the "Neva" a stern anchor gear necessary when unloading and loading a ship lying at anchor with its bow to the berth. Besides, we custom-equip the ships we build for foreign companies with cargo fasteners of Swedish make, British life rafts, Polish biochemical water purification plants, Danish automatic main propulsion engine remote control systems, etc.

Yugoslav sailors have every praise for the ships of our make.

In 1982, our Shipyard built its first modernised version of the Neva ship. It differs from its predecessors in that its overall length has been increased to 140m with a view to enlarging the cargo deck area, raising the deadweight and the cargo-carrying capacity. As a result, the holds' bale capacity has grown by 18% to 13,660 m<sup>3</sup>; container-carrying capacity (20')—by 23% to 298 items; the Lada-car carrying capacity by 25% to 623 cars; and the ship's deadweight has grown by 20%. As to operating speed, it remains practically the same (about 16.5 knots). This prototype modernised model is now giving efficient service to the Azov Sea Shipping Company (USSR).

**Z. N. ARCHAIDZE:** Speaking of profitability, our "Kometa" hydrofoils revolutionised passenger transportation by sea. They have made many marginal routes profitable.

**Correspondent:** *I was told in Varna that twelve "Kometas" do all the passenger carriage along the Bulgarian coast of the Black Sea—and are always full. In Yugoslavia, when I boarded an island-bound "Kometa" I saw that all the other seats were occupied...*

**Z. N. ARCHAIDZE:** That's exactly what I mean. These hydrofoils' speed and comfort attract passengers and bring profit to shipowners. Do you know how they advertise our hydrofoils in Greece?

**Correspondent:** *"While you creep along on a conventional motorship, a 'flying dolphin' will overtake you, reach its destination, get back and then catch up with you again." Is that right?*

**Z. N. ARCHAIDZE:** Yes. The "flying dolphins," as the "Kometas" are known there, have become the chief means of communication among Greece's numerous islands.

**Correspondent:** *How many "Kometas" of your make has SUDOIMPORT exported?*

**Z. N. ARCHAIDZE:** Over 80. They have proved themselves in Finland, the GDR, Greece, Italy, Poland and other countries. And, of course, in Bulgaria and Yugoslavia, as already mentioned here.

**V. D. CHISTYAKOV:** As for our Zarya motorships, they can make most rivers navigable. Drawing no more than 60 cm, they negotiate any shoals and sandbanks quite easily. Bugged up and reed-overgrown river sections are also no problem at all for our Zaryas. A Zarya motorship carries 86 passengers at a minimum speed of 40 km/h. You can easily see how shipowners will profit from taking hikers, anglers and hunters to places previously hard of access. And, of course, the Zarya is an indispensable means of communication in sparsely populated areas.

Travel companies will also benefit a great deal from the Moskva pleasure motorboat of our make. Seating 243, it is ideal for evening and week-end trips.

**Correspondent:** *I saw with my own eyes how popular the Moskva is with the residents of Budapest. On hot summer days, the motorboats were full practically any time from early afternoon on.*

**V. D. CHISTYAKOV:** Our motorboats have proved a great success in Hungary and in other countries—Australia, Bulgaria, Czechoslovakia, the GDR, India, Poland, Romania and Yugoslavia. In 1983, we built a Moskva-type motorboat for the FRG. As far as I know, it's doing well there.

**Correspondent:** *Well, let's get back to hydrofoils, if you don't mind. As we all know, the Komet has been replaced by the Kolkhida recently. What are the new hydrofoil's advantages over its predecessor?*

**Z. N. ARCHAIÐZE:** As we developed the new hydrofoil we pursued several objectives. First, a higher standard of passenger comfort, to reduce the noise and vibration levels, to cut down vertical overloads in pitching, to improve air conditioning on board the winged express. Second, to raise the ship's economic efficiency, i.e. to increase its speed, passenger-carrying capacity and to improve its seaworthiness. Third, to make it still safer. And fourth, to make it less environment-polluting. Let us see how we set about fulfilling these objectives.

In order to raise the standard of passenger comfort, we moved the power plant aft, placed the main propulsion engines on effective shock absorbers, introduced an automatic pitch control system and installed air conditioning in the saloons. In designing the wheelhouse, we drew on the basic principles of human engineering.

To make the ship more profitable, its passenger capacity has been increased by 14 seats (basic model) and 34 seats (tourist model). The two models differ in that one has cabins and a snack bar, and the other does not. The speed has been increased from 31 to 34 knots; displacement, by 10 tons; and cruising range, by 10 miles. All-round trials of the prototype Kolkhida have confirmed its excellent seaworthiness. At wind force 5, and with waves 2.5—3 m high, the ship steers well, builds up sufficient lift and keeps it up at all relative bearings.

As for safety, I can say that the Kolkhida conforms to the IMCO Code safety standards, to international conventions on communication facilities and to the USSR Register's Rules on the Conventional Equipment of Sea-Going Vessels. Besides, the hydrofoil answers international conventions on preventing sea pollution.

**V. D. CHISTYAKOV:** We are also developing a motorship of a new type intended for lakes and man-made seas. It will carry 150 passengers. As soon as the prototype model is ready, I shall dwell on it in more detail.

**Correspondent:** *Today we are discussing the profitability and economic efficiency of the ships built at your yards. Profitability depends largely on how strong, long-lasting and reliable a ship is. These qualities are attained thanks to modern equipment and processes. What are the technical standards of your shipyards? What advanced production processes do you use?*

**V. F. ZABOTIN:** The latest techniques are used throughout the ship building cycle. With a set of mathematical methods, we solve the problems involved in analytical representation of ship-lines, in the automatic formation of the mathematical model of a ship, in the detailed drawing of hull structures and in the automatic location and spacing of blanks on plate material. We constantly raise the standard of assembly and welding automation, and co-operate with leading research organisations of the USSR. We used semi- and fully-automatic CO<sub>2</sub>-shielded arc welding with consumable electrodes and automatic welding of vertical field joints in the ship's hull right on the building berth. New welding techniques—flux-cored and strip-electrode—are used on a wide scale. Welding operations have been mechanised 80%. Now we mount a unit

for the simultaneous assembly and welding of vertical field joints on the building berth and for the automatic welding of horizontal butt joints in a vertical plane. We employ the large-block method of ship assembly. The ship's hull consists of four blocks of a total weight of up to 2,500 tons, complete with the pipeline systems and the ship's gear, the main propulsion engine included. The final assembly of the main propulsion engine and of the shaft line is done at the building berth, not afloat.

**V. D. CHISTYAKOV:** The Moscow shipyard uses the flow-line large-block method of shipbuilding too. We build ships on a conveyor line manned by composite teams, each assigned to a certain berth station. This has a good effect on end product quality.

**V. A. YEMEL'YANOV:** At Lenin-grad shipyard we have introduced a number of advanced practices to make our ships better still. Specifically, we lay out the ship's structural lines to actual size by mathematical methods, using a computer. A mathematical model of the ship's hull guarantees extra-precise outlines of the vital components, obviates the need for butt-jointing, helps improve the section assembly quality and saves much effort on the machining and assembly of the ship's structural members. Components are cut on the mechanised flow lines of the Kristall-type machines.

The ship's structural parts are assembled in a specialised shop, with all the fixtures placed in the assembled sections. Ready sections are primed to protect them from corrosion on outdoor slipways. The fixtures are slushed.

When assembling the hull on the slipways, special attention is paid to welding quality, to the outward appearance of thin-sheet parts of the superstructure. Automatic and semi-automatic CO<sub>2</sub>-shielded arc welding is used, as a rule. All the vital welds undergo gamma ray checks.

The most complicated units of the ship—the universal swinging bow ramp, the main propulsion engine on the frame, and others—are assembled in specialised bays. Extra-ship assembly improves workmanship and makes for more efficient step-by-step checking...

**Correspondent:** *Thank you all very much for taking part in our discussion. The editors wish you further success.*

## MARITIME AND RIVER FLEETS

### CONTRIBUTIONS OF RIVER FLEET MINISTRY'S PLANNING/DESIGN BUREAU

Moscow RECHNOY TRANSPORT in Russian No 12, Dec 83 pp 7-9

[Article by V. Tokmakov, chief, Ministry of the River Fleet Central Planning and Design Bureau: "In Creative Quest"]

[Text] The year was 1945. Our country had begun to restore the economy devastated by the war. Restoration and development of the river transportation system had become a particularly acute problem. The fleet was in need of repair, required replacement and spare parts, and it was absolutely necessary to organize the construction of river vessels in the sectors' enterprises. Therefore, the decision was made in September 1945 to resume the activities of the Central Technico-Design Bureau in Leningrad, disrupted by the war, and to open a branch in Moscow.

Heading the new subelement were experienced specialists--Chief V.G. Belyakov and Chief Engineer V.M. Iovlev. During its first years, the small collective, numbering 108 people in 1948, accomplished significant work: several types of grab-cranes for various cargoes were designed, technical documentation was developed for the production of replacement and spare parts for steam machines, internal combustion engines, and other onboard machinery, and a number of designs were created for vessels and vessel-associated devices.

Major developments were the designs for vessel steam machines of the MP-10 and MP-12 types, of wheeled tow motor vessels for Siberian and Central Asian rivers, of low-draught cargo motor vessels for lesser rivers, and of large wooden barges. During this period, the collective also worked on systems and equipment to prepare water for steam boilers, devices for the remote control of steam machines and diesels, and on equipment to automate onboard boiler operation. Technology and outfitting were also developed for the casting and heat treating of a wide range of ship machinery parts.

A significant number of the developments were executed at a rather high engineering level and were successfully realized. For example, the major series of MP-10 steam machines, produced by the "Teplokhod" plant, have functioned reliably on BOR-500 type tows for more than 30 years.

The collective, formed from highly-qualified specialists, weathered the coming-into-being period in a relatively short time, and grew to an independent



planning/design organization. As the result of growing requirements, in November 1948, based upon the Moscow branch of the TsTKB (Central Technico-Design Bureau), the USSR Ministry of the River Fleet Central Planning/Design Bureau was established with branches in Kiev and Gorkiy. The newly established organization began to rapidly and confidently expand its areas of activity and to increase the volumes of design and normative operations.

The following are primary stages in the 35-year history of the TsPKB: the organization in 1957 of a pilot-experimental plant, transfer of the bureau in 1964 from the control of the MRF Technical Administration to subordination to the Administration of Port Organizations and Mechanization, occasioned by the TsPKB's specialization in the design of port transshipment equipment and complex mechanization of loading/unloading operations, and finally, in 1977, the completion of construction of the TsPKB Planning/Production Complex.

During the time since the establishment of the TsPKB, a great deal has changed in river transportation. Wooden barges have been replaced by metal ones, and vessels with steam-powered units by motor vessels. A portion of the new vessels has been designed by TsPKB. They include R85 and R89 design barges, cargo motorships and tankers of the 2036, R25B and 1754 designs, major series which were built in enterprises of the Lena United Steamship Company. River ports have been equipped with TsPKB-developed pneumatic equipment for the transshipment of grain and cement, with floating hydraulic loaders, grab-cranes for various cargoes, and cranes of all types.

Bureau specialists have designed unique vessels having no counterparts, including the powerful chain tug for the Kazachinskiy Rapids on the Yenisey, the self-unloading R113 design barge for transporting cement with automated loading and unloading employing the closed method, and the R68A and R116 design hydraulic loaders.

The collective of TsPKB designers played a leading role in building hydraulic mechanized equipment for the unloading of mineral-construction materials from vessels. In 1960, the pilot/experimental plant built the first hydraulic loader with a capacity of 600 tons/hour according to a TsPKB design. Since then, specialists from the bureau have built a series of such equipment, raising capacity to 2000 tons/hour. At present, river ports operate more than 100 hydraulic loaders built according to various TsPKB plans. They provide the ports with 37 percent of the total volume of sand and sand-gravel mix shipped by the river fleet.

Bureau specialists actively participated in setting up production at the sector's industrial enterprises of replacement and spare parts for shore and floating cranes, shipborne equipment, and equipment for dredging vessels. Since 1958, the metallurgical department has developed approximately 100 designs of new and for the rehab of existing casting and heat-treat shops and sections. Their realization ensured a significant increase in the technical level and efficiency of casting production and heat-treating at plants in the sector. Numerous technological processes and outfitting have been developed for chill-casting of cylinder sleeves and aluminium pistons for diesels, production of parts using quick-hardening mixtures, tempering of parts using

TVCh (high frequency current), and the blowing of molten cast iron in cupolas with oxygen.

As the lead design organization of MRF in building grab-cranes, the TsPKB has developed more than 120 designs for this type of equipment. Presently, 12 plants in this sector are mass producing grab-cranes in more than 20 versions. In addition, the pilot/experimental plant is producing six-seven types of grab-cranes in smaller lots. In actuality, approximately 95 percent of grab-cranes used by river ports have been developed by the TsPKB. Many of those are marked by design originality--for round timber, three-jawed for sand extraction, for dust-like cargoes with a special sealed jaw edge, tong-shaped, etc.

The continuous work of the specialists to improve the design of grab-cranes, to reduce their unit weight, improve reliability and service life is yielding results. According to information from GIIVT (Gorkiy Institute of Water Transportation Engineers), the latest models of grab-cranes are increasing crane productivity by 15 percent, and the amount of total tonnage processed with correct operation is now 250,000 to 300,000 tons before repair. Today, grab-cranes of TsPKB design are superior in design characteristics and operating qualities to foreign models with which we are familiar.

Development of containerized and packet shipping dictated the necessity for developing appropriate seizure devices and accessories for cranes and lift trucks. This work was performed also by specialists from the TsPKB--grippers were built for 3, 5, and 20-ton containers and various types of cargo gripping devices were designed for package-unit cargoes.

In addition to planning/design activities, the bureau also is involved in work to establish norms for labor and material expenditure. Normatives have been developed and implemented in industrial enterprises and ports pertaining to labor for employees in the high-population occupations, as have norms for material expenditures in machinebuilding, shipbuilding, and ship repair. These are regularly reviewed and adjusted.

The TsPKB functions as a lead organization in the sector in matters relating to price formation, providing expertise in estimates, establishes and reviews prices for industrial products, develops methodological and instructional directives in these matters, and compiles price references and pricelists. The bureau is also vested with the responsibility for the condition and technico-economic validity of the technical-normative documentation in the sector which provides for improved quality of cargo shipments, of loading-unloading operations, and of industrial products. As a result, a lead scientific-research department for standardization was established within its framework.

Since 1981, the TsPKB has been charged with developing layover norms for ships in port.

A new direction has been the work in planning shipping via internal waterways and on the "river-sea" lines for heavyweight and non-standard cargoes. These plans have successfully supported such operations as the transporting of the telescope mirror from Moscow to Rostov on the Don, shipping columns weighing

130 tons each from Havre to Baku, cranes from Hamburg to Baku and from Bremen to Iran, and other heavyweight and large-dimension equipment.

The TsPKB is a multi-planning organization, but its collective sees its main role in work on port associated matters, in increasing its share of the overall volume of operations, which to this point does not exceed 40-45 percent.

In recent years ties with production are being strengthened and the volume of operations through direct contracts with enterprises is being increased. In 1983, this volume constituted 40 percent of the total program. An example of long-term cooperation among planners and production personnel are the relationships established with the Lena United Steamship Company, defined and reinforced by the agreement regarding creative cooperation in 1979. In recent times, 12 different projects have been developed for that entity, some of which are now being realized. To promote more exact planning and coordination, a comprehensive goal-oriented program for combined operations to build new equipment has been developed, which will provide full resolution of the problem of comprehensive mechanization for transshipping operations for bagged cargoes in the port of Osetrovo.

The collective possesses great creative potential. This includes the service of specialists who have worked there many years and who continue to successfully work today. Among those are B.V. Shibanov, A.G. Dolgiy, L.I. Subbotin, I.G. Shapiro, B.L. Kuperman, M.L. Linetskiy, A.I. Smantser, V.F. Kita, G.A. Simes, and other veterans. Under their direction, V.I. Arsenov, A.I. Polyakov, A.A. Dudek, M.V. Chikunov, A.K. Tatarenkov, and S.N. Bukina grew and became established highly-qualified specialists.

The work of the collective has received positive evaluations frequently. It was awarded first places and the Challenge Red Banner for results attained in the republican socialist competition. The TsPKB is a continuing participant in the USSR VDNKh: it has been presented three diplomas, and many workers have been awarded exhibit medals.

However, the collective is still working below its capabilities and is not satisfying today's requirements completely. With correct workload and the full utilization of its technical potential and the elimination of certain shortcomings, it will be possible without additional expenditures to sharply increase the pace for developing new equipment. For this, it is necessary to solve two problems first and foremost.

As noted above, the TsPKB is not a purely planning and design organization, but is involved in various types of activities which to a large degree are not related to design developments (normative, economic, methodological, standardization, etc.). The portion of such work in the overall volume of operations comprises 34 percent. Moreover, during recent years, there has been observed a trend toward its constant growth, while the volume of planning and design operations is being reduced. Is this correct? After all, the designers and technologists are creating new equipment and progressive technological processes. It is mandatory that this situation be changed and design departments of the bureau be expanded by transferring planning-design work

to it relating to port matters, work which is being done by other Central Design Bureaus and planning institutes, and at the same time reduce work of an economic and normative nature.

The second problem is the implementation of developments in production. There are two ways to do this: to more fully involve the production capabilities of clients and to better utilize the capabilities of the pilot/experimental plant. It must be noted that the situation is superior with the introduction of developmental results carried out according to direct agreements with the enterprises, inasmuch as the latter order, as a rule, vitally necessary projects and implement them without delay. Regarding work which is projected in plans as ordered by the ministerial administrations; this work is implemented in production extremely slowly.

The TsPKB pilot-experimental plant, as follows from its name, must be involved with the manufacture and finishing of pilot and experimental prototypes of new equipment. It is however, continuously overloaded with the production of series products. In 1983, for example, the production of pilot and experimental prototypes constituted only 35 percent of the overall volume, with remaining capacities directed toward series production. The same general ratio applies for 1984.

Series production can be carried out by any plant or shop. Therefore, the use of pilot/experimental plant capacities for this production to the detriment of creating pilot prototypes for new equipment cannot be justified. However, we have not succeeded in curtailing or even reducing the output of series products despite the fact that in 1977 it was noted in a collegial decision of the Ministry of the River Fleet that "the TsPKB and the pilot/experimental plant, specialized for planning and building of port machinery and machines, tasked with areas outside their purview, render insufficient assistance to the ports in the mechanization of loading-unloading operations". In 1980, the practice of using the pilot production was subjected to sharp criticism in an article published in the magazine, "VODNYI TRANSPORT" ("Water Transport"). Unfortunately, nothing changed after this.

A solution to the current situation and a perspective for development we see in the total combination of the TsPKB and the plant in an integrated planning/production organization, with the plant becoming a pilot production element, losing its organizational independence. That such an association is indicated, we cite the long-term positive experience of similar organizations in other areas, particularly the Baltic TsPKB with the Ministry of the River Fleet pilot production facility in Leningrad.

This approach will eliminate the breach between planning work and the production of pilot prototypes, which currently extends introduction by 2-3 years. The concentration of design efforts and production personnel in a single collective whose mission is to create new equipment, will eliminate certain discontinuities, mutual complaints, and superfluous coordination.

The problem of creating new equipment is very complex both in a technical as well as an organizational sense. This obliges us to responsibly resolve all problems and to ensure the shortest route to everything new and progressive for port berths and industrial enterprise shops.

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## MARITIME AND RIVER FLEETS

### CONTAINER SHIPS DESIGNED FOR LENA BASIN OPERATION

Moscow RECHNOY TRANSPORT in Russian No 1, Jan 84 p 35

[Article by A. Pavlov, LORP [Lena United River Steamship Company]: "An Effective Container Carrier"]

[Text] The fleet of the Lena United Steamship Company delivers approximately 80 percent of all cargoes required by the Yakutsk ASSR. The waterway from the port of Osetrovo to Yakutsk, which carries the primary flow of cargo, is difficult for navigation: a shallow and winding channel, fast current rates, frequent fog conditions, and during the low-water period of navigation, low water levels prevail. With these conditions, particular demands are placed upon the vessels.

A major portion of the Lena Cargo Fleet vessels were designed by the line's design bureau and built by its enterprises. These are primarily motorship platforms, which constitute the basis for major series of transport ships of various purpose: the motorship platform to a great degree satisfies the demands levied against cargo vessels of the Lena Basin. It differs favorably from hold-type vessels with double bottoms and sides in simplicity and technological effectiveness of design, lower requirements for metal, and greater reliability with respect to unsinkability and cargo protection.

Work to establish the self-propelled cargo fleet in the Lena Basin was begun in the early Sixties. Recently, the design bureau has developed a series of designs for the construction of vessels of varying modifications, specifically, the major series of cargo motorships equipped to push barge chains (designs 272T and 272T-3) and specialized vessels for transporting containers (R40TK and SK-2000).

The first container-carrier was built at the Osetrovo Shipyard in 1970.

Since 1979, the Kachug Shipyard began producing the motorship-container carrier of the "R" class of the RSFSR River Registry according to the improved design SK-2000K, which to a large degree satisfies requirements levied against vessels of this designation.

Their architecture differs considerably from the traditional--a triple deck superstructure with living quarters and deck house situated in the bow segment. Such an approach allowed for improved trimming of the vessel while unladen, improved visibility from the deck house, reduced vibration and noise levels

in the living and general areas, and to bring them up to health norms.

The designers avoided deck loss, which provided for employing a somewhat increased height of the side (2.2 meters as opposed to the 2 meters of the SK-2000 design prototype container carrier) and to establish better conditions for the location of containers on the three-deck arrangement. Certain difficulties arose in the designing, for example, with the remote control of the main engines, as the standard DAU (remote control) systems were designed for distances of not more than 50 feet from the control area to the engines. For this reason, a cable device had to be employed for control. Transfer of the deck house to the bow section so improved the pilot's field of view that the crews began to convert to pushing two barge-chains with a capacity of 1,000 tons each instead of one, and also of two new barges with 2,500--3,000 ton capacities.

The container-carriers with increased barge capacities operate effectively. The motorship "Kachugskiy Sudostroitel'", equipped with high-tonnage equipment on the route Osetrovo-Yakutsk and return (a distance of approximately 4,000 kilometers) expended 290 hours of passage time with an average underway speed of 13 km/hr.

During the last run, when the vessels were returning to Osetrovo in an ice-breaking role, a wider and more durable barge train provided for successful passage, as its hull broke the ice and formed a channel, the width of which exceeded the width of the motorship. With barges having 1,000 ton capacity, the container-carriers could not have moved in such conditions.

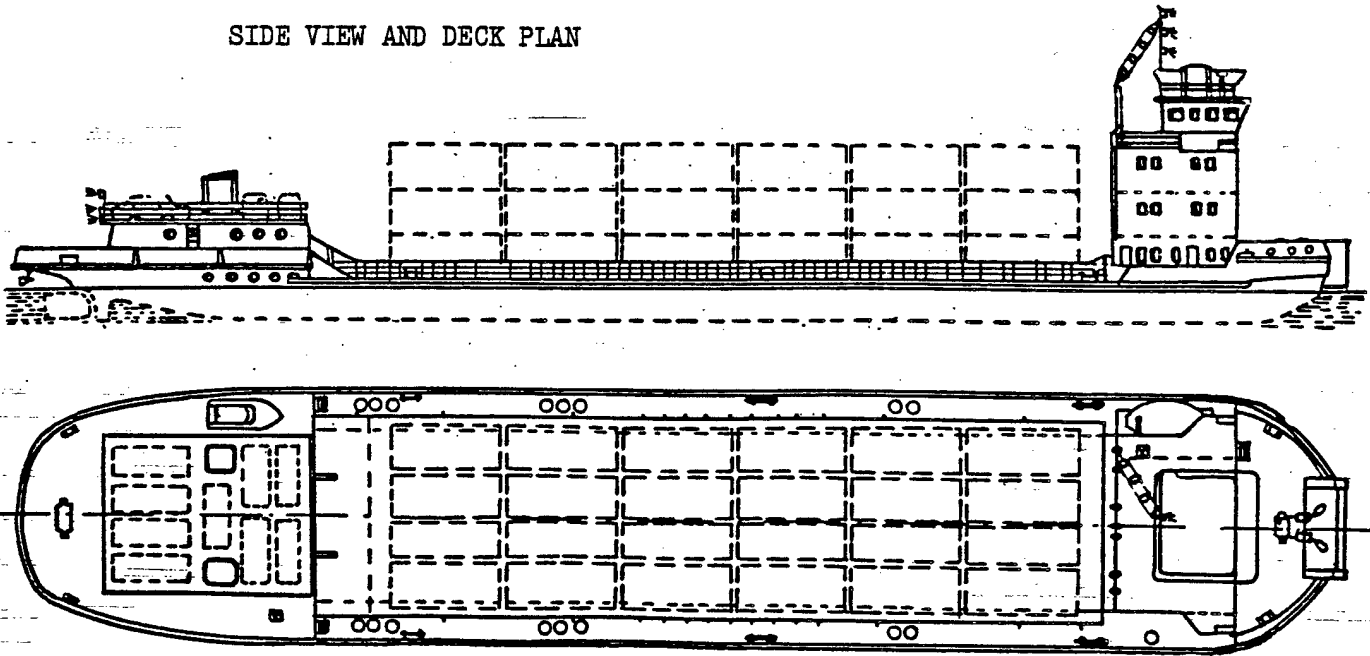
With the two runs with large-tonnage barges, the motorship "Kachugskiy Sudostroitel'" transported 2,500 tons more in cargo than it could have working with 1,000 ton trains. This was equivalent to a round-trip and resulted in the savings of 40 tons of diesel fuel and almost 1 ton of lubricating oil.

Actual cost of cargo shipping on the same line under identical conditions by the motorship SK-2054 with 2,500 ton capacity barges was 5.35 rubles/thousand ton-kilometers, and for the motorship SK-2052, working with 1,000 ton capacity barges--5.66 rubles/thousand ton-kilometers. Labor productivity of personnel afloat increased by a factor of 1.4.

All this bears witness to the fact that the Lena shipbuilders have built a vessel, the operation of which will increase the capacity of the fleet, will extend the navigation period, and will provide for greater efficiency in operation.

For the development of the new type of vessel, the Lena United Steamship Company was awarded the USSR VDNKh Gold Medal.

SIDE VIEW AND DECK PLAN



TECHNICAL SPECIFICATIONS OF CONTAINER CARRIER

|  |           |
|--|-----------|
| Clearance Length, in meters.....                               | 72.95     |
| Clearance Width, in meters.....                                | 14.3      |
| Design height of side, in meters.....                          | 2.2       |
| Draft, unladen (average), in meters.....                       | 0.72      |
| Draft, with cargo of 1,000 tons, in meters.....                | 1.78      |
| Length, with barge train of 3,000 ton capacity, in meters..... | 175.65    |
| Capacity, tons.....  | 1000.     |
| Capacity.....  | 72 units  |
| (20-ft containers)   |           |
| Main engine rating for *NFD-36AI: kilowatt, 2 X 425            |           |
| Speed, loaded, km/hour.....                                    | 19        |
| Cabin accomodations.....                                       | 17        |
| Barge-train  |           |
| "R" configuration capacity, tons.....                          | 3000.     |
| "O" configuration, tons.....                                   | 2500.     |
| Capacity.....  | 142 units |
| (20-ft containers)   |           |

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## PORTS AND TRANSSHIPMENT CENTERS

### PORT PERFORMANCE WRAP-UP FOR FEBRUARY 1984

Moscow VODNYI TRANSPORT in Russian 27 Mar 84 p 2

[Article: "Pay More Attention to Qualitative Indicators"]

[Text] February turned out to be a very troublesome month for transportation centers. The weather posed problems for the work of Azov Sea ports, which were ice-bound for practically the entire month. Ice clearing operations on the Azov Sea required the involvement of additional crews. On more than one occasion hurricanes pounded the northwest coast of the Black Sea, the Baltic and the Maritime Kray. Cargoes arrived at ports irregularly. Under these conditions, most of the transportation centers coped with their monthly assignments, displaying a high level of organization and persistence. Better results in the transshipment of cargoes were achieved at Vyborg, Ventpils, Riga, Ilichevsk, Skadovsk, Novorossiysk, Aktaya, Vostochnyy port, Korsakov. The following ports did not meet their plan targets for transshipments: Arkhangelsk, Murmansk, Belgorod-Dnestrovsk, Tuapse, Baku, Krasnovodsk, Magadan and Nakhodka.

January statistics indicate that in comparison with last year qualitative indicators of fleet utilization have improved at marine transport centers. Positive results in terms of gross and net intensiveness were achieved by the Azov, Chernomorsk, Novorossiysk, Gruzinsk and Sakhalinsk steamship lines. The percentage of time spent waiting to begin loading operations for these steamship lines, expressed as gross anchorage time, was shortened by a factor of 1.5-2 in comparison with the same period last year. Overall volume deteriorated sharply on the Baltic, Latvian, and Lithuanian steamship lines. There was a significant increase in the anchorage time of ships while waiting to enter the continuous plan-schedule of port operations, and net intensity declined by 15-20 percent.

In most transportation centers freight car requirements were precisely supplied, and the mechanism for requisitioning and delivering freight cars for offloading and loading functioned flawlessly, thereby assuring the effective utilization of the rolling stock.

Sailors and railroad workers worked well together in Murmansk, Ventpils, Kherson, Termez and at many other transportation centers. But, unfortunately, there are other examples as well.



The port of Leningrad fell 5,162 units short of its monthly target for unloading freight cars with export cargoes.

At Baku, 30 freight cars with transshipment cargoes were not unloaded, and 148 full freight cars were still sitting at the station at the beginning of March. In Vladivostok the monthly norm was underfulfilled by only two freight cars with export goods, but in Vanino there were 51 freight cars with transshipment goods that were not unloaded.

In February there were numerous illnesses among the employees of the Rēniysk transportation center. On more than one occasion the Moldavian railroad raised the question of stopping cargoes destined for Rēni. Nevertheless the unloading requisition remained at the level of the monthly norm, with the result that 123 full freight cars were still sitting at the station at the beginning of March.

Here is one more typical example encountered in the work of some centers. The port of Nikolayevsk, with a monthly assignment to unload 1,943 freight cars with export goods, reported a total of 1,843, yet the railroad station received 1,977 freight cars and the port unloaded this number too. The record is similar at this port in the handling of transshipment cargoes: the port recorded 1,000 units less than its target, yet unloaded 300 more freight cars than it recorded.

In February all arriving imports were shipped out of ports, but residual stocks of imported items did not decline and amounted to 1.67 million tons at the end of the month. The plan for the shipping out of imports was fulfilled at a 92.4 percent level, freight car deliveries were 23,000 short of plan targets, and 45,500 short of port requisitions. The freight cars not provided according to port requisitions were equivalent to the ships standing at anchor and cargoes that were ready for shipment but still warehoused. The ports were not immediately prepared to handle 1,575 freight cars, primarily because of weather conditions. Ship arrival schedules were not satisfactorily adhered to in February. Interruptions in ship arrivals at certain ports were not fully compensated due to the limited availability of imports and because of inflexible customer requirements for operational management.

Under such conditions, it is essential to return once again to the issue of work quality and the effectiveness of the interaction between the ports and railroads which, could (since they are coordinating their activities on the scale of transportation-economic regions) compensate to a significant extent for fluctuations both in port loadings and in the availability of freight cars of specific types.

In February not a single railroad, with the exception of the Moldavian, fulfilled its target for imports. The lowest results of all were recorded in the Baltic Railroad, which failed to deliver 7,700 freight cars to its ports and fell 12,800 freight cars short of loading requisitions. Freight car deliveries far short of plan targets were also recorded by the transportation centers of the October, Odessa and North Caucasus railroads. Port requisitions, on the whole, were significantly in excess of the plan, as were the numbers of freight cars actually delivered to all railroads.

Some ports requisitioned inadequate numbers of freight cars even when they had imported cargoes on boats or in warehouses. The ports of Odessa and Poti were examples of this. The Lithuanian steamship line did not take measures regarding the port of Klaypeda, which clearly had requisitioned numbers of freight cars for food loadings that were far below its potential, with the result that not only were mooring times for ships excessively long, but also that 5,898 tons were not unloaded. Shipments of bagged sugar from the port of Novorossiysk lagged (with 11,300 tons on ships and in warehouses), yet the monthly requisition was for only 180 freight cars.

By the end of February certain transportation centers had accumulated a significant amount of transshipment cargoes, including those in containers. In the import direction, a combined total of 49,500 tons of cargo were at the ports of Kaliningrad, Leningrad, Riga, Poti and in Poset. In the area of export, immediate measures must be taken to ship 9,900 tons of transit cargo from Ismail and 3,300 tons from Kiliya. The Far Eastern Steamship Line must immediately assist the all-union associations Morkontayner and Soyuztranzit to normalize the transit cargo situation at the transportation centers of Vostochnyy and Nakhodka, where a total of about 50,000 tons of goods of both types have been accumulated.

Transit shipments through the territory of our country should receive all possible assistance from our transportation centers. This part of the responsibilities of subcontractors has both an economic and a transportation function. Transit services fulfilled by Soviet foreign trade and transportation organizations should be strengthened gradually so as to command more and more respect from our neighbors and partners.

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END