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# USSR Report

TRANSPORTATION

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12 March 1986

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CIVIL AVIATION

CHIEF ON 'UNFAVORABLE' YEAR FOR SOVIET AIR TRAFFIC CONTROL

Moscow VOZDUSHNYY TRANSPORT in Russian 12 Dec 85 p 2

[Article by TsUVD GA [Air Traffic Control Central Administration, Ministry of Civil Aviation] Chief V. Shelkovnikov: "Toward Flight Safety: Responsibility--The Path to Reliability"]

[Text] Scientific and technical progress has had an enormous positive effect on increasing the reliability of the air traffic control system, but the effect of the human factor on flight safety is greater than 90 percent in the traffic service.

The overall integrated program of research on the study of the human factor in the traffic service, developed by the ATC Scientific and Experimental Center, will produce effective recommendations on reducing the influence of the human factor on flight safety in ATC. The recertification of dispatcher personnel was conducted this year to raise the professional level of the specialists. The psychological observation of dispatchers directly controlling air traffic, to reveal specialists with a low level of professionally important qualities, is concluding. They will be transferred to less stressful sectors.

The Ministry of Civil Aviation, along with other ministries and departments, is examining social questions whose resolution will allow the reduction of personnel turnover and the retention of the best specialists in the ATC organs.

The 11th Five-Year Plan now concluding was an unfavorable one for the traffic service. The basic cause of this was a lack of discipline and the poor professional preparation of some dispatchers and flight supervisors.

THEREFORE, THE BASIC AREA OF WORK IN TRAFFIC SERVICE OPERATIONS REMAINS, AS BEFORE, RAISING LABOR AND TECHNOLOGICAL DISCIPLINE, STRENGTHENING THE EXACTING ATTITUDE OF SUPERVISORY PERSONNEL TOWARD THEMSELVES AND THEIR SUBORDINATES, CREATING AN ATMOSPHERE OF INTOLERANCE FOR THE SLIGHTEST BREACHES OF TECHNOLOGICAL DISCIPLINE IN ATC, AND MAKING EVERY BREACH WIDELY KNOWN. And flight supervisors should play an enormous role in this.

A significant rejuvenation of the middle-echelon command personnel has occurred in our service in recent years. Recently young specialists, with know-

ledge and initiative, are entrusted with shift supervision and the education of the personnel. But professional skills are sometimes acquired before civil maturity and the ability to lead people. Thus, it is necessary to educate flight supervisors first and foremost, and to choose candidates for this position more carefully.

Proceeding from the existing state of affairs in the traffic service, I would like to dwell on some other basic areas of work for raising flight safety in ATC.

ONE OF THESE IS IMPROVING THE PROCESS OF INTERACTION BETWEEN THE TRAFFIC SERVICE AND THE GROUND SERVICES.

The incorporation of the directive of the first deputy minister of civil aviation of 29 December 1984 on "The Process of Interaction Between the Traffic Service and the Ground Services" made possible to a significant extent the regularization of transportation equipment operation on the airfield.

However, the continuing incidents of aircraft forced to make a second go-round because of the appearance of motor vehicles and people on the runway and the number of airports operating under category II (and in the future III) ICAO [International Civil Aviation Organization] conditions raises the issue of developing an automated control system for aircraft traffic and ground transport. This system must also provide for a subsystem that protects against unauthorized access to the runways, dispatcher-controlled axial taxiway lights and airfield surveillance radar. This area is especially urgent for airports with intensive aircraft and transportation traffic and airfields with complex runway and taxiway configurations, as well as airfields operating under conditions of limited visibility. Therefore, the developers of automated airfield systems must in the future provide for their interconnection with the aircraft and ground transportation control system.

I WOULD SINGLE OUT THE IMPROVEMENT OF THE AIRCRAFT TRAFFIC FLOW PLANNING SYSTEM AS THE MOST IMPORTANT AREA OF WORK FOR RAISING THE QUALITY OF ATC.

The continuous growth in intensity of aircraft traffic along air corridors will lead to the appearance of intensive areas of corridor intersection and points whose intensity is equal to, and in a number of cases under conditions of a mass breach of flight regularity, even exceeds carrying capacity.

The presence of more than forty intensive sectors of air corridor intersection (basically in the European part of the country) forces a deeper look at this problem.

It is true that at the formulation stage of aircraft traffic schedules (the so-called strategic level), the Raspisaniye ASU [Management Automation System] takes into account the carrying capacity of intensive intersections, but the planning of aircraft traffic flow on flight day in confused situations remains an urgent problem.

The air traffic control centers of main and auxiliary zones should incorporate planning methods more actively in areas with intensive traffic and a complicated airspace configuration and should make broader use of group computer information control centers. The elimination of the overloading of ATC organs is the chief criterion for evaluating the activity of these centers.

Considerable work has been done in recent years on improving the structure of the country's airspace. The modern demands on the ATC system force a fundamentally new look at the approach to airspace organization. It is necessary to increase the network of parallel air corridors on the main, most intensive air routes, create more orthodromic corridors, organize entry and exit corridors in air centers and airfield zones with the maximum number of air transfers and organize so-called standard flight paths that divide entry and exit aircraft traffic in space by altitude and do not conflict with each other.

That is why traffic service supervisory personnel must actively and persistently work on resolving the above issues for improving the structure of the airspace.

Unfortunately, as shown by verifications, the Ukrainian and Far East administrations of civil aviation have not yet assigned the required significance to the given area of work.

An intensive search is going on in various countries to find ways of improving the methodology of air traffic control to guarantee total flight safety. EVERY BREACH OF TECHNOLOGY MUST BE CAREFULLY INVESTIGATED, ALONG WITH WHICH A BROAD VERIFICATION OF ATC ORGANIZATION AT THE AIRFIELD WHERE IT OCCURRED SHOULD BE CONDUCTED, SINCE ITS APPEARANCE IS A FACTOR THAT DIRECTLY POINTS OUT POOR ASPECTS OF THE CONTROL PROCESS.

These breaches practically never occur as a consequence of some particular cause, but rather as a result of the interconnection of several differing causes. Taken separately they can seem inconsequential, but together with others they can make up a sequence of outwardly unconnected events that lead to undesirable consequences. These causes should be discovered and eliminated until the last link in the chain of events referred to is isolated.

Proceeding from these recommendations, all traffic service supervisory personnel must investigate in detail all breaches that have been repeated in the course of the five plan at every airport.

A highly effective method of raising the level of flight safety is the timely publication of informational bulletins on the results of the ATC service operations of airports deemed unsatisfactory, with an account of the circumstances, causes, measures taken and an indication of the guilty. The mistakes of others must be carefully studied, so as not to allow their repetition in one's own work.

This year TsUVD GA issued seven informational bulletins with graphic illustrations of air situations, but, as it turned out, a wealth of this material did not reach dispatcher personnel at many educational and training institutions.



THE PROPAGATION OF PROGRESSIVE OPERATING EXPERIENCE IN COMPLEX CONDITIONS IS A SUBSTANTIVE CONTRIBUTION TO RAISING THE LEVEL OF FLIGHT SAFETY IN ATC. This can be by film, slides or printed publication.

The CEMA Civil Aviation Center must work more actively, in our view, on propagating aviation safety, following the best world examples, such as the films "I and We See Through Others" on accident prevention in the air, "Flights in the Mountains" on ways of making mountain flights safer, "Wind Shear" and others. Finally, the "Catalogue of Audiovisual Means for Propagating Aviation Safety," issued by ICAO, should be utilized.

A few words should be said in conclusion about the dangerous feeling of complacency that sometimes arises, unfortunately, in some collectives. This trend has been noted in areas with automated air traffic control systems. In the Moscow ATC area, for example, and in the traffic service of the Leningrad Administration of Civil Aviation. A high degree of ATC process automation--the possibility of receiving data instantaneously on the number of aircraft, altitude, speed, conflict-determining vector of extrapolation and, finally, data from the dangerous convergence warning system--should all the same not lead to the appearance of complacency.

THE AIR TRAFFIC CONTROL SERVICE IS NOT A SPHERE OF ACTIVITY IN WHICH A FEELING OF COMPLACENCY IS PERMISSIBLE. A CONTINUOUS SEARCH FOR WAYS TO RAISE THE LEVEL OF FLIGHT SAFETY IN AIR TRAFFIC CONTROL IS NECESSARY.

There is a clause in the draft of the Fundamental Areas of Economic and Social Development of the USSR for the 12th Five-Year Plan and for the period to the year 2000 that relates directly to the organization and provision of the work of air traffic control organs. It speaks of the enormous significance of the tasks of ensuring the high-quality work indices that are placed before the industry and the service by the CPSU Central Committee and the Soviet government.

It is a matter of honor for every ATC service worker that these tasks be fulfilled.

12821

CSO: 1829/36

## CIVIL AVIATION

### AN-124 KIEV-POLYARNYY-VLADIVOSTOK CARGO FLIGHT

Moscow PRAVDA in Russian 27 Dec 85 p 6

[Article by PRAVDA correspondent N. Bratchikov, Vladivostok: "The 'Ruslan' Flies"]

[Text] We are racing in a motor vehicle to the heart of the airfield with A. Shargun, the commander of the Vladivostok Airport, where, like an enormous white gull spreading its nearly 73-meter wings after a northern flight, an An-124--the "Ruslan"--is resting. As reported in PRAVDA, this giant aircraft flew from Kiev on the first working flight to the city of Polyarnyy. It arrived in Vladivostok yesterday.

Work has seethed around the aircraft since early morning. A tractor with the Yakutalmaz emblem pulled up an unwieldy trailer on which towered an orange-colored half of a dump truck body of the firm "Yuklid" weighing 15 tons. A second one was lying alongside. It had also just arrived from the Nakhodka Trade Port and now had to be loaded into the belly of the aircraft.

A group of technicians, having checked the dimensions of the "iron passenger," carefully lifted the cargo slightly with the aid of the "Ruslan's" special loading complex and directed it into the transport. A "soft chair" had been prepared for it from pine beams, and it was tied down extremely securely with roping devices to keep it from moving in flight.

The second part of the dump truck took its place in the same manner. Not wasting time, the drivers of the Yakutalmaz Association industrial transport who had come with the "Ruslan" for the acceptance of the giant dump truck, V. Pozdnyakov, V. Dyadyura and G. Gavrilov, again drove the tractor and trailer to Nakhodka. Even at night, the work did not stop.

"We will have to take 34 vehicle units. And another tractor and trailer as well. The weight is considerable. We will divide it into two runs. No plane in the world has yet lifted such a cargo," relates L. V. Zhebrovskiy, the expedition's technical leader.

We go around the setup of Leonid Vasilyevich. We meet the members of the technical team, the team called the "flying team." Twenty-two people, besides the six flyers, provide the expeditionary work associated with the autonomous

"Ruslan" flights delivering outside cargos to remote regions of the country. They have plenty of cares: planning the run, technical flight support, and loading.

We met the members of the "flying team." Senior Engineer V. Tkachuk and Technician V. Gayevoy. It was they who rapidly dispersed the giant body parts in the aircraft. We are met in the cockpit by Test Flight Engineer Yu. Dmitriyev. There are no other flyers. They are resting in Vladivostok after the six-hour flight here from the north.

"How was the flight?"

"The flight was normal: in this huge aircraft you don't notice that you're in the air: there are no bumps or even the smallest vibrations. It is true that difficulties arose in the north--right before the landing there was a sharp temperature increase, causing the runways to ice up. But our commander, Aleksandr Vasilyevich Galunenko, a young but very experienced pilot, landed the "Ruslan" impeccably.

"When do you go back?"

"Today at seven in the morning Vladivostok time to Polyarnyy, and then we'll return home for the New Year. We want to greet it, like everyone, with a tight circle of family and friends."

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## CIVIL AVIATION

### DESIGN FLAWS, ALCOHOL ABUSE CITED IN AIR SAFETY INVESTIGATION

Moscow VOZDUSHNYY TRANSPORT in Russian 15 Feb 86 p 4

[Unsigned report under the rubric "In the USSR Procuracy": "To Observe the Laws Steadfastly and Rigorously"]

[Text] On 11 February 1986, the USSR Procuracy Collegium reviewed the status of the Procuracy's investigation into the implementation of legislation regarding civil aviation flight safety.

Responsible members of the CPSU Central Committee, the USSR Procuracy, the USSR Ministry of Internal Affairs, the Ministry of Civil Aviation and the USSR Ministry of the Aviation Industry participated in the Collegium's work.

It was noted that, as a result of the combined efforts of party, soviet and law enforcement organs, as well as of leaders of enterprises and organizations in civil aviation and the aviation industry, certain positive results have been achieved in ensuring flight safety in air transport. Well-conceived, purposeful and organized measures taken to prevent air accidents permit the majority of aviation enterprises to be accident-free.

At the same time, however, the status of civil aviation flight safety still does not meet the demands made on it. An unfavorable state of affairs in ensuring flight safety is noted in aviation enterprises of the Ukrainian, Far East, Georgian, Krasnoyarsk, West Siberian and Uzbek Administrations of Civil Aviation.

A series of aviation accidents has been caused by deficiencies in the organization, operational support [obespecheniye] and execution of flights. Another cause is the presence of design and production defects in aircraft.

Some managers and political workers are not exerting enough influence on improving organizational, educational and preventive work designed to ensure flight safety. In a number of civil aviation administrations, they have still not eliminated unexcused absenteeism, and there are instances of alcohol use during work, especially in crop dusting operations, when pilots often remain outside the control of aviation enterprise management.

Certain aviation enterprise managers still have not been imbued with a sense of great responsibility for implementing party and government decisions aimed at

strengthening production, technological and labor discipline, and at eliminating drunkenness. They conduct this exceptionally important work in only a formal way, taking compromising positions with respect to loafing, bad workmanship, drunkenness and unexcused absence.

A significant strengthening of agency control, and the cooperation of the Ministry of Civil Aviation and the Ministry of the Aviation Industry are required to carry out the measures which have been worked out.

The work of the procurators has not been adequate. The transport procurators have not displayed the required persistence and aggressiveness in stopping any violations in air transport operations. They don't always react sharply and on principle to the inaction and negligent attitude of some aviation enterprise managers toward matters of flight safety. They rarely raise questions about these managers' personal responsibility for the unfavorable state of affairs.

Aviation enterprise managers do not always supply the transport procurators with documents containing the necessary and complete information about the status of flight safety, and when the procurators have this information, they do not always subject it to serious and critical analysis.

The legislation designed to combat violations of production, technological and labor discipline, as well as drunkenness, must be enforced steadfastly and rigorously, and the procuracy's actions against violators must be without compromise.

In his report to the Collegium, the Procurator General stressed the necessity for and the importance of further activization in the fight against violations of flight safety regulations, and of the use of all weapons [rychagy] in the arsenal of the offices of the Procuracy, in order to impose the necessary order on air transport and enterprises of the Ministry of the Aviation Industry.

Achievement of firm results in preventing violations of civil aviation flight safety regulations will depend to a significant degree on the coordination of actions of the managers of aviation enterprises, public organizations and law enforcement agencies.

It is necessary to raise a lasting barrier against violators of production, technological and labor discipline.

In every sector there remains great and responsible work, the main thrust of which must be directed above all toward the prevention of violations in air transport operations. We must have steadfastness, adherence to principles, persistence and purposefulness in achieving the final result.

CSO: 1829/86

## CIVIL AVIATION

### MORE ON NEW IL-96, IL-114 AIRCRAFT

Moscow NEDELYA in Russian No 46, 11-17 Nov 85 p 8

[Article by V. Inozemtsev: "What's New, Design Bureau? A Pair from the 'Il' Family"]

[Text] A multistory building with wide windows in the engineering wing, the path to which, laid with white stone, led through a garden court with legendary fighters of far-off wartime frozen in eternal flight. Quiet halls, flooded with light, with many rows of drafting tables, a computer center installation and filled with the chattering of printers. And, of course, shops, laboratories, stands for the full-scale testing of the assemblies and designs of flying machines born here. Every time one has occasion to visit this corner of Moscow, it is like looking into the past of our aviation...

At the Experimental Design Bureau imeni S. Ilyushin, I had occasion to see an instructive diagram composed from Aeroflot data of many years. From this chart you learn: THREE QUARTERS OF ALL OF OUR AIR PASSENGERS ARE TRANSPORTED ON ROUTES 500 TO 4,600 KILOMETERS LONG. Next to it was written by hand: "The practical operating flight range of the Il-86 widebody airbus."

The air giant with a takeoff weight of 209 tons and a fuselage 60 meters long is officially called a medium mainline aircraft with high passenger capacity. In its three cabins, 350 people travel in comfort, as is well known, to the resorts of the Black Sea and to Delhi, from the capital of Uzbekistan to Moscow, from the banks of the Neva to Berlin or Paris. Our first airbus is not yet ten years old (it flew for the first time in December of 1976), but the geography of its routes already includes four continents and it has transported 8 million passengers!

Once, in meeting an Il-86 from a routine transatlantic voyage, I inquired of an aviation specialist I knew--why send a medium-range airbus on a long-distance flight? "Let it be a lesson," he replied half-humorously, "we'll benefit from this experience..."

The day has come, and General Designer Academician G. Novozhilov has presented the new offspring of his collective--the long-range mainline Il-96-300 passen-

ger aircraft, for which the medium airbus that has recommended itself highly served, as the design bureau leader emphasized, as the basic model. A new member of the "Il" family of aircraft has appeared that is destined to carry on the distinctive work of the well-worked Il-62 and Il-62M in flights across many time zones.

The domestic long-range airbus is externally reminiscent of its predecessor, but its dimensions are larger--the wingspan is almost ten meters greater, and the tail fin is two meters higher. All of this, along with other design elements of the new airliner, were carefully calculated on a computer allowing for the use of modern metal alloys, composites, synthetic materials and the latest achievements of aviation technology. As a result, although the takeoff weight of the aircraft reached 230 tons, it concedes nothing to the Il-86 in speed--850-900 kilometers per hour--or in operating ceiling--9-13 kilometers.

"Everyone," noted G. Novozhilov, "is always interested in the number of passengers on board and the maximum flight range. Well, 300 people are accommodated in comfortable seats in two cabins that are formulated in accordance with design requirements. The Il-96 will fly distances of 4,000 to 9,000 kilometers, and up to 11,000 kilometers on certain international routes."

And what about the crew that will have to fly the aircraft that surmounts the distances between continents? A total of three people--two pilots and a flight engineer--will be in the cockpit, equipped with an electronic complex with color display screens on the instrument panel. All necessary information on the flight and system operating conditions will appear on these screens, ensuring the practically total automation of air navigation.

Even the most crucial stage--the descent for landing in conditions where visual orientation is reduced to a minimum due to bad weather--can be executed by the Il-96 itself, obeying radio signals from the ground and the commands of the flight navigation complex. The pilots will only have to monitor the operation of the perfected and reliable flight systems.

Like its predecessor, the Il-96 is a two-decked aircraft, on the "second floor" of which are the cockpit and the passenger cabins. Their hospitable hosts, incidentally, will be ten flight attendants--a smaller number will not suffice to provide service for three hundred passengers and to prepare and distribute breakfasts, lunches and dinners, prepared in a special kitchen-buffet compartment.

Included in the duties of the stewardess today, obviously, is the operation of the so-called "audio-visual flight entertainment system"--more simply, showing films recorded on magnetic tape with the aid of projection apparatus.

There are three compartments on the lower deck of the aircraft in which more than fifteen standard baggage-handling containers are housed; space is also left over for "piece cargo." The Il-96-300 will have to make long flights with two or three landings in a day, and therefore its creators refrained from using built-in ramps. Entrance and exit to this airplane will be as usual. So then, the long-range mainline "Il" of the new generation will soon appear.

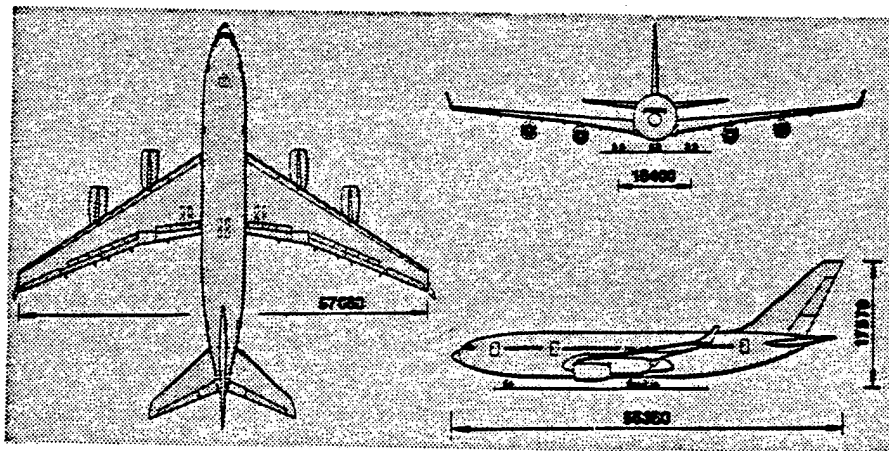
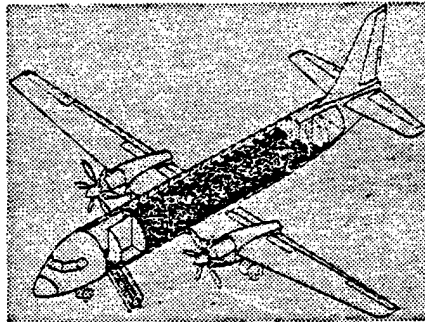
But a large number of air passengers take local air routes, where the veteran AN-24 has labored continuously for over two decades. Today the form yet another winged craft is taking shape on the drawing boards of the Ilyushin designers, under the styli of the automated graphics apparatus and in an endless stream of figures "swallowed up" by computers--the 60-seat Il-114 passenger turboprop, intended for routes of 1,000 kilometers.

A speed of 500 kilometers per hour is fully adequate for it, which is provided by two quiet multi-blade gas-turbine engines. Their priceless virtue is low fuel expenditure and, consequently, high aircraft efficiency. The maximum takeoff weight--a little more than 20 tons--will permit Il-114 operation from concrete and dirt airfields, which is quite important for serving remote cities and towns.

The creators of convenient built-in ramps on the airbus aircraft also did not leave out this "Il"--it also has its own small flight of stairs that is rapidly retracted into a special recess under the entrance hatch. Passenger baggage can be carried on board and stowed in special racks at the entrance.

Two pilots and one flight engineer are the whole crew of the aircraft, which along with its elder colleagues--the long- and medium-range airbuses--make up a triad of "Il" aircraft providing service on all the lines of Aeroflot.

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CSO: 1829/41





CIVIL AVIATION

TUPOLEV BUREAU DEVELOPING TU-204 PASSENGER JET

Tupolev on Features

Moscow TRUD in Russian 3 Jan 86 p 4

[Interview with Hero of Socialist Labor Academician Aleksey Andreyevich Tupolev, general designer of the Experimental Design Bureau imeni A. N. Tupolev, deputy to the USSR Supreme Soviet and USSR Lenin and State Prize laureate by N. Dombkovskiy: "Reporting on Details: An Addition to the "Tu" Family--A New Airliner in Born"]

[Text] General Designer of the Experimental Design Bureau imeni A. N. Tupolev, Deputy to the USSR Supreme Soviet, USSR Lenin and State Prize Laureate, Academician and Hero of Socialist Labor A. A. Tupolev relates the latest developments in the design collective he heads.

[Question] Aleksey Andreyevich, three years ago in an interview with TRUD you discussed the creation of the Tu-154S cargo plane and the highly efficient Tu-154M. These planes can already be seen in the sky. But in the same conversation you referred to a future passenger aircraft with increased comfort and efficiency that would begin flights in the 12th Five-Year Plan. Hasn't the time come to discuss it in a little more detail?

[Answer] Our collective is constantly working on improving aircraft for the national economy and improving their efficiency and operating characteristics. Besides the Tu-154 modifications that we have already mentioned, Tu-134SKh aircraft were delivered to Aeroflot. These planes were equipped with apparatus that allowed them to rapidly determine the state of crops and evaluate yield prospects over large areas.

But we are also creating new aircraft along with the modification of already existing ones. One of these is a highly efficient passenger aircraft intended for operation on mainlines of up to three and a half thousand kilometers.

The latest achievements of science and technology in the spheres of aerodynamics, engine construction, materials science and manufacturing were incorporated into its design. Especial attention was devoted to ensuring highly efficient aircraft operation. The proportionate fuel expenditure of the Tu-204 that you see in the photograph will be much lower than that of already

existing turbojet passenger aircraft.

[Question] What specific conveniences are envisaged for the passengers?

[Answer] We'll begin with the fact that the rational configuration of the passenger cabin in and of itself already ensures a higher degree of comfort--the seats are more comfortable and the aisles are wider. The cabin is designed for 214 seats. The side panels have been moved back from the seats, and now even the tallest passengers will not experience discomfort. Add to this the large lights that ensure an excellent view in flight and the new design of closing baggage shelves for hand baggage.

[Question] On what routes will the new "Tu" operate?

[Answer] It will replace the Tu-154, and this means that with time, the "204" will take upon itself a significant share of passenger transport both within the country and abroad.

I would like to note that much has been done to increase the flight safety of this aircraft. There is multiple redundancy of the fundamental systems of the aircraft. A reliable navigation complex and an entire on-board computer system take on many of the obligations of controlling the Tu-204. It therefore became possible to reduce the number of crew members to two or three. Another specialist can be added to its complement in especially difficult operating conditions.

#### Other Characteristics Noted

Moscow IZVESTIYA in Russian 4 Jan 86 p 1

[Article by V. Belikov: "'Tu' Airlines: A New Generation--A Report on the New Passenger Aircraft and Commentary from General Designer Academician A. A. Tupolev"]

[Text] The Tu-204 turbojet airliner about which IZVESTIYA reported in an issue before the new year is in the mock-up shop, which is very spacious, like a concert hall or a covered arena. Nevertheless you feel an uncomfortable closeness from the adjacent enormous presence whose accustomed place is the airfield and the expanse of the heavens.

A. A. Tupolev. The latest offspring of our experimental design bureau, that has received the designation Tu-204, is an aircraft of a new generation, created on the basis of the very latest achievements of science, technology and design thought. The airliner has highly improved aerodynamics that ensure the most advantageous cruising flight characteristics, highly efficient wing mechanization and projected low-noise engines designed by P. Solovyev that have proportionately decreased fuel expenditure. Thus, the main components of Tu-204 profitability and high efficiency are ensured, to which the draft of the Fundamental Areas directs us: "...to begin the operation of highly efficient mainline passenger aircraft..."

New metal alloys with improved mechanical properties are employed in the Tu-204 design, and the most modern so-called composite materials, lowering the weight of the aircraft, are widely applied as well. Particular attention was devoted in its planning to increasing its working life and level of reliability.

The new aircraft does not exceed the latest version of the well-known Tu-154 in size. Like it, the Tu-204 is a medium-range mainline airliner for 214 passengers, which happens to be the largest proportion of passenger transport in Aeroflot.

\* \* \*

Coinciding the dimensions of the two aircraft is the result of a directed search of design thought.

"Fly more and sit less"--this principle was incorporated into the Tu-204 by its designers. For example, over a year the aircraft will spend more than one and a half times as much time in the air as preceding aircraft types. The time spent on the ground is decreased thanks to the fact that the on-board apparatus and equipment is more reliable and does not require frequent inspection and checking.

Efficiency, efficiency... But that is not all that determines the features of the Tu-204, an acquaintance with which once again affirmed the justice of the words that I once heard from Andrey Nikolayevich Tupolev: "The basic sense of our work is the resolution of new problems in aircraft construction." It is enough to look around the cockpit of the 204, to pay attention to the unique configuration of the work stations of the basic crew members, numbering two or three people in all.

A. A. Tupolev. The pilots do not see the accustomed mosaic of dials, scales and indicators on the instrument panel in front of them. They are replaced by so-called integrated cathode ray tubes--something on the order of small color television screens. All information necessary for conducting the flight and monitoring on-board systems is represented on them.

A special apparatus projects instrument readings onto the front window during landing that are necessary to the pilots for successfully completing the most crucial phase of the flight. They can "peruse" altitude and flight speed data without taking their eyes off the rapidly approaching landing runway.

\* \* \*

Great comfort awaits air travelers in the passenger cabin. Here are envisaged comfortable seats installed three to a row on both sides of a spacious aisle and large lights as well as a kitchen-buffet section and roomy closed shelves for hand baggage.

A. A. Tupolev. Thanks to a new fuselage configuration--the vertical diameter is 20 centimeters greater than the horizontal--it is as if the floor and seats

have been lowered, and the seated passengers and the aisle along the row are now located in the widest part of the cabins. The cramp has disappeared, no one bumps each other with their elbows, and moving about in the cabin doesn't bother anyone.

The new-generation Tu-204 airliner will begin flights in the skies of our country in the current five-year plan.



12821  
CSO: 1829/41

CIVIL AVIATION

PLANS FOR CSSR-BUILT L-610 'FLYING BUS'

Moscow IZVESTIYA in Russian 27 Jan 86 p 1

[Article taken from telephone and teletype by V. Belikov: "Flying Bus"]

[Text] Prague--The Czech aviation engineering enterprise Let has been producing planes for half a century already--passenger planes, recreational planes and planes for agricultural aviation. Now, as Ye. Yakovlev, our correspondent, reports, the enterprise's collective is busy designing a new passenger vehicle, the L-610, which they call the "flying bus" here.

V. Mertl, chief designer at Let and hero of socialist labor, telling about work on the new vehicle, says that it was begun several years ago on an Aeroflot proposal. The plane transports 40 passengers and is being designed with powerful turboprop engines, taking into consideration modern world trends in aviation engineering.

In contrast to the L-410 aircraft, with a carrying capacity of less than six tons, that is already in use in the Soviet Union, the new liner carries aloft a payload of more than 14 tons. Its speed goes up to 500 kilometers per hour, which is one quarter higher than the L-410. Flight altitude is up to 7000 meters and the plane can fly almost 1000 kilometers without landing. The plane can take off and land on dirt strips at small airfields.

A commission of Czech and Soviet specialists approved a full-sized model of the L-610. The first planes will take off in 1987, and by the end of the current five-year plan they will be in lot production.

12461

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## CIVIL AVIATION

### DETAILS OF NEW Ka-126 HELICOPTER

Moscow IZVESTIYA in Russian 29 Jan 86 p 1

[Article by I. Andreyev: "Ka-126: The Familiar Stranger"]

[Text] Not long ago in the Research and Development Bureau imeni N.I. Kamov something happened that was perhaps not as spectacular as the first flight of a new vehicle, but was no less critical. An authoritative commission of civil aviation specialists showed "agrarian" aviators a half-size model of the new Ka-126 agricultural helicopter.

The first customers familiarized themselves with the planned characteristics of the new flying apparatus so that later, in the course of flight and operations testing of the vehicle, they could be compared with the actual ones. Lot production of the helicopter, which is designed for SEV [Council of Economic Interdependence] member-countries, is projected for the city of Brashov, Socialist Republic of Rumania. On 29 January the model will become one of the important displays in the Soviet section of the international exhibit "Aviation in Agriculture" which has opened in Moscow's Sokolniki Park.

Externally, there is little change in the helicopter relative to the Ka-26, which has been working in agriculture for two decades already. Except that the bulky engine nacelles, which on the Ka-26 concealed a pair of piston engines, have disappeared from the sides of the fuselage. In their place is one gas-turbine engine, barely visible behind the streamlined contours of the upper part of the helicopter. The design of the cabin has become more elegant, more pleasing to the eye and more comfortable for work, the compact instrument panel inevitably narrowing the pilot's field of vision. These are all the differences visible to the inexperienced person.

"It was planned that way," Sergey Viktorovich Mikheyev, OKB [Research and Development Bureau] chief, comments on my impressions. "We consciously retained not only the configuration, lay-out and dimensions of the vehicle, but its flight weight as well. Moreover, having equipped the Ka-126 with one gas-turbine engine, we left all the basic assemblies and mechanisms from the Ka-26. It is important that those elements of the -26 that are still in lot production fit

the new vehicle, and that pilots and operators, long accustomed to it, see the Ka-126 as an old friend."

"Did it make sense to alter the power assembly radically in order to preserve everything else?"

"Without a doubt it made sense, and here is why. Any driver knows how unpredictable a piston engine is in cold weather. It gets cold even in a light frost, the oil gets thick--they begin giving trouble starting. You do not have these problems with the new engine. All aviation has long been using gas-turbine engines--the An-2 is the only piston-engine plane left. Gasoline--aviation gasoline is not often found at airfields today. Besides, it is more expensive than kerosene.

"Finally, at the same capacity a piston engine is far heavier than a gas-turbine one. Having lightened the power assembly, it is possible to take on board a heavier payload and to increase the duration and range of flight. In a word, to improve all the things that the economy and profitability of a helicopter working in that most important sphere of the economy--agriculture--depend on."

"You enumerated certain positive characteristics of a GTD [gas-turbine engine]. Can it be that it has no drawbacks? For example, an increased appetite for fuel, albeit relatively inexpensive kerosene."

"It is true--the GTD requires more fuel for the same amount of time. Naturally, the hourly kerosene consumption depends on both the work routine of the engine and the speed at which the vehicle is flying. So, the curve of this dependency is such that with planning it is possible to make fuel consumption for the two basic flight regimes the same as that of the piston-engine Ka-26. The helicopter flies, in essence, either at a speed of 40-50 kilometers per hour, when it is dusting or fertilizing fields, or at a 160-kilometer cruising speed, when it is carrying freight, patrolling forests or controlling traffic on highways.

"In this combination of losses and gains and in the optimum combination of properties of the vehicle is the very essence of any helicopter design, the more so an agricultural one.

"The GTD allowed us to eliminate a substantial deficiency of the Ka-26--with a full load that one could hover only at an altitude of sea level. If the areas being worked were higher, it was necessary to take on board less fertilizer or pesticide. The new vehicle can carry out agricultural operations with the same payload at an altitude of one kilometer."

"The members of the model commission payed particular attention to the economy and profitability of the new helicopter," Evgeniy Glebovich Pak, assistant chief designer, enters the conversation. "They are experienced people who know the Ka-126 extremely well. Like us, they want not only to retain the operational merits of the vehicle, but to improve them substantially.

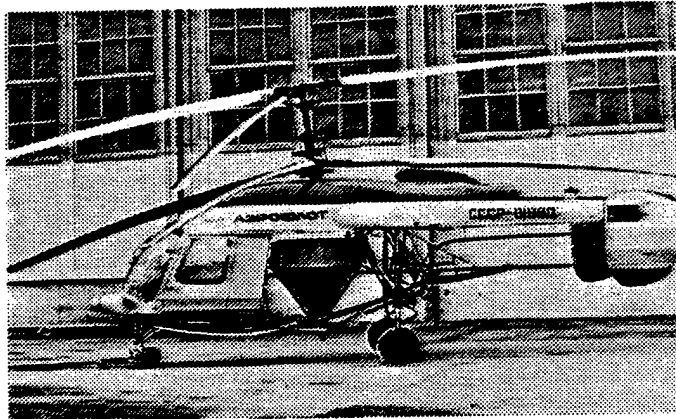
"And besides. The agricultural helicopter is a seasonal vehicle. It fulfills its "direct function" from six to eight months a year. The rest of the time it

stands idle. This is not economical. The helicopter should spend its allotted service life in the air. Since the cold does not bother it, the GTD allows the Ka-126 to work in the winter--to fly, after harvest time, where it is needed as a transport vehicle, where today, for the sake of a few hundred kilograms of freight, it is necessary to dispatch heavy helicopters..."

"A model is only a model, although it differs little from the "real" helicopter. What must the Ka-126 still go through before it takes off and goes into lot production?"

"A "real" prototype is already built," says S. Mikheyev, "intended for strength tests. We are producing separate assemblies--they will undergo checking on stands that imitate real flight loads. All the working documents are transferred to the lot plant in Brashov. Rumanian colleagues will develop machining attachments and assemble, we call it that, the engineering mock-up of the Ka-126.

Flight testing of the vehicle built here will be conducted "at home". Lot-produced Ka-126's in time will replace the Ka-26 in virtually all CEMA countries.



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CIVIL AVIATION

CHIEF ON FUNCTIONS OF REORGANIZED MAIN INSPECTORATE

Moscow VOZDUSHNYY TRANSPORT in Russian 25 Jan 86 p 2

[Interview with Nikolay Vasilyevich Ryzhakov, chief of the Main Inspectorate of the Ministry of Civil Aviation, by V. Tamarin, VOZDUSHNYY TRANSPORT correspondent: "Organization for Each and Every One"; date and place not specified]

Text] [Question] There is no work in civil aviation which does not touch upon the problem of flight safety.

Thus N. Ryzhakov, chief of the Main Inspectorate of MGA [Ministry of Civil Aviation], whom we asked to comment on the features of the new regulations for the Main Inspectorate and inspectorates pertaining to flight safety in civil aviation administrations, began a conversation with our correspondent.

[Answer] With a view to expanding the role of the inspectorate, the MGA Inspectorate was reorganized into the Main Inspectorate, and by a 25 November 1985 order of the minister, new regulations for this organ were approved.

[Question] That means that virtually new regulations are coming into effect, does it not?

[Answer] Yes, and we consider the reorganization an opportunity for the comprehensive improvement of the organization of inspectorate operations. The granting of more rights and independence to inspectorate workers increases the responsibility of each inspector for his own activity.

[Question] Obviously, there was an urgent need for this?

[Answer] The party assigns great significance to securing the safety of all flights. It requires that MGA adopt urgent measures and improve all operations for securing the complete safety of flights.

Taking into consideration that guaranteeing the safety of flights is a government task and problems connected with it must be solved in a comprehensive fashion, to train and cultivate people achieving a high level of organization, precision and reliability of aviation equipment, it was decided to give more rights to the inspectorate.

[Question] In what, specifically, is this expressed?

[Answer] An important difference in the new regulations is the /mandatory nature/ [boldface type] of inspectors' orders. Failure to take measures according to them should be considered a dangerous threat to flight safety, with all the corresponding consequences.

An indissoluble connection with the civil aviation administration is established by means of agreement in the annual and quarterly plans for the activity of inspectorate and administration, which are approved by the chief of the MGA Main Inspectorate, and monthly ones, which are approved by the chief of the administration inspectorate. Such a system of agreement and approval of plans does not divert the inspector organs from the problems of the administration, and it makes the solution of flight safety problems a common, coordinated, joint endeavor, and in the end, it makes the solution correct.

On the other hand, the regulations oblige the administration inspectorates to approach the planning of operations more responsibly, to know the circumstances in the administration well, to have working contacts with the directors of services and enterprises and with party organizations. The suggestions of public flight-safety inspectors will be considered in this.

[Question] And how are the rights of inspector organs specified?

[Answer] All orders, directions and instructions for the administration of civil aviation that are connected with flight safety, retraining specialists, improvement in class, incentive and bonuses for workers, as well as those for problems of discharge and restoration in aviation operations and for dismissal and hiring in UVD [Air Traffic Control], should be coordinated with the inspectorate of the administration of civil aviation. I will add to this, that an important factor in increasing the role of inspector organs in this direction is the subordination of the MGA Main Inspectorate to the MGA Higher Qualifications Commission (VKK)--a permanently active organ that directly influences the level of professional training of aviation specialists.

[Question] And how and for what is the responsibility of inspector organs increased in this?

[Answer] It is provided for through the implementation of control over the securing of flight safety, the fulfilling of the requirements of standard documents regulating flight safety. Inspectors answer for control of the quality of investigations of aviation accidents by MGA and UGA [Civil Aviation Administration] commissions, for the quality of investigations by Main Inspectorate commissions, for the authenticity of information provided by the Main Inspectorate on problems of flight safety, for failure to take measures for the elimination of the causes of accidents in the civil aviation administration, and for deficiencies in the operation of enterprises, subdivisions and services. That is, the inspector organs must not only ascertain the state of things, but actively involve themselves in work to prevent aviation accidents and preconditions for them.

[Question] What will be done for the institution of a unified system of inspection methods?

[Answer] An "Informational-methodological sheet for the inspector" will be published, which will help choose a main direction for the activity of inspectors and direct attention to those problems that need to be solved first. Unfortunately, there is still not a unified methodology in the work of inspector organs. Therefore, in the minister's order we are appointed to present "Organizational-methodological instructions for the work of the inspectorate in the flight safety of civil aviation administrations" for approval by 1 November 1986. Thus, this year a document will be established that significantly facilitates the work of inspector organs, especially for young specialists and those newly arrived at the inspectorate. The experience of inspectorate veterans, the recommendations of ICAO [International Civil Aviation Organization] and suggestions from the field, including those of public inspectors, will be considered in the development of the instructions. Obviously, a place will be found in them for standard official instructions for inspectorate workers.

[Question] Nikolay Vasilyevich, will idiosyncracies in the activity of the inspectorates of civil aviation administrations be considered--number of planes and airfields, territory, climatic conditions and other nuances in operation? Let us say, the volume and level of problems being solved in the Ukrainian or Estonian UGA and the Kazakh or Moldavian administrations--surely they are not equally significant?

[Answer] The starting point for an evaluation of the activity of the inspectorate of any administration is fulfillment of and control over the fulfillment of the requirements of MGA standard documents, primarily the basic document NPP GA-85. No allowances will be made for anyone in the exactingness and objectivity of the inspectors' conclusions on the main problem--flight safety. The requirements of aviation laws are identical for all.

Now, when UGA inspectorates have become more independent, there should be more exactingness in their work. Inspectors should visit airports, routes and PANKh [expansion unknown] operative points more frequently. People must be taught that if an inspector is not there right then, he could appear any minute. We need a living operation, not a paper empire.

[Question] One must suppose that now the responsibility of the commanders of industry for fulfilling inspectors' orders will grow also?

[Answer] Of course. Until not long ago, and I must confess this in all honesty, the attitude toward them was fairly condescending, and the inspectors themselves are guilty of this. Because they were written in a generalized form suggesting, and not demanding that fulfillment be reported. And control over their fulfillment was weakened.

Now we require of the inspectors that they compose their orders objectively, with reference to the NPP GA-85 and other standard documents and not to emotions of the "like-dislike" "either/or" type, but the way the documents require it.

At an instructional-methodological conference at MGA and at UGA conferences we gave a principle evaluation of deficiencies in the activity of UGA inspectorates and made note of constructive and specific measures for their elimination.

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## RAIL SYSTEMS

### NEW TBILISI METRO STATIONS OPEN

Moscow GUDOK in Russian 12 Nov 85 p 1

[Unattributed article: "The Metro Draws Back the Boundaries"]

[Excerpts] The letter "M" over the new Varketili Station signifies the great labor victory of the Tbilisi metro builders who have kept their word with honor: by the 68th anniversary of Great October, the new Varketili, Grma-Gele and TEVZ underground stations entered service, along with a well-equipped metro depot. Including the new stages, there are already 25.57 kilometers of line with nineteen stations in working Tbilisi today.

The new sections immediately join three of the city's industrial areas in a unified transport artery: the Zavodskoy, the Imeni 26 Komissarov and the Leninskiy, where the greatest passenger traffic arises.

GUDOK correspondent S. Babayan asked Hero of Socialist Labor V. Gotsiridze, a USSR State Prize laureate and the chief of the Tbiltonnelstroy [Tbilisi Tunnel Construction] Order of Lenin Administration, to comment on this important event for Tbilisi residents:

"The sixty-eighth anniversary of the Great October Socialist Revolution became a double holiday for our collective. The metro builders dedicated the early introduction of the underground line and the car depot complex to it.

"Briefly about the stations. All of them are single vaulted, deeply laid with in-situ cast ferro-concrete. This design was first tried in our already operating Saburtalinskaya Station. Much has been improved, however, in the new sections according to the developments of the Kavgioprotrans [Caucasian State Institute for the Planning of Transportation] Institute. The metro stations' decor was executed in simple but rational form, using elements of national architecture."

The new metro lines were constructed by two leading collectives of Tbiltonnelstroy--Tunnel Detachments Nos 5 and 32. The latter also built the car depot--a modern engineering structure occupying 30 hectares.

In the start-up year of the first line of the Tbilisi Metro, 21.5 million passengers were transported. This year, by preliminary estimates, approximately 144 million people will make use of the services of the underground.

The construction of the first section of the third line has been completed. Blue express trains already rush along the new underground mainline, and the metro construction labor duty continues.

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## RAIL SYSTEMS

### GORKIY METRO TO BEGIN REVENUE SERVICE

Moscow GUDOK in Russian 20 Nov 85 p 1

[Article by B. Bukharina: "There is a Metro in Gorkiy"]

[Excerpts] The first metro in the Volga region and the tenth in our country--the Gorkiy Metro--is being readied for start-up. This outstanding gift was presented to the city residents by the construction workers of the underground lines. A ceremonial meeting took place here on November 19. The new stations are ready to greet passengers.

During all eight years that the first line was being constructed, the residents of Gorkiy became familiar with the labor victories in the underground construction sites through newspaper reports and radio and television programs. Yesterday the participants in the ceremonial meeting inspected the metro stations.

The first line of the Gorkiy Metro joined three industrial areas in the city section across the river--Kanavinskiy, Leninskiy and Avtozavodskiy. Passing along the Oka, the underground road joins the Moskovskiy Railroad Station with the Gorkiy Auto Plant.

The Gorkiy Metro is being built in difficult hydrogeological conditions. The builders encountered water-saturated soil all along the route, and even quicksand was far from a rarity. The metro builders remember how, at the construction of the Moskovskaya Station, the excavator bucket literally floated in the water in spite of the artificial lowering of the water level.

Here in Gorkiy, testing was successfully conducted on the TShchB-7 mechanized tunneling complex, which leaves behind itself a completed tunnel with monolithic pressed-concrete finish. It is interesting that the shield complex was successfully turned around in an installation chamber on the line between Proletarskaya and Avtozavodskaya stations for driving a parallel tunnel. The builders saved a month of assembly and disassembly work then.

The first passengers will see six new metro stations: Moskovskaya and Chkalovskaya, Leninskaya and Zarechnaya, and Dvigatel Revolutsii and Proletarskaya.

The stations are single-vaulted in design with columns. But one of them--the Moskovskaya--is unusual. The central station at the railroad gateway to the city with prospective motor vehicle mainlines and future metro lines became the first metro station in the country with four tracks and two parallel platforms in one hall and on one level.

Blue express trains are beginning regular operation on the first line of the Gorkiy Metro. But the construction workers already have a new working address. After all, the underground city will grow further and in the near future will progress to the high section--to the right bank of the Oka and the Volga.

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## RAIL SYSTEMS

### DECREE URGES FASTER YEREVAN METRO CONSTRUCTION

Yerevan KOMMUNIST in Russian 12 Nov 85 p 1

[Unattributed article: "The Course of Metro Construction"]

[Text] The Armenian SSR Council of Ministers, in an adopted decree, obliged the Armtunnelstroy [Armenian Tunnel Construction] Administration of the metro, the Armtransstroy [Armenian Transport Construction] and Yerkhimstroy [Yerevan Chemical Construction] trusts, the Main Administration of Installation and Special Construction Work and other organizations to adopt specific measures for fulfilling the plan of construction and installation work for 1985. Everything must be done to introduce the section from Gortsaranain Station to Shengavit Station, the branch line to the depot and the engineering block into operation by the end of the year. Especial attention should be devoted to questions of quality in construction and installation work. The completion deadline for the construction of the first metro line from Druzhba Station to Ploshchad Spandaryana Station is established in the 4th quarter of 1986 with the entry into operation of the Ploshchad Spandaryana and Oktemberyan stations.

In 1986 the Metro Administration should begin preparatory work on the section extending the line from Druzhba Station to the Achapnyak region. The Armgip-rotrans [Armenian State Institute for Transportation Planning] is required to issue the planning estimates for extending the line to the Achapnyak region in good time. The Yergorsovet [Yerevan City Soviet] Ispolkom is charged with assigning the sections and assimilating the territory in the area of the construction sites of the new metro line.

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## RAIL SYSTEMS

### FIRST RAUTARUUKKI-BUILT RAILCARS DELIVERED

Moscow GUDOK in Russian 30 Nov 85 p 3

[Unattributed article: "On the Basis of Cooperation"]

[Text] The delivery of the first Finnish series-produced specialized railcars to the Soviet railroads took place at the capital's Riga Station. Finnish Ambassador Extraordinary and Plenipotentiary to the USSR A. E. Karkhilo took part in the ceremony.

This rolling stock was produced according to Soviet technical documentation. Our bogies and braking and other constituent equipment was used in its assembly. This is yet another example of the mutually beneficial cooperative collaboration between the USSR and Finland in the sphere of railroad technology. In accordance with a treaty, our northern neighbor erected in the shortest of time frames--less than three years--a car building plant that can produce up to 4,000 units of rolling stock per year.

"The demands made of railroad cars in the Soviet Union are the toughest," says Director M. Kivimyaki of the Rautaruukki firm. "And although car building is a new thing for us, we try to produce high-quality and reliable products."

The positive results of specialized car tests conducted in harsh climatic conditions are confirmation of this.

Before the end of this year, 150 specialized cars will enter the country's railroads, and more than 1,500 in the next. Timber flatcars and mineral hopper cars, as well as heat-insulated thermos cars, will be built first. Within the bounds of the treaty, moreover, shipping capacity for liquid foodstuffs and flour will be delivered to Soviet plants.

The mineral cars arouse special interest. Their operating lives, as is well known, are limited. After several years they are "eaten out" by corrosion, especially when transporting potash fertilizer. Two types of bodies are now undergoing testing: one totally of stainless steel and one with a special anti-corrosive coating. The question is now being resolved of which of these two types will become definitive for supply.

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## RAIL SYSTEMS

### ALTAY PLANT TO PRODUCE LONGER, IMPROVED BOXCAR

Moscow GUDOK in Russian 17 Dec 85 p 2

[Article by N. Viktorov, Novoaltaysk: "Technology of the 12th Five-Year Plan: A New Boxcar"]

[Text] "Look at the photo," says Chief Designer Viktor Nikolayevich Timofeyev of the Altay Railroad Car Building Plant [AVZ]. "What is so new and unusual about a four-axle car? But if you are a car-building worker, then you see something. There is plenty that's new is this test model that will enter series production at the AVZ in the middle of the 12th Five-Year Plan, and that by the end of it will become basic, supplanting its elder colleague."

The leading plant in the industry now produces 68-ton capacity four-axle cars with a body volume of 120 cubic meters. When experimental "shipments" were started, they even carried about 70 tons in test runs. But the main thing here is not the weight, but the capacity. Heavy freight is basically shipped on flatcars or in open cars--ores, coal, building materials and so on.

Specialized cars--cement and grain carriers and others--are becoming ever more numerous. And this means that boxcars are being freed up. For what? For all kinds of things, while lightweight, that are in bales, boxes or packages. And dispatchers are racking their brains: by weight still more could be added, but it won't fit, it's stuffed to the roof. In short, volume is needed.

Therefore, the new car will have 20 cubic meters more of capacity with the same freight capacity. This was accomplished by lengthening it by three meters. There was nowhere to go sideways or up.

What else will distinguish the new car? A solid-metal body? Yes, but the AVZ hasn't produced boxcars with wooden bodies for two years. The operators have complaints about the strength of the end walls. This feature was taken into account. The end walls have already been reinforced in the series-produced cars, and will be more so in the prospective design. But the designers have their own point of view. Any reinforcement is, as a rule, an increase in weight. And this is an additional expenditure of energy in shipping, as well as an increase in material expenditures in construction. It is probably worth it to consider how to prevent the increase in established speed in hump yard sorting.

There is another recent modernization--a 5-millimeter steel plate on the floor between the doors so that a loader can enter the car body. But it is proposed to lay multi-layered plywood down in place of the traditional boards in the new car. Such floors are more economical, easier to produce, more reliable and longer lasting in use. But here the designers have their own complaints for those who operate the cars. Nails a finger wide are almost always driven into the floor. Not exactly the standard method of tying down freight. Naturally, the holes are left in the floor afterward.

Or take the doors. The tightness of the fit, the ease of movement, the longevity--all of this is incorporated in the design. But any door can be deformed if cement pours into an aperture, hardens and is then dug out with a crowbar. Operating conditions once again.

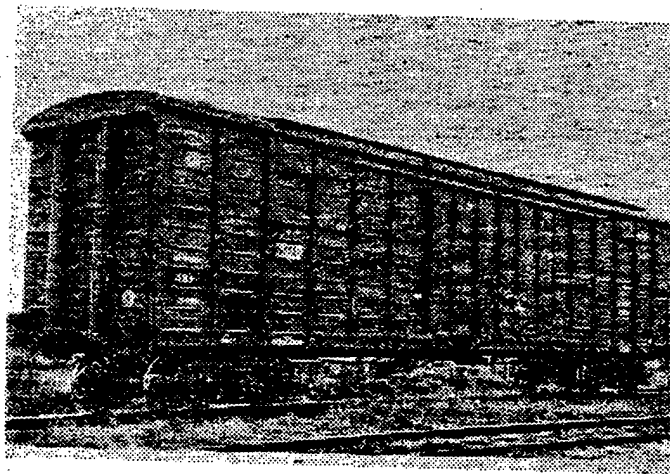
The car builders, however, have no illusions and are improving the door nonetheless. In the new 140-cubic meter design, the doors will sit on rollers rather than be suspended from them. Why was such a solution adopted? Because during crane or cable unloading the upper edge of the aperture is often hit where the roller guides are fastened.

That, probably, is all that is most important about the new boxcar. Another innovation, however, is proposed: a plywood covering inside the all-metal body. Tests with polyurethane insulation have been completed. It is more reliable and economical. It's up to the chemists now whether it will be this material or something new in the interior finish. That is roughly how it will be with the aluminum bodies as well. Experimental models were tested: they are light, attractive, do not need painting and do not suffer from corrosion. But this is for later, the distant future. There isn't enough of the winged metal.

For now, until the middle of the upcoming five-year plan, 120-cubic meter cars will come off the assembly lines, certified, by the way, as being of the highest quality, and then--140-cubic meter cars.

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## MARITIME AND RIVER FLEETS

### 'VOLGO-BALT-249' CLASS SHIP SPECIFICATIONS

Moscow RECHNOY TRANSPORT in Russian No 9, Sep 85 pp 24-25

[Article by Yu. Lappo of the Central Engineering and Design Bureau, under the rubric "Equipment of the Fleet and Ports": "The New 'Volgo-Balt' Series of Motor Ships"]

[Text] The lead motor ship, Volgo-Balt-249, constructed by design 92-040 for the Minrechflot [Ministry of the River Fleet] at a shipyard in Komarno (CSSR), has gone into operation. The ship is a modification of the mixed navigation, river-sea motor ship in the Volgo-Balt series. Although the names of the first and the new series are identical, they still differ substantially from one another. The revision of design 2-95A/R, created more than 12 years ago, was prompted, for the most part, by the need to bring it into conformance with the rules and standards that have changed and become stricter during the elapsed period, as well as with the new requirements of international conventions. Comparative characteristics of the motor ships in the previous and the new series are presented in the table [See following text].

The ships of the new series are general-purpose. They are intended for transporting coal, grain, lumber, mineral and building materials, large-tonnage containers, and general cargo.

Motor ship Volgo-Balt-249 has three cargo holds, the sizes of which suit the dimensions of large-tonnage containers [See drawings following table]. The latter also can be transported on the hatch covers, designed for a load of 1.75 metric tons per square meter. The holds are equipped with carbon dioxide fire-extinguishing systems, and with forced ventilation providing for six changes of air per hour, which permit the transporting of coal under any operating conditions. Grain can be delivered in the motor ships without installing shifting boards. The paint on the hold surfaces permits its bulk transporting. Provision is made for a rig for transporting logs on the hatch covers. The strength of the second [inner] bottom permits unloading the ship with 16-ton [metric] cranes. Provision is made for simultaneous opening of the holds, as well as access to them with closed hatches.

The ship's cargo capacity is 200 metric tons less than that of the motor ships in the first series, and amounts to 2,500 metric tons with 3.75-meter draft in river conditions, and 3,000 metric tons with 4-meter draft in maritime con-

ditions. The reduction in cargo capacity was prompted, first, by the new design's having been developed with consideration for the stricter requirements in the RSFSR River Registry's changed rules regarding strength, watertight integrity, fire safety, and ship reliability; and, second, by improvement in the comfort level. Shipboard accommodations are equipped with an air conditioning system. The crew is quartered in one-person cabins with sanitary facilities. Living and office accommodations are well decorated, and equipped with modern, comfortable furniture; there is a sauna, and a special accommodation for engaging in sports. The noise level and vibration are close to standard, and lower than on other ships of such type.

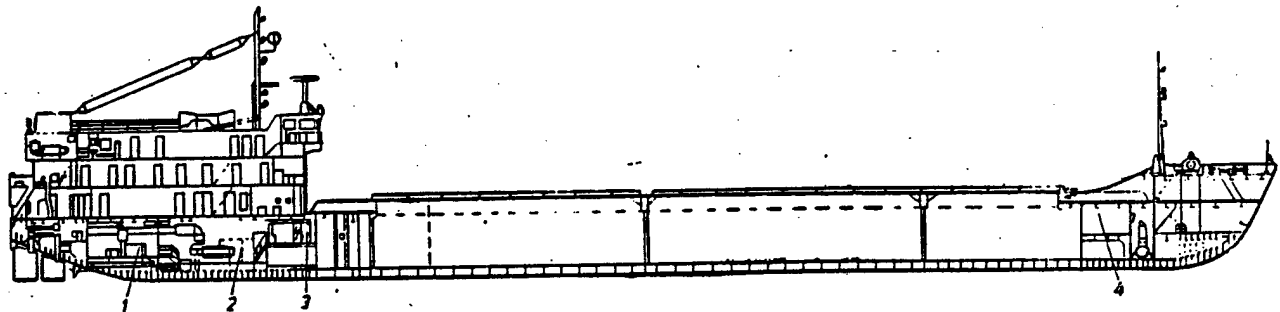
The lead motor ship's trials have shown that her characteristics conform to the approved technical design and contract. Her speed in deep water is 18.9 kilometers per hour, instead of the expected 18.2.

On the whole, the ship has received a positive evaluation. However, the crew has comments concerning, first of all, the quality and reliability of the fitting-out equipment. These comments must be generalized in the summaries of operation and taken into account in the series construction. The lead motor ship has been turned over to the Belomorsk-Onega Steamship Company. The ship's design was developed by the building plant's [yard's] design bureau, with the participation of TsTKB MRF [Ministry of the River Fleet's Central Engineering and Design Bureau] specialists. The work on it is not finished, since, in addition to measures aimed at improving construction quality and reliability, measures presently are being considered, which will permit expanding the motor ships' navigation area, and thereby increasing their economic efficiency.

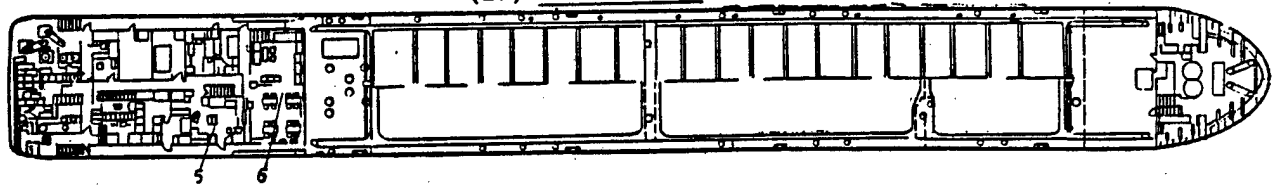
[Table on next page]

Characteristics	Ship Modification Designs	
	2-95A/R	92-040
Designed length, in meters	110.5	112.4
Designed beam, in meters	13	13
Extreme beam, in meters	13.19	13.43
Height of side amidships, in meters	5.5	6
Maximum height of undetachable parts when in ballast, in meters	11.77	13.2
Weight [Displacement] of ship when empty, in metric tons	1,312	about 1,860
Designed cargo capacity in fresh water, in metric tons	2,700	2,500
Average draft at designed cargo capacity, in meters	3.56	3.75
Maximum cargo capacity in sea water, in metric tons	3,200	about 3,000
Maximum draft at sea, in meters	3.78	4
Power of main engines (2X6-27.5A 2L), in kilowatts (in horsepower)	2X515 (2X700)	2X515 (2X700)
Electric power plant capacity, in kilowatts	3X100 1X55	3X100 1X25 1X50
Number and total volume in cubic meters of cargo holds	3 (4,700)	3 (4,064)
Ship's self-sufficiency in supplies, in 24-hour days	15	15
Speed under designed loading in calm, deep water, in kilometers per hour	20	18.9
Installation for cleaning oil-containing bilge water	None	"SYeFRANS"
Installation for cleaning and disinfecting waste water	None	"NEPTUMATIK" MOS-12
Installation for preparing drinking water	None	"OZON-0.5"
Power of low-speed/stopped maneuvering system, in kilowatts	None	about 140
RSFSR River Registry class	"M-SII"	"M-SII" (Ice)

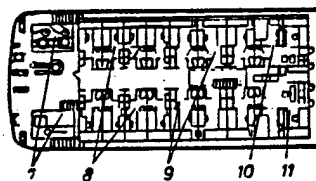
[Ship drawings next page]



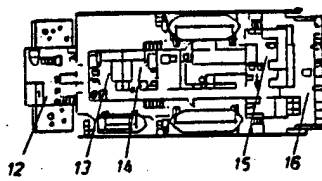
(17) Главная палуба



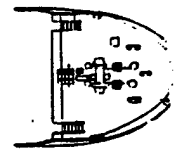
(18) Палуба II яруса надстройки



(19) Шлюпочная палуба



(20) Полубак



Теплоход «Волго-Балт-249» [проект 92-040]  
 1 — отделение дизель-генераторов; 2 — отделение главных двигателей; 3 — центральный пост управления СЭУ; 4 — спортивный зал; 5 — камбуз; 6 — столовая и красный угол; 7 — шахты выхлопных трубопроводов (фальштрубы);

8 — каюты рядового состава (6 кают); 9 — каюты командного состава (8 кают); 10 — блок-каюта старшего механика; 11 — блок-каюта капитана; 12 — помещение аварийного дизель-генератора; 13 — каюта штурмана; 14 — каюта радиста; 15 — радиорубка; 16 — рулевая рубка

Motor Ship Volgo-Balt-249 (Design 92-040)

Key:

- |   |  |
|---|--|
| 1. Diesel generator room                            | 9. Cabins for leading crew members (8 cabins)  |
| 2. Main engine room                                 | 10. Senior mechanic's [engineer's] cabin suite |
| 3. Central SEU [ship's power plant] control station | 11. Captain's cabin suite                      |
| 4. Sports hall                                      | 12. Emergency diesel generator space           |
| 5. Galley   | 13. Navigator's cabin                          |
| 6. Ship's mess, reading and recreation room         | 14. Radioman's cabin                           |
| 7. Exhaust pipe shafts (false stacks)               | 15. Radio room                                 |
| 8. Cabins for ordinary crew members (6 cabins)      | 16. Wheelhouse [pilothouse]                    |
|   | 17. Main deck                                  |
|   | 18. Second deck of superstructure [01 level]   |
|   | 19. Boat deck                                  |
|   | 20. Forecastle                                 |

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## MARITIME AND RIVER FLEETS

### MARITIME SHIPPING COMPANIES TEST NEW ECONOMIC SYSTEM

Moscow VODNYI TRANSPORT in Russian 12 Dec 85 p 2

[Report on interview with G. D. Gerasimchuk, chief of the Planning and Finance and Currency Administration and member of the Collegium of the Ministry of the Maritime Fleet, by VODNYI TRANSPORT correspondents V. Lavruk and V. Orlov: "The Black Sea, Baltic, and Latvian Shipping Companies are to be Converted to New Management Methods as of 1 January 1986"; date and place of interview not given; first three paragraphs are VODNYI TRANSPORT introduction]

[Text] Successful solution of the task put forward by the party of accelerating the country's socioeconomic development requires deep changes, first of all, in such a decisive sphere of human activity as economics. A tremendous role here belongs to improving management of the national economy.

As is generally known, the draft of the Basic Directions provides for converting all sectors of the economy to new management methods in the 12th Five-Year Plan. Three shipping companies will operate according to the new methods in maritime transport as of 1986, they are the Black Sea, Baltic, and Latvian Shipping Companies. Their selection was no mere chance. Suffice it to say that their relative share in the sector's overall volumes amounts, for example, with regard to profits to 45 percent and with regard to the number of workers to 32.5 percent. The new methods tested in practice and the accumulated experience will then, certainly, be used by other maritime transport subdivisions.

Taking into account the importance and significance of the work at hand and the great interest of newspaper readers in what the new management conditions represent, our correspondents approached G. D. Gerasimchuk, chief of the Planning and Finance and Currency Administration and member of the Collegium of the Ministry of the Maritime Fleet, with a request to answer some questions.

[Question] Gennadiy Davydovich, in the beginning of our interview let us attempt to briefly determine what is the main goal of the shipping companies being converted to new management conditions and what are the basic ways for achieving it.

[Answer] If one is to describe this briefly, then this is being done in order to solve more successfully the basic tasks set before maritime transport in the 12th Five-Year Plan, that is prompt, qualitative, and complete satisfaction of transportation requirements of the national economy and the population and a rise in the economic work efficiency of the sector. This is the general course

for all workers of our subdivisions, this is our ultimate and main goal. I want to particularly stress that it must be achieved with the least expenditure of all kinds of resources. This can be achieved on the basis of full utilization of such important factors as improvement of planning and organization of transportation, acceleration of development and introduction of new equipment, development of creative initiative, raising the interest and responsibility of labor collectives for the growth of transport process efficiency, and strengthening cost accounting. In a word, there is a need for a sharp turn to intensification of production.

[Question] After determining overall tasks, let us turn to more specific ones. Let us say that work under new conditions will make it possible, on the one hand, to see how all elements of the economic mechanism function as a whole and, on the other hand, what prevents them "getting used" to each other and where and which unit is weakened and how it can be strengthened.

[Answer] Yes, this is one of the important tasks. It consists of adjusting the entire mechanism to the maximum and of thoroughly studying the influence of progressive forms of planning and economic stimulation on the work of shipping companies. After all, their rights in planning and economic and financial activity are now being greatly expanded and excessive regulation and petty guardianship with respect to them are being removed. But, naturally, at the same time their responsibility for final results is also being increased. The entire experience, which will be accumulated in 1986, will then make it possible to convert other enterprises of the sector's basic operational activity to new conditions.

#### Planning

[Question] Thus, we have come to a group of questions which, probably, can be combined under one very comprehensive word--planning. First of all, we would like to know if the quantity of plan indicators set for shipping companies is being reduced?

[Answer] Of course, it is being reduced. One of the most important features of working in a new way is precisely the fact that the number of plan indicators confirmed from above was reduced by more than one-half. Incidentally, this applies to both five-year and annual plans.

[Question] What indicators will now be set, for example, in annual plans?

[Answer] I will list the basic ones in the following order:

overall volume of shipments (dispatches) of cargo in tons in coastal trade and of foreign-trade cargo in foreign shipping;

income from transporting cargo and passengers abroad after deducting expenditures connected with such transportation;

profits;

growth of labor productivity of workers in basic operational activity, calculated according to comparable income per one production personnel worker;

tasks with regard to developing, mastering, introducing, and improving utilization of new equipment and technological processes in shipping cargo and providing services for passengers;

norm for withholding from calculated profits to state budget;

wage fund of nonproductive personnel;

limit of state centralized capital investments and construction and installation work and putting into operation of fixed capital, production capacities, and projects at the expense of state centralized capital investments; and

volume of deliveries of ships and funds for basic kinds of material-technical and fuel-energy resources.

Particular attention should be devoted to the following fact: under the new conditions of management the shipping companies conclude direct agreements with senders (recipients) of cargo for its delivery on the basis of confirmed annual plans for shipping cargo in coastal trade and of export and import cargo in foreign shipping. Such agreements provide for additional material responsibility of both sides. Forming the basis here is the use of incentive allowances (discounts) to confirmed rates for these shipments depending on the fulfillment by sides of contractual periods for the presentation of cargo and transportation means.

[Question] What indicators are set by shipping companies themselves?

[Answer] All of the remaining ones. They include cargo turnover, prime cost, overall and calculated profitability, physical input limit, volume of container and palletized cargo shipments, volume of loading and unloading work in ports, numerical strength limit, and others. All of them will be determined by shipping companies independently as calculated ones during drawing up of plans. Thus, a broad scope is provided to collectives for manifesting initiative, for realizing creative thought, and for deep economic search.

[Question] A question has been repeatedly raised in our newspaper that it is necessary under the present conditions of maritime transport operations to introduce a labor productivity indicator which would characterize more precisely the effectiveness of labor input, for example, in the fleet. Up to now it has been measured by the quantity of cited ton-miles which account in a certain period of time for one worker engaged in shipments. You must admit that this physical indicator suffers from serious shortcomings.

[Answer] I agree. This problem was repeatedly discussed by specialists, and even an economic experiment was conducted for the purpose of solving it. Taking into account the fact that labor productivity in ton-miles does not fully reflect the final result of the transportation process, hereafter it is envisaged to calculate it in value terms. That is, as I have already mentioned, according

to income per production personnel worker. This will make it possible to determine the final labor productivity growth result of workers in the basic operational activity of shipping companies (the sector) not only in shipping but also in other work which cannot be expressed in ton-miles (transshipment of cargo in ports, icebreaker support of transport vessel operations in ice, technical maintenance and repair of the fleet, maintenance of depths at approaches and in the water area of ports, and so forth).

In speaking about indicators, it should be stressed that today a leading place in plans must be occupied by qualitative indicators, and by the normative method in their development. We are also directed at this by the draft of the new wording of the CPSU program. To constantly seek and find ways for improving them is a cause of every worker of the fleet and the coast.

[Question] A question arises as to how the economic activity of shipping companies and of the enterprises which form a part of them will be appraised?

[Answer] It was established that such appraisal will be carried out by higher organizations and local organs during the summing up of work and socialist competition results with regard to fulfillment of plans for shipping (dispatching) cargo in coastal trade and of foreign-trade cargo in foreign shipping, proceeding from pledges with regard to shipping cargo according to list of products and within periods according to concluded agreements; with regard to income from transporting cargo and passengers abroad after deducting expenditures; and growth of labor productivity, profits, putting production capacities and projects into operation, and basic tasks for mastering and introducing new equipment.

#### Rights and Possibilities Are Being Expanded

[Question] You have already mentioned that rights and possibilities of shipping companies are being expanded under new management conditions. In what is this expressed specifically?

[Answer] Let us take the transportation of cargo and passengers abroad as an example. Suppose that a shipping company has obtained above-plan income from it. Can it use some part of these funds? Yes, it can. When working in a new way it is granted the right to expend 5 percent of above-plan income from foreign shipping for the acquisition abroad of equipment, new machinery and technology.

Great possibilities now also open before shipping companies in questions of using the production development fund. Judge for yourself. For the purpose of improving the use of production potential as well as increasing the interest of shipping companies in raising the technical level of production at the expense of their own funds, they are granted complete independence in disposition of the development fund. Its means are provided in the composition of state capital investments and are allocated separately in a plan as noncentralized capital investments along with centralized ones. This fund is distributed in shipping companies according to norms subject to the level of utilization and the degree of fixed production capital depreciation and results of economic activity. Norms of its formation by virtue of profit withholding tax and amortization deductions, intended for complete restoration of fixed capital, are established by the ministry for shipping companies as stable ones for a 5-year period.

Shipping companies develop and confirm plans for reequipment of production, which is set for implementation by using means of the aforementioned fund. Included in these plans are, first of all, measures which ensure acceleration in the pace of replacement of outdated production capital and in conducting work within a brief period of time. In this case mere substitution of equipment must not be allowed under the guise of reequipment.

Means of the development fund are not subject to withdrawal from a shipping company and can be accumulated by it for carrying out necessary measures in subsequent plan periods. The aforementioned means are kept and used in bank institutions, which finance capital construction. Temporarily spare means of the fund are used by banks as resources for giving credit for reequipment and modernization of production. A bank pays interest in the annual amount of 0.5 percent to shipping companies for using means of their development fund.

I would like to add to what I have already said that shipping companies are also granted the right to make additional expenditures for reequipment of fixed capital above the limits of state centralized capital investments provided for by a plan when it is economically expedient by using a part of amortization deductions that are earmarked for major repairs. All of this attests to the fact that a collective which works in a new way gets many rights. The matter now depends on using them with the greatest benefit.

#### Economic Incentive

[Question] Everyone is aware of the great influence that economic incentive has on growth of labor productivity and on strengthening the interest of collectives and every worker in achieving the best national economic results.

How will it be implemented now in shipping companies and will it affect wages and payment of bonuses to their workers?

[Answer] Actually, the role of wages and economic incentive in improving qualitative indicators of activity of shipping companies is being raised when working under new conditions. The wage fund of production personnel is formed of two components, which are the wage fund of the basic year plus a supplementary fund that is calculated according to norms for every percent of increase of comparable income from basic operational activity. These norms ensure the interest of collectives in the growth of labor productivity and in observing economically sound correlations between the growth of labor productivity and the growth of average wages.

[Question] That is it may be said that the wage fund completely depends on the income obtained by a shipping company from basic operational activity. This means that an increase or decrease in it will immediately affect the wages of a worker?

[Answer] Quite right, the management of shipping companies and enterprises in coordination with trade union committees is given the right by economizing the wage fund to set supplementary payments to wage rates of up to 25 percent for

professional skill to highly skilled workers and dockers-machine operators and up to R300 per month to ship crews and workers engaged in particularly difficult and responsible operations. It is important that the amounts of these allowances and supplementary payments must be set by taking into account every worker's personal contribution to developing and introducing new highly productive equipment and technology, reducing labor, material, and power intensiveness, and raising the quality of work and services.

Engineers, technicians, and employees (except for ship crew workers) can receive allowances of up to 50 percent of salary. In this case the enumerated allowances are not included in maximum allocations for the support of management personnel. Moreover, supervisors of shipping companies and enterprises can introduce supplementary payments for holding two jobs (positions) to workers of coastal enterprises and organizations, who are among various categories of personnel, without confirmation of the list by a higher organization. Naturally, all of these supplementary payments, allowances and increased salaries are reduced or completely abolished when work indicators deteriorate.

[Question] But what is to be done with payment of bonuses? After all, the amount of an award is connected in percent relationship with monthly wages. Will it not turn out that the one who receives supplementary payments, allowances, and increased salaries would "lose out in cash" when bonuses are distributed?

[Answer] No, this will not happen. The point is that the amounts of bonuses (including maximum ones) for basic results of economic activity are determined by taking into account the supplementary payments and allowances paid for holding two jobs (positions), expanding service zones or increasing volumes of work, performing duties of a temporarily absent worker, high professional skill, high qualification, rank, raising labor productivity compared to plan by reducing the number of personnel at sectors being served on the basis of implementing organizational and technical measures, and for working during nighttime.

[Question] Will supervisors of enterprises have a material incentive in increasing the technical level and raising the quality of shipments?

[Answer] For supervisory workers of shipping companies it was established that bonuses in the amount of up to two salaries will be paid according to annual results in fulfilling a plan for shipping (dispatching) cargo in coastal trade and of export and import commodities in accordance with concluded agreements. In this case the amount of bonuses paid is differentiated depending on the relative share of shipments, which are carried out according to direct agreements, in the overall volume of shipments in coastal trade and of export and import cargo in foreign shipping, bearing in mind that with the relative share of aforementioned shipments of less than 50 percent bonuses are not paid.

Moreover, supervisors can receive bonuses in the amount of up to two salaries for fulfilling tasks with regard to developing and introducing new equipment and highly efficient technological processes in shipping cargo and providing services to passengers and for obtaining an economic effect by virtue of introducing scientific and technical achievements in production. All of the aforementioned bonuses are paid regardless of fulfillment of other bonus payment indicators.

[Question] From what you have said it is clear that the new management conditions make it possible to considerably expand economic incentive possibilities of leading workers. From what is this fund to be formed?

[Answer] Shipping companies and enterprises were permitted instead of numerous funds to create a unified economic incentive fund. This will make it possible to regulate organization and control over correct utilization of funds. This fund is formed by using means of the economic incentive fund (except for means of the wage fund which are used for payment of bonuses) and bonus funds for developing, mastering, and introducing new equipment; producing consumer goods; economizing various kinds of physical resources; collecting and turning over industrial by-products for reuse; contributing to inventions and innovations; commissioning production capacities and projects; and collecting, safekeeping, and shipping scrap and ferrous and nonferrous by-products.

Means of the unified economic incentive fund are used in accordance with an estimate, which is discussed and confirmed by a labor collective, to award workers for a specific contribution to solving tasks such as fulfillment and overfulfillment of a plan for shipping cargo in coastal trade and of export and import cargo, including in accordance with concluded agreements; developing and mastering new equipment; payment of awards for annual work results; rendering of one-time assistance; and so forth.

The economic incentive fund is formed by shipping companies and enterprises by proceeding from the size of the fund, which was formed in accordance with the basic year plan, and additional deductions according to norms for every point (percent) of increase in profits compared with the basic year.

The absolute amount of deductions to the economic incentive fund for shipping companies can be increased or reduced in the course of annual plan fulfillment subject to fulfillment of plans for shipping (dispatching) in coastal trade and for foreign-trade cargo in tons by taking fulfillment of commitments with regard to direct agreements into account. In this case for every percent of plan nonfulfillment the economic incentive fund is reduced to 3 percent and for fulfilling agreements in full it is increased to 15 percent. The specific amount of the norm for increasing or reducing the economic incentive fund is set by the Minmorflot in coordination with the Trade Unions Central Committee subject to the relative share of the volume of cargo shipments which are carried out according to agreements in the overall volume of shipments.

#### Social Aspects

[Question] Our readers, of course, want to know what effect the new management conditions will have on social aspects.

Taking into consideration the fact that they are directly connected with the sociocultural measures and housing construction fund, a question arises with regard to the mechanism of its formation.

[Answer] It must be said that this fund is formed by proceeding from the sum according to the basic year plan and the sum of the fund's increase for every percent of labor productivity increase, calculated by the running total to the basic year in the amount of 4 percent.

Shipping companies (enterprises) were given the right to be independently in charge of the sociocultural measures and housing construction fund. Of course, what it is used for must be discussed and approved by labor collectives.

The fund's role has also been raised in solving social development tasks of labor collectives. During the 12th Five-Year Plan, in proportion to establishment of necessary prerequisites the means of this fund should become one of the main sources for operating enterprises in financing the construction of housing, children's institutions, dispensaries, pioneer camps and other nonproductive projects.

The capital investments financed by using the means of the fund are provided in the composition of state capital investments and are allocated in a plan separately as noncentralized capital investments.

Construction of nonproductive projects, which is carried out by using the means of the fund, is provided with limits of capital investments in an order established in relation to means of the production development fund.

For staffing shipping companies (enterprises), which are converted to the new management conditions, with highly skilled personnel, the management is given the right by consent of labor collectives to retain at its disposal up to 15 percent of living space which was commissioned by virtue of the sociocultural measures and housing construction fund and to provide (by joint decision of the management and trade union committee) living space out of turn to highly skilled specialists with processing done in an established order.

Executive committees of soviets of people's deputies are charged to ensure immediate allocation of plots of land and inclusion in work plans of subordinate organizations the tasks for planning and constructing housing and children's institutions, which are to be carried out by using the means of the fund.

The profit distribution mechanism is being substantially changed in shipping companies. It is directed, first of all, at arousing the economic interest of enterprises in increasing monetary accumulations, which are needed by them as well as by the state (payments to budget) to carry out their functions.

The practice of payments to the budget itself has changed compared with the existing one. If formerly a norm was set for a part of profits which remained for the needs of an enterprise, then now a norm is determined for a part of profits which are transferred to the budget.

Normative deductions are made not from overall but calculated profits, that is from profits less payments for production funds and interest for credit. This should arouse the interest of enterprises in improving the use of these funds as well as in not permitting (or even in halting) the accumulation of above-plan reserves of physical assets. After all, their existence increases the payment for funds, and this causes reduction in the amount of calculated profits, that is reduces that part of them which remains at an enterprise for its own needs.



[Question] Quite a wide range of questions was discussed during the interview. But it is clear that more of them will arise, particularly when work in a new way begins next year. Therefore, our newspaper intends to begin a special rubric and to publish under it materials by maritime fleet specialists, scientists, leading economic, party, and trade union workers, and leading production workers. In them it will point to the principles and the essence of the new management methods, analyze the advantages of production activity of shipping companies and enterprises, provide systematic recommendations, and so forth.

[Answer] I believe that readers will follow such published material with interest. In conclusion I cannot but note that the sector has conducted extensive preparatory work with regard to conversion of shipping companies to new conditions. Moreover, a businesslike conference of leading workers of shipping companies, ports, and other maritime transportation enterprises was held in Odessa in November, participating in which were responsible representatives of the Administration of Affairs of the USSR Council of Ministers, the USSR Gosplan, the USSR Goskomtrud, the USSR Gosstrib, the USSR Minfin, the USSR Gosbank, the MVT, the Central Trade Union Committee of Maritime and River Fleet Workers, the central administrative machinery of the MMF, the Soyuzmorniprojekt, and party and soviet organs. It adopted appropriate recommendations and discussed basic provisions of methodical and normative documents.

However, success of the matter does not depend on finishing work on documents alone. The main thing is to increase the interest of ship crews, docker and machine operator brigades, and all participants in work in a new way in achieving the best final results with least expenditures. In this it is necessary to ensure broad support of all initiatives and proposals of labor collectives with regard to improving the economic mechanism. Considerable work is also facing specialists of administrations, associations, enterprises, and scientific institutions. It includes generalization and dissemination of experience of shipping companies, an all-round analysis of their activity, rendering of effective methodical assistance in solving arising problem, and much more. A rather important role is also allotted to the system of economic education in the system. In general, there is a need for a creative collective approach to solving a whole complex of tasks. After all, the new management conditions are one of the most important directions in the activity of maritime transportation and in putting party decisions into practice.

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## MARITIME AND RIVER FLEETS

### RSFSR RIVER FLEET MINISTRY TESTS NEW ECONOMIC SYSTEM

Moscow VODNYI TRANSPORT in Russian 19 Dec 85 p 2

[Report on interview with L. N. Ryamzin, deputy minister of the river fleet, by VODNYI TRANSPORT correspondent Yu. Boldenkov: "All Shipping Companies of the RSFSR Ministry of the River Fleet are to be Converted to New Management Methods as of 1 January 1986"; date and place of interview not given; first four paragraphs are VODNYI TRANSPORT introduction]

[Text] Under contemporary conditions, when the scale of our country's economy is growing rapidly, specialization of enterprises is developing, the role of cooperation is growing, and shipments according to contractual commitments are increasing, efficient and uninterrupted operation of the transportation conveyor is of particular significance.

The draft of the Basic Directions states: "The basic tasks of transportation are timely, qualitative, and complete satisfaction of requirements of the national economy and the population in shipments..." The deeds and thoughts of rivermen of the Russian Federation are aimed today precisely at solving these tasks.

As of 1 January 1986, they are to be the first among the country's transport ministries to work under the new management conditions. It is necessary to start with a good pace in labor activity from the very beginning of the 12th Five-Year Plan in order to fulfill production plans.

Our correspondent has met with L. N. Ryamzin, deputy minister of the river fleet, who answered some questions of interest to readers.

[Question] Lev Nikolayevich, please tell us why is it precisely the MRF RSFSR that is the first among the country's transport ministries to be converted to the new management conditions, what played the decisive role in this?

Due to Demands of the Times Plus Initiative

[Answer] This is the way I would have responded briefly to this question. The party is purposefully pursuing an economic policy by striving on the one hand for harmonious combination of centralized planning leadership and on the other hand for strengthening the interest of enterprises in the growth of production efficiency.

For a long time it was impossible to achieve a fundamental change in this question, which is obvious in the example of our sector's work during the past several years.

The question is: Did we have a right to continue occupying a waiting position and resigning ourselves to the features of planning from an achieved level without taking into account factors such as the continuing growth of cargo shipments in regions of the Far North, eastern basins, and particularly over small rivers? Life demanded the use of modern means of efficiency in transportation and some reduction in mixed railway-waterway transportation in central basins. These and many other factors have necessitated a more attentive approach to the prospect of river transport development.

Following a thorough and all-round analysis of work results of the ministry and shipping companies, consideration of outlines for the development of shipping companies in the 12th Five-Year Plan and in the period up to the year 2000, and consultation with authoritative specialists in river transportation and other departments, the collegium adopted a decision on making a proposal with regard to conversion of MRF shipping companies to new management conditions. It remains for me to add that our proposal was approved.

[Question] We talk a lot about the new management system. Journals and newspapers quite often carry materials on the work of industrial enterprises and the increased economic effect, but in what is the essence of the new system in river transportation?

[Answer] Its essence is in improving planning and increasing the interest of labor collectives in the growth of transportation process efficiency and in strengthening cost accounting.

These levers should set in motion the unrevealed potential work possibilities of the fleet and coastal enterprises and improve provision of the national economy with transportation. The new management system considerably expands the rights of shipping companies in planning and economic activity and at the same time increases their responsibility for work results.

#### Improvement of Planning--the Main Lever in Improving Work of the MRF RSFSR Shipping Companies in Transporting Cargo and Passengers

[Question] The question about imperfection of plan indicators was at times posed sharply in statements by river fleet workers. How will the economic activity of shipping companies be planned now? What indicators and norms will be the fundamental ones for the sector?

[Answer] Well, this unfavorable criticism is justified in many respects. A contradiction actually existed between the production goals of shipping companies and the requirements of the national economy. For example, reduction in the distance of shipments in connection with the use of modern means of efficiency, development of more labor-intensive shipments to small rivers, to regions of the Far North, and in mixed river-sea communication have led to a reduction in the growth rate of cargo turnover in ton-kilometers and deterioration of labor productivity indicators in terms of ton-kilometers.

You must realize yourself that shipping companies did something like that reluctantly. The new plan indicators eliminate such contradictions completely.

As of 1986, indicators and economic norms, which are not subject to change and reconfirmation, are to be confirmed in a five-year plan for basic operational activity in plans for social and economic development of a shipping company as well as of the ministry as a whole.

Proceeding from a five-year plan, the following are included in an annual plan:

the overall volume of shipping (dispatching) cargo in tons;

tasks for realizing services for the population which require payment, including transporting of passengers;

expenditures per ruble of income from basic operational activity;

growth of labor productivity of workers in basic operational activity, calculated in value terms (according to income per production personnel worker);

profits;

norm of deductions from calculated profits to state budget;

wage fund of nonproductive personnel;

limit of state centralized capital investments and of construction and installation work and putting fixed capital, production capacities, and projects into operation by using state capital investments;

tasks for developing, mastering, introducing, and expanding the use of new equipment and technological processes in shipping cargo and providing services for passengers;

the volume in delivery of ships and basic kinds of other material and technical resources; and

tasks for average reduction of norms of expenditure of basic kinds of materials and fuel and power resources.

The aforementioned indicators, limits, and economic norms, which were confirmed by directive organs, speak of the broad scope opening for creative and economically expedient activity in shipping companies as well as at enterprises.

[Question] How will the new indicators affect the activity of shipping companies and what changes will occur in the economic mechanism? After all, if we are speaking of large calculations, it will be necessary to reorganize not only the principle of approach to ensuring transportation of cargo and passengers but economic thinking itself.

[Answer] I agree with you completely on this point. The activity of shipping companies and ports will now be appraised after fulfillment of plans for shipment

of cargo, including commitments with regard to cargo shipment agreements by taking into account the volumes of cargo presented for shipment, as well as for growth of labor productivity, profits, commissioning of new production capacities, and tasks for developing and introducing new equipment. Provisions have been made for utilization of economic incentive measures by increasing (reducing) the economic incentive fund (depending on fulfillment of cargo shipment agreements) and of new forms of bonus payments to workers of shipping companies and operating enterprises.

Since the indicator for cargo shipment volume in tons has become one of the basic work indicators, the income and profits will depend on how much and what kind of cargo was shipped and what kind of expenditures were involved. Here it is important to stress that ton-kilometers will be confirmed by the USSR Gosplan as an accounting indicator for determining fleet and fuel requirements. The gross productivity in utilization of all kinds of ships will, as in the past, be determined through cargo turnover.

Owing to the fact that the quality of passenger transportation service for the population depends not on the distance but on the variety of transportation and the completeness of services rendered, an indicator "tasks for realization of services to the population which require payment, including passenger transportation" was provided instead of the one for passenger turnover in passenger-kilometers.

An important aspect in economic activity will also be the fact that the limit in the number of workers and employees is to be determined by shipping companies themselves on the basis of confirmed indicators and it will be only coordinated with territorial planning organs.

Technical Improvement of Production and Acceleration of Development and Introduction of New Equipment--the Second Fundamental Direction in the New Management System

[Question] Apparently, a particular place in appraising the economic activity of shipping companies is allotted to commissioning of new capacities and projects and fulfillment of tasks for developing and introducing new equipment. But these factors do not always depend on their activity and of the enterprises under their jurisdiction because they are let down by construction workers and there is a lack of necessary equipment and materials. What is to be done in such cases? Probably the new management conditions provide shipping companies with certain guarantees.

[Answer] I would have worded your question differently: the new management system does not provide guarantees, but considerably expands the possibilities of shipping companies and enterprises with regard to reequipping production. Let us look at what this stems from. First of all, from financing. Supervisors have now been given the right to use means of the production development fund and bank credit for fixed capital replacement if the expenditures are directed at financing work with regard to reequipment and modernization of the operating fleet, enterprises, and production facilities. Expenditures from this fund may also be made for preparation and output of new equipment, including on the basis

of progressive technological processes; for conducting measures aimed at eliminating "bottlenecks" in basic and ancillary production; and for measures which promote growth of labor productivity and cost reduction of transportation and operations.

When there are not enough means in the production development fund, the USSR Stroybank and the USSR Gosbank may extend credit to shipping companies within the long-term credit extension plan:

for planned expenditures connected with carrying out measures with regard to reequipment and modernization, provided that capital investments are justified within average sectorial norms; and

for carrying out highly effective measures with regard to reequipment, the need for which arises during fulfillment of a plan, above the limit of state capital investments, and provided expenditures are justified up to 5 years.

Shipping companies are given the right in case of economic expediency to make additional expenditures by using a part of amortization deductions for production reequipment above the limits of state centralized investments provided for by a plan. In this case construction and installation work may be performed only in the volumes necessary for assembly and installation of equipment.

As you can see, possibilities of shipping companies to finance reequipment of production have been considerably expanded. It is necessary to add that the means of the production development fund are not subject for withdrawal from shipping companies. They may be accumulated for implementing necessary measures during subsequent periods. Temporary spare means of the fund can be used by banks, for which the latter will pay interest to shipping companies.

[Question] The possibility to manipulate funds will, of course, have a beneficial effect on results, but, apparently, there are also other aspects which prompt shipping companies toward reequipment?

[Answer] Beyond any doubt! Shipping companies have now been granted much independence in developing production. For example, they may develop and confirm production reequipment plans themselves when the estimated cost of measures is up to R2.5 million. It must be stressed in particular that planning estimates and title lists for reequipment, which are executed by using means of the production development fund and bank credit, are also developed by shipping companies independently and are confirmed by their supervisors.

When necessary the development of planning estimates is carried out by planning organizations on the basis of tasks confirmed by supervisors of shipping companies in accordance with indicators of a reequipment plan.

Measures, which ensure acceleration in the rate of replacement of outdated production capital and conducting work within a short space of time, must be included in reequipment plans first of all. In this case mere substitution of equipment must not be allowed under the guise of reequipment.

All measures aimed by shipping companies at acceleration of scientific and technical progress will be implemented ahead of other measures.

[Question] Lev Nikolayevich, how will this look in practice?

[Answer] Shipping companies submit data to the RSFSR Ministry of the River Fleet on volumes of capital investments and proposals on volumes of contractual work, which are necessary for fulfilling measures that are being implemented by using means of the production development fund and bank credits as well as overall technical and economic indicators, which characterize effectiveness of the measures.

The ministry will take into account the aforementioned capital investments in full volume as noncentralized ones and will submit data on them together with draft plans for centralized capital investments to the RSFSR Council of Ministers for consideration during preparation of plan drafts.

The RSFSR Council of Ministers, the RSFSR Minrechflot, and construction ministries are charged in developing draft plans for capital construction with ensuring immediate inclusion in them of work with regard to reequipment and modernization.

[Question] Quite often there were cases when funds and construction workers were available, but work stopped dead owing to lack of necessary material support.

[Answer] You are right, but in this situation it was established that for the purpose of improving material and technical support of measures, which are implemented by using means of the production development fund and bank credits, the development of plans for material and technical support of the RSFSR Minrechflot's shipping companies must be started by the USSR Gosplan, the USSR Gossnab, the RSFSR Council of Ministers, and the Ministry of the River Fleet from primary examination and provision in full volume of the requirements in material and technical resources of work with regard to reequipment and modernization of operating enterprises.

Proposals by the RSFSR Minrechflot on the volumes of capital investments in new construction will be examined only after requests of shipping companies for aforementioned resources are met.

A decision was adopted that as of 1987 the provision of material and technical resources for work, which shipping companies fulfill by a method of operations using organization's own resources with means of the production development fund and bank credits, is to be carried out directly by territorial organs of the USSR Gossnab on requests of shipping companies and in accordance with planning documentation.

The USSR Gossnab through its territorial organs is charged to determine the requirement of shipping companies in equipment and other material resources for this work and within established periods to submit appropriate data to the USSR Gosplan, and the USSR Gosplan is to provide for in draft plans the allocation to the USSR Gossnab of material resources necessary for ensuring this requirement.

The RSFSR Council of Ministers, corresponding councils of ministers of autonomous republics, and executive committees of soviets of people's deputies were ordered to ensure in a top priority order the allocation to shipping companies on their requests of local construction materials for fulfilling work by using own means and bank credits.

And, which is very important, the RSFSR Council of Ministers provides for top priority allocation to the Minrechflot, and the ministry to shipping companies of necessary limits of capital investments and construction-installation and planning work as well as material and technical resources for developing and mastering new equipment and technology.

Yes, shipping companies have been given great possibilities in reequipping production and accelerating scientific and technical progress. The main thing now is to develop and implement the outlined measures in a consistent and purposeful manner. The development of shipping companies and enterprises will now depend on how these questions are being solved.

Raising Interest of Labor Collectives in the Growth of Transportation Process Efficiency and Strengthening Cost Accounting--the Third Condition of New Reform

[Question] Lev Nikolayevich, the questions of incentive play an important role in improving economic activity of shipping companies and enterprises--this is a generally known truth. What new and economically expedient in this field for raising the interest of labor collectives in achieving the greatest results will be used as of next year?

[Answer] New principles for the formation of funds of economic incentive and sociocultural measures and housing construction were established. A unified order was established for these funds: they are formed proceeding from the amounts of these funds, which are determined according to a basic year plan, and the amount of increase of the economic incentive fund according to norms for every percent of increase of fund forming indicators compared with a basic year.

The amount of increase of the sociocultural measures and housing construction fund will be calculated according to a norm in the amount of 4 percent for every percent of increase of labor productivity, which is calculated by a running total to a basic year. At the same time, the responsibility of shipping companies for work results is being raised, since a reduction in the rates of growth, first of all, leads to reduction of the wage fund and bonus funds.

It was established, for example, that the wage fund of production personnel in shipping companies is formed from an amount of the wage fund of a basic year and a supplementary fund, which is calculated according to norms of increase for every percent of increase in income from basic operational activity.

The aforementioned norms are established proceeding from the necessity of ensuring interest of collectives in raising labor productivity as well as in adhering to economically sound correlations between the growth of labor productivity and the growth of average wages.



The rights of shipping companies and enterprises in the use of the wage fund have been considerably expanded. In coordination with trade union committees they may establish the following by economizing the wage fund:

supplementary payments to wage rates and salaries of highly skilled workers for professional skill. Thus, for example, proceeding from the new provision wages for workers of sixth category can be increased up to 24 percent, for workers of fifth category up to 20 percent, for workers of fourth category up to 16 percent, and for workers of third category up to 12 percent of the wage rates. For port workers who have first classification class 25 percent, second class 20 percent, and third class 15 percent of the wage rates. For rank and file ship crew members the amount of salary may be increased by 10 percent;

allowances for highly skilled engineering and technical personnel and employees in the amount of up to 50 percent of salary; and

salaries for highly skilled workers who are engaged in particularly difficult and responsible operations in the amount of up to R250 rubles per month.

The amounts of supplementary payments, allowances, and salaries will be determined by taking into account every worker's personal contribution to developing and introducing new highly efficient equipment and technology, reducing labor, material, and power intensiveness, and raising the quality of output being produced. The aforementioned supplementary payments can be reduced or completely abolished when work indicators deteriorate.

[Question] For prompt and qualitative fulfillment of plan indicators ship crew members and production and engineering and technical personnel are paid a bonus. What is the new order for crediting to it? Will allowances and supplementary payments affect its maximum amounts?

[Answer] I would like to say right away that, on representation of the RSFSR Minrechflot, the State Committee for Labor and Social Problems together with the AUCCTU were given the right to raise the established maximum amount of bonuses paid from the wage fund to ship crew members and port workers for achieving the highest final work performance results in transporting cargo and passengers and in processing ships and railcars.

Further, the amounts of bonuses, including maximum ones are determined by taking into account the supplementary payments and allowances paid to workers, including for holding two jobs, expanding service zones or increasing volume of work, performing duties of a temporarily absent worker, high professional skill, rank, raising labor productivity, and for working during nighttime.

Thus, both supplementary payments and allowances are organically taken into account in determining the amount of a bonus and only contribute to its increase.

[Question] Apparently, economic incentives will also concern supervisors of shipping companies for successful work of the fleet, ports, and enterprises?

[Answer] Yes, for the purpose of strengthening the interest of supervisory workers of shipping companies in raising the technical level and quality of shipments they can be paid bonuses for annual results in the amount of up to two salaries.

First of all, for fulfilling shipments and dispatching cargo in accordance with concluded agreements. In this case bonuses are differentiated depending on the relative share of cargo shipments being carried out according to agreements in the overall volume of shipments. Second, for fulfilling established plan tasks for developing, mastering, and introducing new equipment and new highly efficient technological processes in shipping cargo and providing services for passengers as well as for getting an economic effect by introducing into production of scientific and technical achievements. All of the aforementioned bonuses are paid regardless of fulfillment of other bonus payment indicators.

[Question] We have examined in sufficient detail the question with regard to raising salaries and establishing personal supplementary payments, but economic incentives do not consist in them alone. It is also more rapid solution of apartment problems, getting a place in a kindergarten, a children's nursery.

[Answer] Shipping companies and enterprises have been given the right to solve questions independently with regard to using the sociocultural measures and housing construction fund. Labor collectives decide after discussion as to where means of this fund should be directed. During the 12th Five-Year Plan, in proportion to establishment of necessary prerequisites the means of this fund will become for shipping companies and enterprises one of the basic sources for financing construction of residential houses, children's institutions, dispensaries, pioneer camps, and other nonproductive projects. Moreover, construction of nonproductive projects, which is carried out by using means of this fund, is ensured with material and technical resources and limits of capital investments and contractual work in the same order as construction of projects by using the production development fund.

Executive committees of soviets of people's deputies were ordered to ensure in priority order the allocation of land plots and inclusion in work plans of subordinate organizations the planning and construction of residential houses and children's institutions.

Means of the sociocultural measures and housing construction fund which are accumulated by shipping companies and enterprises are not subject to withdrawal.

It is necessary to note one very important aspect here: to ensure staffing of shipping companies and of enterprises which form a part of them with highly skilled personnel, the management is given the right by consent of labor collectives to retain at its disposal up to 15 percent of living space which was commissioned by using the means of the sociocultural measures and housing construction fund and to provide it out of turn to highly skilled specialists.

[Question] Lev Nikolayevich, for all shipping companies the new year will be truly a new one. But how are they supplied at the local level with developments, documents, and methodical instructions so that work, as the saying goes, would turn out well from the first day?

[Answer] Extensive work has been conducted in the central administrative machinery. An order was issued by the minister in which specific tasks and responsibilities of main administrations, administrations, and departments as well as of supervisors of shipping companies are defined. All necessary normative documents, which will be conveyed to shipping companies in the near future, are in the last stage of coordination with appropriate organs.

The success of the matter will depend, first of all, on attentive study of all prepared documents and on conveying particular features in them to every river transport worker of the RSFSR. It must be always borne in mind that conversion to new management methods in basic operational activity of shipping companies and of the Ministry of the River Fleet as a whole should be appraised by every sector worker, on the one hand, as great trust in the rivermen of Russia and, on the other hand, as personal responsibility before the party and the people for successful solution of transportation questions.

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## PORTS AND TRANSSHIPMENT CENTERS

### MORE CARGO TRANSFER TECHNOLOGY, EQUIPMENT URGED

Moscow VODNIY TRANSPORT in Russian 27 Aug 85 p 2

[Article by L. Vetrenko, professor, doctor of technical sciences and chief of the LVIMU (Leningrad Higher Engineering Navigation School) imeni Admiral S. O. Makarov School of Transshipment and Port Operations Administration: "What is Interfering with the Transportation Technology System"]

[Text] In the last quarter century the volume of cargo handling at the nation's ports has increased 3.3-fold while the number of dockworkers and machine operators has been reduced by 2 percent. The main task in further intensifying production at maritime ports now is one of reducing, in fact absolutely minimizing, heavy and unproductive manual labor. This task has both a deep social and an economic nature.

Today it is impossible to analyze the transshipment process at maritime ports without considering the nation's transportation technology system as a whole. When you speak of internal, coastal shipping, both shippers and receivers have experienced problems, delays or, even worse, loss of cargos, at all stages of the process from the port to the railroad. The system is responsible for getting cargos from the shipper's door to the receiver's door.

Unfortunately, the transportation technology system is not under a single, dedicated authority. Some examples can illustrate what this leads to.

Let us say that a 20-foot international-standard container arrives at a port. Taking it off a ship in the "direct" way and placing it on a special railroad car involves a matter of minutes. Why then will the dockworkers put such a container on the dock and begin to dismantle it? There are at least two good reasons. First, there is not enough of the special rolling stock needed to carry these containers. Then, even if the special cars could be found a second threat faces the 20-foot container: only 1 percent of the nation's railroad stations can handle these containers. The remaining 99 percent do not have the special transshipping facilities required. There is one solution: dismantle

the container at the port. Or if the situation is reversed: small cargos arriving at the port are reloaded into international-standard containers. Is this really happening? Is this part of a dockworker's job?

In the outskirts of Tallin there is a cement plant which until recently shipped its hard-to-transport products from the port of Tallin in paper bags weighing 50 kg each. For years port workers had asked the plant to acquire a machine to consolidate large lots of cement bags on a special pallet. This package (already weighing 2 tons) has a number of advantages: it speeds the transshipping process, improves the working conditions of those handling cargo and allows cement to be shipped in open flatcars, thus freeing scarce closed cars for other cargo.

The Estonian cement workers resisted the suggestion as long as they could. They stopped their opposition only when the USSR Ministry of the Maritime Fleet acquired the packaging machine for itself. But is this a matter to be handled by the Ministry of the Maritime Fleet which should be buying ships and transshipment port equipment instead of packaging machines?

Twenty five years ago the nation's first combined teams of dockworkers appeared at maritime cargo ports. Here, the principle of cooperation among team members allowed the freeing of thousands of hands and significantly raised labor productivity. At the initiative of maritime port collectives, these teams were established in other branches of the national economy. By the mid-1970s, the UKB--consolidated combined teams--appeared. Package and container cargo handling also began at that time. Is there a limit to further improvement of transshipment processing equipment at maritime ports? Of course there isn't! After containers there were lighters. After improving the transshipment facilities of the nation's maritime ports we are now talking of ways to improve the entire transportation technology system.

The country's transportation technology system exists. While it is not getting on too well without a single controlling authority, I would like to draw the reader's attention to critical questions for which answers must be sought today.

The first three groups include questions which are particularly technical in nature.

The first and most important problem facing all participants in the transportation technology system (in whose ranks I must include those who ship and receive cargo) is that of consolidating shipping containers and creating modern ways of consolidating cargos. I mean all types of methods--from slings for consolidated packages to barge tugs and rafts. The task is to forget all about shipping individual, small packages (boxes, bags, barrels, etc.) on maritime fleet vessels.

The consolidation of shipping containers is necessary to eliminate manual labor on the part of dockworkers. This a part of the social program for developing our society. From a purely economic point of view, the consolidation of packages increases labor productivity and nearly triples the rate at which ships and railroad cars are loaded and unloaded.

The second group of questions covers transportation technology system transport equipment. For the maritime fleet this primarily involves special fleet vessels: the "Ro-Ro", "Ro-Flo", container carriers, barge haulers and ocean-going ferries.

It is extremely important that modern ocean-going ships be equipped with open-type cargo holds with a minimum amount of below-deck space which is difficult to access for loading and unloading.

The third group of questions concerns transshipment equipment at all levels of the transportation technology system. Modern, high-capacity port cranes, reloaders, manipulators and general purpose loading equipment are required.

I give a special role in this group of questions to the creation of an arsenal of special handling tools which could allow, for instance, a single loader to be used with different types and sizes of cargo.

The group of commercial and legal questions will play a significant role in the future intensification of transportation technology system operations. New rate structures and conditions are needed for transshipping consolidated cargos. A rate system is needed which would encourage all carriers (the maritime fleet, railroads and the river fleet) to handle consolidated freight, whether in the form of strapped packages, containers or lighters. Cargo delivery periods must be established for all cargo flows, because the commercial speed at which cargos move is one of the most important factors of transportation technology system operation and for the savings achieved in its work.

I would assign organizational questions to the fifth group. First of all, a combined water/rail cargo delivery system must be actively implemented. Shippers should not be interested in intermediate transshipment points at which cargos shift from one form of transportation to another on their way to the receiver. This should take place at the carrier's discretion.

Still missing and necessary is a unified system of indicators for planning and evaluating the operation of all forms of transport in the system.

Each year up to 60 billion tons of all types of cargo are transshipped on all forms of transport in this country. Some 5-6 million persons are occupied in loading and unloading operations. The task of scientists and operations personnel in the upcoming 12th Five-Year Plan is as before--intensify cargo hauling and minimize manual labor in handling operations. This task will be fulfilled more completely as broad and modern solutions are found to the questions outlined above.

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## PORTS AND TRANSSHIPMENT CENTERS

### CHIEF ON PETROPAVLOVSK-KAMCHATSKIY PORT PROBLEMS

Moscow VODNYI TRANSPORT in Russian 27 Aug 85 p 2

[Interview with R. Bashirov, chief of the Port of Petropavlovsk-Kamchatskiy, by A. Mikhasenko, special correspondent: "Capital Construction: Balance Between Port Capabilities and Cargo Handling Volume Disturbed"; date and place not specified]

[Text] The Petropavlovsk-Kamchatskiy Commercial Port. Ships from the Far Eastern, Primorye, Sakhalin and Kamchatka shipping companies arrive here at Avachin Bay all year long carrying cargos needed by the peninsula's economy and its inhabitants. Coal, clinker, powdered lime, cement, metals... A simple listing of the cargos would fill several pages. The cargo volume is growing rapidly and port workers are finding it increasingly difficult to handle each year. Why?

One of the reasons is the imbalance between the development of basic operations and the equipment needed to perform the job. Many problems involve capital construction, the improvement of technological processes and the modernization of production.

Port economists calculate that the proportion of container cargo handled has grown 2.5-fold and now amounts to some 707 thousand tons (including medium-sized containers). Specialists believe that these figures will increase. Now the dock area contains some 1400 20-foot containers instead of 1276 (its theoretical capacity). A unitized warehouse has been built at the port of Vladivostok and SKM-700 ships have begun operation on the Vladivostok-Petropavlovsk line. In a little while the terminal will be "suffocated." Processing the number of containers planned in the existing space is impossible without breaking safety rules and operating procedures. A second phase must be started. The repair and construction administration, workshop, motor pool, commissary and TMT [not further identified] wholesale warehouse buildings must be torn down. Here there is only one possibility--develop the port toward the south, including the construction of berths 13 and 14 with nearly eight hectares of warehouse space. The port has formulated and prepared its suggestions, the shipping company managers support us and we have received promises of support from the Transportation and Operation of the Fleet and

Ports Main Administration of the Ministry of the Maritime Fleet. Now all efforts must be combined to see this matter through.

Construction of the workshop is another problem. Designed in 1979, its construction was started on Signalnyy Cape in 1981. Then due to insufficient resources, the general contractor--the Kamchatmorgidrostro Trust (KMGS)--had to stop construction. The work has been restarted and the project is scheduled for completion in 1987. While all this is going on the port's capability balance is disturbed since the workshop is obsolete and will not meet the port's needs. Last year formal construction of a 300-seat dining facility began. I say formal because not one thousand rubles was spent on construction last year! Zero! Construction is "continuing" this year--37 thousand rubles of a total of 300 thousand rubles have been spent. If we are going to build the terminal at this pace then we'll be finished around the year 2000.

For this reason we need to develop our own construction capability. The port's repair and construction administration, developed to satisfy the needs prevailing when it was created, is now in the center of the container terminal and is the main thing holding back progress in this area. The building and its equipment do not satisfy current needs and the repair and construction administration's saw frame is about to fall down. We are building a new saw frame which will be finished during the third quarter of this year. The Gidrorybprom Institute has made an estimate and will soon issue documentation on building an administration and operations building for the repair and construction administration. We still have not had a decision on capital investment for financing it. We really need the support of the shipping company and ministry authorities.

After the existing saw frame is torn down, a warehouse for breaking down 20-foot containers is proposed for the site. To meet the deadline set by the Transportation and Operation of the Fleet and Ports Main Administration, the question of transferring a Kansk-type warehouse to the port and providing the necessary equipment must be answered.

Something must be said about the need to carry out the construction of the terminal's second phase. The dining facility we mentioned earlier was an integral part of the container area construction at the time it was started. But because of the KMGS trust's systematic failure to perform, it was removed from the plan and given independent status. Mechanical repair shops, lighting towers and part of the utility network have also been and are being built "independently." Work on a unit of housing facilities, high-tension networks and transformer substations also remains incomplete. The loader garage, sewage pumping station, cleaning facilities, computer center and the planned but not yet furnished power/heat supply have been delivered with major parts incomplete. The assurances of proper completion remain on paper alone. All the parties involved need to draw conclusions from this situation. If this is not done, the decision-making errors will bring new problems in their wake.

[Question] How is the construction of the lighter storage base at Babiya Bay progressing?



[Answer] Port workers first encountered lighter handling last year when the "Aleksey Kosygin" arrived at Avachin Bay. They faced the situation and understood the enormous promise, without exaggeration, of the new transportation system. In a preliminary discussion in 1981 on the planning of lighter operations in the Far Eastern Basin, the Kamchatka Shipping Company and the Dalmorniiprojekt Institute [Far Eastern Ocean Scientific Research Institute of Design] decided to set up a lighter base in Babiya Bay. The port specialists' opinion that the base should be built in the southern portion of Signalnyy Cape was ignored. At the time, lighter handling was considered secondary and was not included when port capital investments were determined, so no provision was made for the base's construction. But it had to be built. During experimental operations, when up to 40 lighters were handled, they stood at anchor in Babiya Bay near the floating dock section. Practical operations with tugs and lighters during the first year showed the error in this decision to avoid building a major base by creating a temporary holding facility in the bay.

The bay ices over in November and the ice reaches a thickness of 1-1/2 meters by February. A 1.2-meter coating of ice forms on the bottoms of the lighters and they freeze into a single block which cannot be moved by tugs. The water in the bay is fresh, the ice is solid and lighters cannot be broken out of the narrows.

The pontoon draw-bridge is also an obstacle which hinders the lighters in reaching the holding area. The distance to the lighter tug anchorage which must be traversed by these floating containers is over five miles. We had to activate three powerful tugs, something truly wasteful in view of the current shortage in the tug fleet. Therefore, port specialists developed and continue to defend a suggestion to build and equip a lighter base near Signalnyy Cape to the south of berth No. 1. The advantages are obvious: the towing distance is reduced eight-fold and the area's favorable icing conditions allow wintertime lighter operations. The narrow, 120-meter long pier consisting of three floating-dock sections would protect the lighters and existing berths 10, 11 and 12 from wave action. The nearby warehouses and repair base would allow rapid unloading and facilitate maintenance when necessary. Security measures, electricity, heat, water and other services would be provided more easily in this area.

There is yet another powerful argument. The Kamchatmorgidrostroy Trust would gladly undertake the construction of the marine facilities since it has the necessary technology and specialists. We estimated that the construction expenditures would be pay for themselves in a three-year period. To add insult to injury, port personnel have had to make their point about these obvious benefits for year. In the future we will be able to handle as many lighters as necessary. Also in the future there can be discussion about reducing the line fleet on the Vladivostok-Petropavlovsk run and about the increase in lighter profitability.

[Question] But tomorrow's foundation must be laid today. In the meantime, judging by our conversation, the solutions to many problems find themselves in "reefs and shoals."

[Answer] Occasionally the bureaucracy interferes and sometimes even shipping company internal interests clash. We are overcoming the negative influences. The enterprise's plans are large and complex. We are going to develop our own ship repair facility. We are anticipating a supplementing of the auxiliary fleet during the 12th Five-Year Plan. We have a lot to do in developing Koryak Autonomous Okrug shipping points.

The current requirements for conserving labor resources and assuring cargo safety make it necessary to outfit shipping points in the okrug with wharf facilities.

In a word, this is work in an untouched area. The oblast is hurrying to convert itself from a frontier into an economically developed area. Transportation, particularly maritime transport, is an important part of the region's infrastructure. Our job is to ensure its uninterrupted and reliable operation.

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## PORTS AND TRANSSHIPMENT CENTERS

### PROBLEMS, DELAYS IN NEW TALLINN PORT CONSTRUCTION

Moscow VODNYI TRANSPORT in Russian 5 Dec 85 p 1

[Article from Tallinn by VODNYI TRANSPORT special correspondent V. Uzelman, under the rubric "Capital Construction": "A Schedule in Chain Reaction: 'Finish Construction of the New Tallinn Seaport' (from the draft of Basic Directions in the USSR's Economic and Social Development for the Years 1986-1990 and the Period to the Year 2000)"; first paragraph is VODNYI TRANSPORT introduction]

[Text] New Tallinn Port is among the large ports, construction of which was begun during this 5-year plan. Today it is growing in breadth and height. However, there still are a good many difficulties which are delaying construction, and, not infrequently, the schedule for putting the individual structures into service is disrupted.

Construction of the port is in its fourth year. The landing [wharf or pier] for mineral and construction cargoes already has been completed. And, whereas crushed rock from Vyborg, for example, previously was delivered to the port of Tallinn, and from there to here by truck, now the cargoes come direct. A railroad spur, on which construction materials have begun to arrive, has been activated.

The first priority turnover complex is supposed to go into operation in December of the coming year. Until recently, the state of affairs at the construction site had caused no particular alarm. The major operations, moneywise, were being carried out. The plan for construction and installation work was being fulfilled and overfulfilled.

The Baltmorgidstroy [Baltic Sea Hydraulic Engineering Construction] Firm's general contractor, SU-423 [Construction Administration 423], even now is handling the general contract, but only by using subcontractors. It cannot provide the necessary tempos with its own forces today, and the most disruptions of all occur precisely on those structures where the workers of this administration are employed.

The perishable-cargo facility is part of the turnover complex, along with the grain facility. The turnover complex is supposed to receive its first ships a year from now. The storage accommodations are practically ready for this al-

ready. But then the landings are being erected with marked delay. Only one has been completed, and that one by just 60 percent. Consequently, the schedules for turning the working area over for construction of the ramps for warehouse No 2 have been disrupted. Installation of the portal cranes is under threat of disruption. A truism--disruption of the schedule on one structure causes a chain reaction, and has an effect, like an echo, upon the others--at once comes to mind.

One of the structures to be delivered this year is the central distribution center (TsRP). Bringing it into operation will provide a reliable electric power supply for construction. However, as of today, barely more than half of the planned work has been carried out here. The roof, the subfloor conduits, and the inside and outside trim are not finished, although the TsRP, according to the schedule, already should have begun operating in the third quarter. Naturally, the subcontractors cannot start installing the electrical equipment. Moreover, one of the two strands of the cable-laid electric power line has not been run from the "Kallavere" substation to the TsRP, the laying of the second electric power cable line has not been started, and construction of the foundation for the power transformer has not been finished at the "Kallavere" substation. And the transformer, by the way, was received as long ago as last year.

To what is the departure from schedule leading? To interruptions in electric power supply during the winter period, and to the impossibility of supplying SU-423's own base, being put into operation this year, with electric power. And then, naturally, to a lowering of the other structures' construction rates.

Disruption of schedules also leads, at times, to the damaging of valuable materials. Thus, the delay in constructing a base for assembling and storing materials and equipment compelled the NTP [New Tallinn Port] management to keep expensive equipment, not in warehouses, but in open air storage.

Wherein lie the causes for such a situation, in which the work plan is being fulfilled as a whole, but individual structures are being built behind schedule? First of all, in the insufficient capacities of the general contractor--the Baltic Sea Hydraulic Engineering Construction Firm's SU-423. Before the start of New Tallinn Port's construction, this administration had been constructing no more than 100 linear meters of landing lines in a year, and then they loaded this gigantic thing onto it, having reinforced it with practically nothing.

The matter of the need for bringing in additional labor resources has been put more than once before the Glavmorrechstroy [Main Administration for Maritime and River Facilities] of the USSR Mintransstroy [Ministry of Transport Construction]. Indeed, things reach the point at which workers are lacking for several months on some structures, as was the case in erecting the off-site electric power supply systems and structures. No more than two or three persons regularly work on the water supply line's second-lift pumping station. In result, the station's activation, planned for the third quarter, has been postponed. And, of the turnover complex's 19 structures, work is being done on only 4 in all.

Let me remind you, in this regard, that SU-423 is a hydraulic engineering organization, and many of the kinds of work that must be done at New Tallinn Port are unfamiliar to it. I am talking, first of all, about the special operations--sanitary engineering, certain engineering, and others. The Main Administration for Maritime and River Facilities and its Baltic Sea Hydraulic Engineering Construction Firm should assist SU-423 in organizing the special work area, and in bringing its personnel up to full strength. Adhering to schedules then would become a more realistic matter.

"But even today matters could be organized better," thinks A. Ponomarenko, director of the New Tallinn Maritime Commercial Port. "Practical experience in similar large-scale construction convinces me that an operational staff is needed here, which would take upon itself coordination of all the involved construction enterprises' actions, control over adherence to delivery schedules and job-performance discipline by contractors, organization of socialist competition, and conduct of graphic propaganda work [agitation]."

In general the staff exists...in decisions of the interdepartmental commission, which meets once every several months. As long ago as May, the Baltic Sea Hydraulic Engineering Construction Firm was supposed to have manned an operations control [operativno-dispatcherskaya] group. But it does not exist as yet.

Barely more than a year remains before the start of operation of the new port's transshipment complexes. They are fitted out with the most modern and complicated equipment. Only trained people with high qualifications will be able to operate it. Therefore, it is necessary to get the personnel ready even today, for you will not get almost a thousand persons (and that is just how many will work at the first turnover complex) in a single stroke. But who is supposed to engage in this? Unfortunately, the future manager of the new port has not as yet been named, and all turned over structures are transferred temporarily to the books of the director's office. But it, to be sure, will not organize the transshipping process. This problem must be solved without delay, as well as that of housing. The structures for nonproduction purposes also are being erected behind schedule. Of a little over 3 million rubles, only about 2 million have been used since the beginning of the year by the Promstroy [Industrial Construction] Firm of the Estonian SSR's Minstroy [Ministry of Construction].

From afar, New Tallinn Port presents a more or less completed picture. However, upon detailed acquaintance with the state of affairs, one sees that there is no end of work. It is the very same with construction progress also. In accomplishing the SMR [construction and installation work] volume overall, individual structures, among which are limiting ones, are being erected behind schedule. And this can lead to a situation in which the first priority turnover complex, being turned over next year, will operate in spurts, and with disruptions.

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## PORTS AND TRANSSHIPMENT CENTERS

### CHIEF ON BAKU PORT OPERATIONS

Moscow MORSKOY FLOT in Russian No 12, Dec 85 pp 8-9

[Article by Baku Port Chief T. Akhmedov: "Management and Economics: The Chief Port of the Caspian"]

[Excerpts] The Port of Baku is the largest in the Caspian Basin, joining the Caucasus, Central Asia and the Volga region in a unified transportation center. Through its berths pass cargo in transit from Western and Eastern Europe, as well as export cargo of Minvneshtorg [Ministry of Foreign Trade] for Iran.

In the postwar years, the developing national economy required a further increase in the amount of cargo handling, and the developing Volga-Baltic and Volga-Don water routes gave the Caspian direct egress to all seas contiguous to the European territory of the USSR.

A new timber port area was built and placed in operation with three berths and the necessary equipment for the fully mechanized handling of timber and bulk cargos, along with a new passenger area with a modern maritime terminal and berths for vessels of the port fleet. The construction of oil-handling berths with modern equipment for pumping oil and petroleum products was completed on the Apsheronkiy Peninsula.

The fixed productive assets of the port grew by more than 15 million rubles in the 11th Five-Year Plan. New cargo berths equipped with powerful cargo handling complexes were placed in operation and the operating hydraulic engineering structures for receiving and processing ferries and RO-RO ships were reconstructed.

With the active participation of the port collective, a transportation center was created based on it that united the port workers, sailors, railroad workers, drivers and the Soyuzvneshtans [All-Union Foreign Transportation] Association.

The interaction of the related transport workers was aimed at accelerating the turnaround times of ships and railroad cars, making maximum use of the capabilities of the handling complexes, and resolving future tasks that will ensure the growth of the efficiency of the transport process. Thus, at the Baku

Transportation Center more than 200,000 tons of cargo was switched from rail to motor vehicle and river transport. Agreements were concluded with principal recipients for the direct fixed-route shipment of building materials and mineral cargo. The shipment of agricultural products was taken under special review. More than 260,000 tons of agricultural cargo was shipped in 1984 without delays or losses.

The successes achieved by the collective were assisted by the intersector socialist competition organized by the sailor, railroad and motor vehicle trade union committees. The results of this competition were discussed at joint sessions of the trade union committees and by representatives of the coordinating council, who awarded challenge pennants and banners along with cash prizes.

Nonetheless, there still exist many substantive shortcomings in the operation of the transportation enterprises of the Baku Transportation Center in spite of the positive results achieved.

The monitoring of the activities of related transport workers by the on-site transportation commissions is still poorly arranged. The coordination of ministerial and departmental activity, the management of railroads and shipping companies and all industrial enterprises on the east and west shores of the Caspian should be improved, cargo traffic in mixed shipments should be made more efficient, and the delivery of cargo in containers and parcels should be more broadly developed.

The lack of departmental coordination is a barrier yet to be overcome in the incorporation of continuous scheduling for transportation center operation.

We are especially concerned with the impending increase in the number of ferries. This will require the immediate revision of documents and their unification, as well as the simplification of the receipt and dispatch of cargo in railcars between the Azerbaijan Railroad, the Caspian Shipping Company and the Central Asian Railroad. The participants in the transportation process still make poor use of computer technology in planning and coordinating operations. Due to inadequate information on railcar arrivals, there are cases where ferries are delayed or depart empty.

The results of the first quarter of port operation in 1985 are reassuring. The cargo handling plan was fulfilled by 113% and the intensiveness of cargo operations exceeded the plan by 29%. Railcar turnaround time was reduced by 50%, theoretically freeing up 1993 railcars.

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## PORTS AND TRANSSHIPMENT CENTERS

### MURMANSK PORT APATITE TRANSFER DEVICE DETAILED

Moscow MORSKOY FLOT in Russian No 12, Dec 85 pp 42-44

[Article by Candidate of Technical Sciences M. Matskevich, senior scientific colleague of Lenmorniiprojekt [Leningrad Maritime Scientific, Research and Planning Institute], Department Chief Designer V. Belokopytov and L. Dyatlov, sector chief of the Baltic TsPKB [Central Planning and Design Bureau: "Science to Production: Without Dust and Losses"]

[Text] The Port of Murmansk is the only one in the USSR through which apatite concentrate is shipped. The apatite concentrate is currently transferred from railroads to maritime vessels by a specialized conveyor complex which possesses the shortcomings characteristic of these systems, which do not allow the full solution of problems of protecting the environment and preventing cargo loss. Measures that were adopted recently were unable to eliminate fully these shortcomings.

Over the course of many years, Lenmorniiprojekt and the Baltic TsPKB conducted research that demonstrated the possibility of a creating highly productive pneumatic conveyor installation for transferring apatite concentrate that ensures a decrease in dust formation and cargo loss. Taking into account the uniqueness, innovativeness and complexity of the technical solutions for such a complex, as well as the lack of similar installations both in the USSR and abroad, it was decided to construct an experimental pneumatic conveyor installation (EPCI) that would be a part of the future pneumatic conveyor complex and would include all the fundamental assemblies of one process line of this complex.

For the EPCI it was necessary to determine all parameters of the pneumatic conveyor process and verify the workability of all assemblies and apparatus. The data received should form the basis of the design of the specialized pneumatic conveyor complex for transferring apatite concentrate from railroads to maritime vessels.

Construction was completed on the EPCI in the Port of Murmansk in 1981. Besides Minmorflot [Ministry of the Maritime Fleet], Mintyazhmash [Ministry of Heavy and Transport Machine Building], Minkhimprom [Ministry of the Chemical Industry], Mintransstroy [Ministry of Transport Construction] and Minmontazhspetsstroy [Ministry of Installation and Special Construction Work] took part



in the construction. The EPCI structure complex was designed to test three process lines: pneumatic car--silo (repository for free-flowing solids)--spherical pump--loading machinery--ship (first version); pneumatic car--two-chamber pump--loading machinery--ship (second version); and, pneumatic car--single-chamber pump--silo (third version).

The first two versions envisage the future creation of a pneumatic conveyor complex using silo-type storage and the third omits the necessity of using silos, since the chamber pump has storage capacity at the same time.

A system of two-chamber pumps with single-chamber pumps for back-up storage was proposed in planning the design principles of the future pneumatic conveyor complex. All three versions that were researched have common functional units: pneumatic cars (5 test models) with a 58-ton freight capacity, intended for shipping the apatite concentrate on the Kirovsk-Murmansk line and for operations in the closed loop; apparatus for unloading cars with automatic hosing and for loading the cars at the EPCI when working in a closed loop (storage--conveyor--hopper--pneumatic car and so on according to one of the versions shown above); a compressor station for generating compressed air, supplying the work process with pressure up to 0.8 MP [megapascals] (8 kilograms of force per square centimeter) and a control system with pressure up to 0.1 MP (10 kilograms of force per square meter). Moreover, all versions have a central control panel permitting control of all units and mechanisms with the exception of the loading machinery, which is controlled from the operator's cabin or immediately from the deck of the ship with the aid of a portable panel, as well as a measuring laboratory equipped with instruments for registering the basic parameters of the pneumatic conveyor process. All the functional units are joined in common process operation. The pneumatic cars, arriving from Kirovsk, feed into the EPCI. The apatite concentrate is unloaded into the silo or the single-chamber pump. From the silo, the concentrate enters the spherical or two-chamber pump and then, depending on the version in use, passes through the loading machinery into the hold of the ship.

Process Line	Cargo Pipe Diameter, mm	Productivity Tons/Hour	Operating Pressure, MP
Pneumatic car--Silo	150	160-200	0.55-0.60
Silo--Spherical Pump--Hold	300	1100-1200	0.67-0.69

For setting up and fine tuning the assemblies and units of the EPCI and conducting experiments under long-term operating conditions without depending on the arrival of ships and cars, the work was accomplished in a closed loop.

Processes that are not subjected to modeling were researched on the experimental installation, and parameters and data were acquired that could not be calculated theoretically with an adequate degree of precision. This regards the following: the productivity, expenditure and pressure of the air; the stability of the pneumatic conveyor process with a moisture content of 1.5% in

the apatite concentrate; the magnitude of actual stress in the body of the chamber pumps; the allowable number of load cycles and the minimum allowable ambient temperature; the amount of cargo residue in the pneumatic cars and the chamber pumps; the air-tightness of the hose apparatus connections and the longevity and operating reliability of individual units and assemblies; and, the optimal ship loading process using dust-suppressing apparatus.

As a result of research in 1982-83, the parameters shown above were determined and all units and assemblies of the EPCI were tested in operation with cargo. Based on the data obtained, the first version of the process line was recommended.

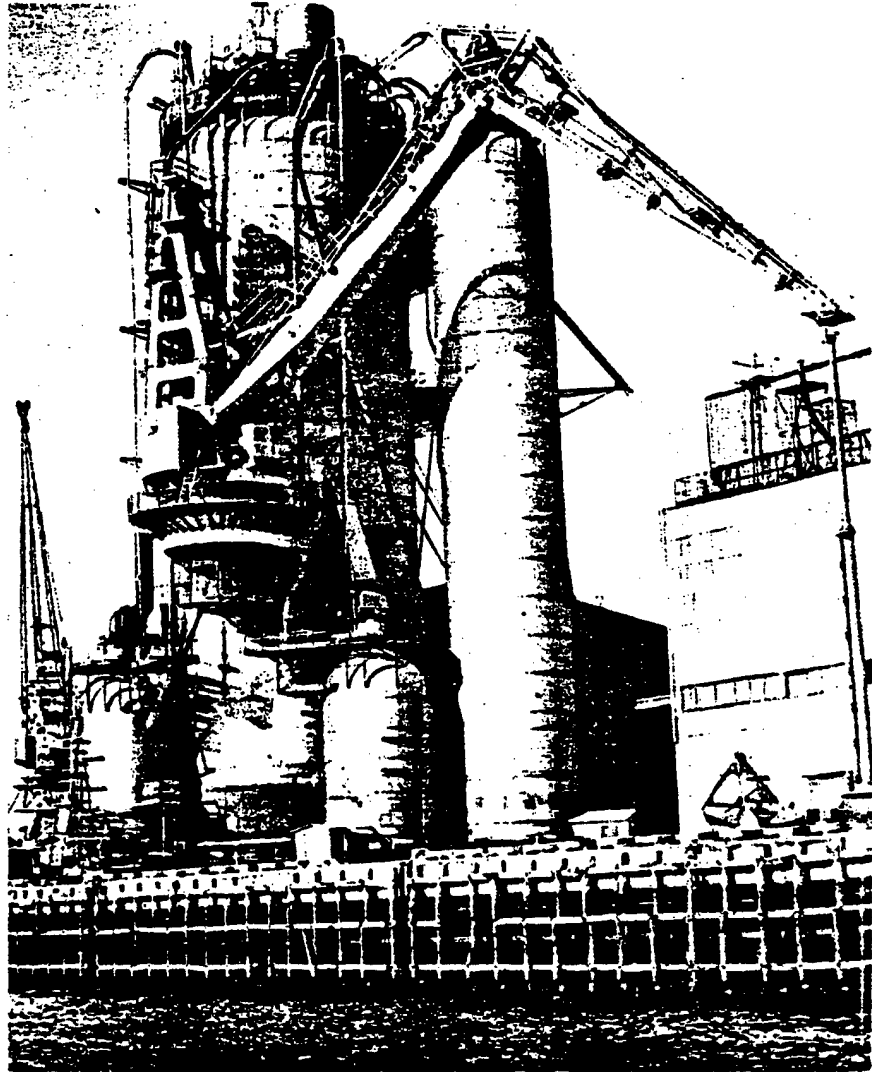
The fundamental technical data of this version are presented in the table.

The pneumatic conveyor process parameters obtained for transferring apatite concentrate from railroads to maritime vessels can form the basis of pneumatic conveyor complex design. These parameters sometimes turned out to be more efficient than those used earlier in the development of planning requirements. Specifically, the actual expenditures of air for transporting 1 ton of cargo when operating in the optimal mode with a productivity of 1,000-1,100 tons per hour turned out to be 7-10% less than estimated, which allowed a substantial reduction in the energy consumption of the complex; the value of the operating pressure in the operation of the silo--hold version does not exceed 0.7 MP instead of 0.8 MP according to estimates.

As for the fundamental merit of the new handling method for apatite concentrate, the full elimination of dust formation and cargo loss along the entire length of the route from the pneumatic car to the ship's hold should be cited. The most difficult problem, as should have been expected, turned out to be the elimination of intensive dust formation in the last link of the technological process--when loading the hold. It can only be solved in a process of ship test loadings.

It should be kept in mind that the EPCI was created for scientific research purposes and its possibilities as a single process line in a ship loading section are limited by several circumstances. The total capacity of the silo and spherical pump is 4,500 tons, which would allow the loading of only one hold at a time. The stationary position of the loading machinery, located on a silo cantilever and having 3 operating motions (turning, changing and raising the telescope mechanism) requires a special ship disposition at the berth to provide the possibility of handling the entire area of the hold. To switch from one hold to another requires that the ship be pulled forward, and to accumulate the usual cargo batch of 4,500 tons (from the area storage) takes quite a bit of time. Naturally, a complex with 8-10 process lines would not have these shortcomings. For developing the technology of hold loading and solving questions of dust suppression, the circumstances enumerated above had no significance.

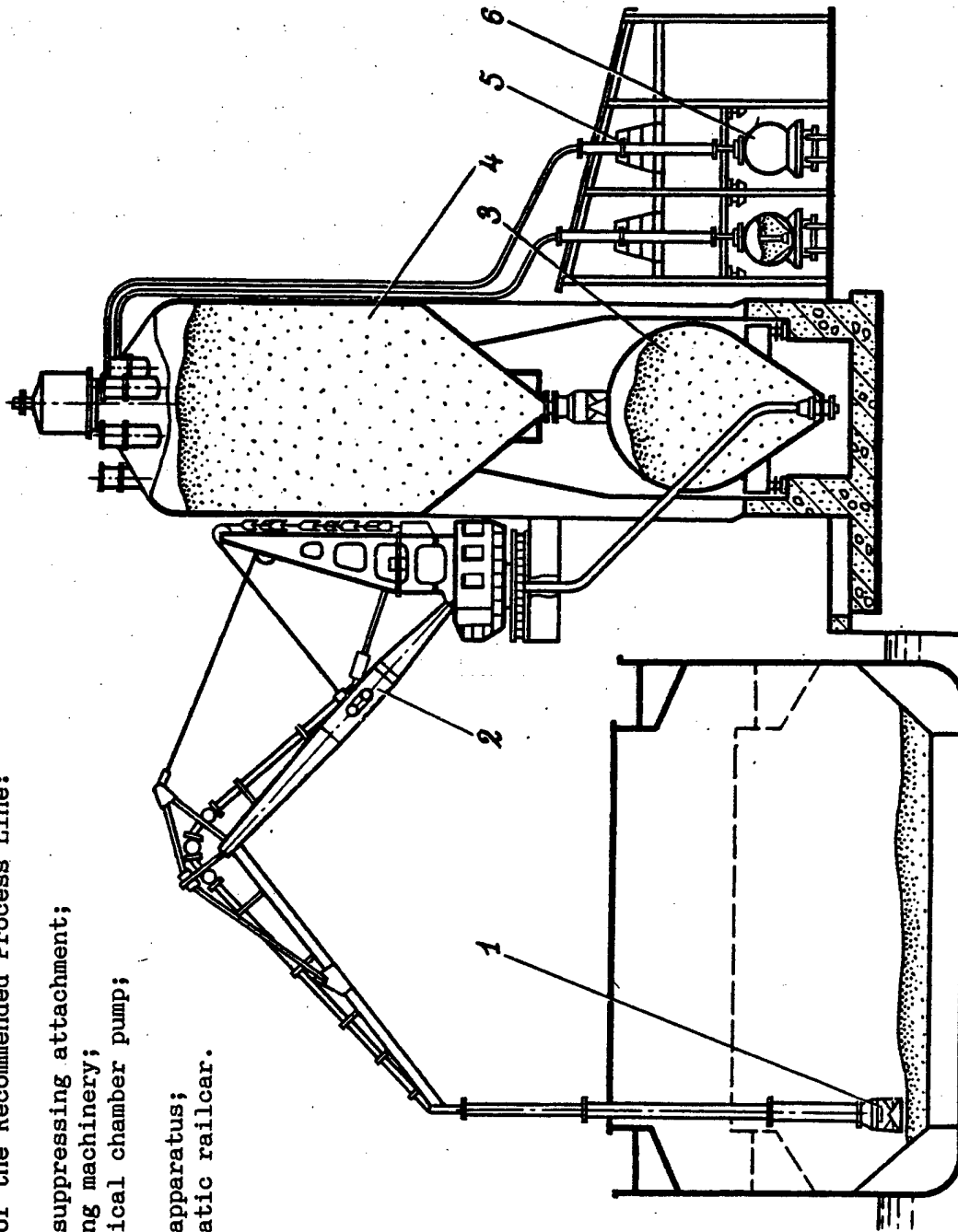
Five test loadings of ships were conducted in 1984. Cargo in 400-ton batches was fed beforehand from the conveyor complex storage into the EPCI hopper and was later transferred by pneumatic cars to the silo. After 3,500-4,500 tons



The Experimental Pneumatic Conveyor Installation

Diagram of the Recommended Process Line:

- 1--Dust-suppressing attachment;
- 2--Loading machinery;
- 3--Spherical chamber pump;
- 4--Silo;
- 5--Hose apparatus;
- 6--Pneumatic railcar.



was accumulated, it was unloaded into the hold of a ship. In the fifth and last test, 4,500 tons of cargo was kept in the silo and spherical pump for a month at unfavorable temperatures.

The hold loading cycle was composed of the following operations: setting up the cargo pipe of the loading machinery in the ship's hold (no more than 3-5 minutes); loading the spherical pump (4-6 minutes); inflating the spherical pump--raising the pressure to 0.7 MP (10-12 minutes); unloading the spherical pump depending on the productivity value chosen (30-38 minutes); discharging the air from the pump after unloading (3-4 minutes). The first two operations can be combined.

The loading cycle time for one batch of cargo (the capacity of the spherical pump) is from 47 to 60 minutes. With an average spherical pump load of 850 tons, the operational productivity is from 850-1,085 tons per hour for one process line. Thus, a specialized complex with the simultaneous operation of eight process lines can provide an operational productivity on the order of 8,000 thousand [as published] tons per hour.

Dust suppression systems were tested in the process of test loading the ships: dust-suppressing attachments installed on the end of the cargo pipes of the loading machinery, and systems for moistening the apatite concentrate immediately in the cargo pipe.

It can be supposed that the further refinement of loading technology and other measures with a standard moisture value for the apatite concentrate of approximately 1% will permit an even greater decrease in dust formation in ship loading. Dust and cargo loss have been fully eliminated in all remaining sections of the process line. The test loading of ships with apatite concentrate with the aid of experimental pneumatic conveyor apparatus is continuing today in the Port of Murmansk.

FROM THE EDITOR. As the issue went to press, it became known that a group of staff members of the Minmorflot organization was awarded a USSR State Prize for 1985 in the area of science and technology for the creation and incorporation of the automated engineering complex for apatite handling at the Port of Murmansk.

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## PORTS AND TRANSSHIPMENT CENTERS

### LENINGRAD FLOOD BARRIER CONSTRUCTION EXPERIMENT

Moscow VODNYI TRANSPORT in Russian 4 Jan 86 p 1

[Article by VODNYI TRANSPORT staff correspondent V. Yeliseyev, under the rubric "Attention--Experiment": "An Experiment in the Gulf of Finland"]

[Text] The Leningrad Hydroelectric Power and Special Construction [Lengidroenergo-spetsstroy] Administration's hydraulic engineering builders [gidrostroyteli] are working for the seventh year in the Gulf of Finland, constructing a system of flood-protection structures. The northern shore of the Gulf in the vicinity of Gorskaya Village already is connected with Kotlin Island by a dam, along which, today, run BelAZ's [motor vehicles made by the Belorussian Plant] and KrAZ's [motor vehicles made by the Kremenchug Plant]. Two gigantic water outlet works have been built. Production bases have been constructed on the Gulf's north shore and on Kotlin itself.

As A. Perepelitsyn, the Lenges [Leningrad Hydroelectric Power Plant] Administration's party committee secretary, related, the hydraulic engineering builders, in accepting increased socialist obligations in honor of the forthcoming 27th CPSU Congress, obligated themselves to achieve high intensification rates in all work and the acceleration of erection schedules for the system's individual structures.

It is presumed that no less than a year of working time will have been saved in the erection of structure V-4 (water outlet works No 4). Because of what? It all began with the planning. The project's Chief Engineer L. Bershteyn, an engineer of the Gidroyekt Institute imeni S.Ya. Zhuk [All-Union Planning Survey and Scientific Research Institute imeni S.Ya. Zhuk, formerly the Planning, Survey and Research Administration for Constructing Hydraulic Engineering Structures], having had experience in constructing the Kislaya Guba Tidal GES [Hydroelectric Power Plant] at Kola Peninsula, proposed abandoning, in building the structure, the classical method for its construction, wherein sheet piling is driven into the bottom of the reservoir at first, then the water is pumped out, and only then is the structure itself assembled in the drained area. The hydraulic engineering builders proposed assembling V-4 ashore, and then towing it out to the installation site in finished form.

They built a dry dock at Gorskaya Village. In it they constructed two enormous reinforced concrete sections and assembled the steel gates in them. From that point on, Reserve Admiral Garkusha, deputy chief of the Leningrad Hydroelectric Power Plant Administration for the fleet, took charge of operations.

As the Administration's Deputy Chief Engineer L. Sharov related, each of the two sections had impressive dimensions: Length 130 meters, width 52 meters, height 14 meters, draft 4.7 meters, and weight 32,000 metric tons.

For their towing into the Gulf under ice-situation conditions, the Baltic Steamship Company's seamen came to the tug Kotlin's aid, having assigned six powerful harbor tugs, Purga, Uragan, Tuman, Aysberg, Toros, and Tayfun to the hydraulic engineering builders.

With their assistance, the towing operation and the installation of the sections on site in the Gulf proceeded successfully, and took 6 hours in all. The experiment had succeeded, and now the hydraulic engineering builders propose laying down the sections of the next water outlet works, V-2, in the very same dry dock, using their experience in creating structure V-4.

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## PORTS AND TRANSSHIPMENT CENTERS

### FLOATING BERTH FOR LIGHTER CARRIERS AT ODESSA PORT

Moscow VODNYI TRANSPORT in Russian 16 Jan 86 p 2

[Article from Odessa by T. Ovrutskaya: "Into Port Came...the Landing"]

[Text] In Odessa Port they prepared especially carefully for the arrival of Zoya Kosmodemyanskaya--the motor ship was delivering unusual cargo--floating landings. Awaiting them were industrial engineers, crews of floating cranes, and the longshoremen of the 207th brigade under the supervision of element leader [zvenyevoy] A. Tsarenko, who had more than once had occasion to handle heavy, large-dimension cargoes with his comrades.

"The weight of each section, and Zoya Kosmodemyanskaya took on four of them at Murmansk," relates one of the unloading technology development engineers, Senior Industrial Engineer B. Kholrev, "is 98 metric tons. The length is 36 meters, and the width 8.5. Therefore, we decided to take the landings off the deck with two 100-ton [metric] cranes in tandem, but something had to be changed in a hurry in our plan. The cranes could not take the cargo at once--it was explained that the cargo was facing away from their servicing zone. We had to turn the motor ship around alongside, and, in addition, sink her [ballast her down] by 2 meters. All this was done without haste. Floating crane Captains V. Kotlovskiy and N. Velichko acted at a good pace and without mistake. The tug Peleng took each removed landing to its future anchorage site then and there."

Port and harbor craft repair and construction administration workers moved three more sections of the floating pier from Ilichevsk. They assembled it rapidly--underwater, they clinched the metal couplings and set the anchors in the ground, and the pier was ready.

Just why does Odessa Port need it?

The reason is that the Black Sea Steamship Company's first lighter carrier [LASH ship], the Indira Gandhi, which carries 82 lighters aboard, will arrive here at the end of January. It is understandable that special landings are needed for their storage and berthing. It is so crowded in Odessa Port, too, and for that reason also, it was decided to "build" floating piers.

"The new pier," says S. Bukin, chief of the hydraulic engineering and engineering construction department, "can receive 40 lighters. We are installing one more--for 48 lighters--in the next few days. The floating piers will operate with a full workload."



## INTERSECTOR NETWORK DEVELOPMENT

### SCIENTISTS PROPOSE WAYS TO MAKE TRANSPORT MORE EFFICIENT

Moscow IZVESTIYA in Russian 13 Jan 86 p 2

[Article by Doctors of Technical Sciences A. Komarov and S. Ushakov and Candidate of Technical Sciences B. Ryazantsev: "The 27th Party Congress--The Party Strategy--Acceleration, Energy, Realism: Where Billions are Lost: Improving the Quality of Transportation Services of the Economy"]

[Text] In the draft of the Fundamental Areas of Economic and Social Development of the USSR for 1986-90 and for the period to the year 2000, an entire section is devoted to transportation and communications. The most important tasks of transportation are formulated as: the timely, full and high-quality satisfaction of the needs of the economy and the population for transport and the raising of the economic efficiency of its operation. An analysis of the reader mail shows that problems in the development of transport also concern many of our readers. In their letters are specific suggestions for improving matters. Today we are publishing some of them.

Great attention is devoted in the draft of the Fundamental Areas to improving the operation of transport. This is as it should be. Every year our industry loses 7-8 billion rubles due to shortcomings in transportation service (and first and foremost the issue is the railroads). How do these losses arise? How can they be sharply diminished?

The primary and basic requirement is undoubtedly to fulfill the shipment plan for every load of freight and every shipper. That is how the operation of the railroads is evaluated. Nonetheless, disruptions of the plan, especially in the winter months, are far from isolated occurrences and the losses they inflict are evident. But even the fulfillment of the yearly and monthly plans for freight shipping does not solve the problem. TIMELINESS is necessary as well in shipments.

Enterprises with a continuous production cycle need to have bulk freight (coal, ore, building materials etc.) supplied to them regularly and in the necessary frequency. This allows them to refrain from supplemental shipments of raw materials and fuel and to reduce their manufacturing stocks. A violation of the shipment rhythm disorganizes production and leads to manufacturing disruptions and equipment idle time. Due to the irregularity of car dispatch

more than a billion superfluous ton-operations are performed in the coal industry on coal transshipment, losses occur and labor expenditures grow.

For industries in machine building and a number of other industries, the timely delivery of freight in cooperative supply has a decisive significance. But the operative shipment system of railroads gives no assurances that the freight will arrive at the needed times. It is necessary to deliver perishable goods on time, as well as some portion of high-priced materials and assembly products. The unjustified use of motor vehicle transport is often compelled for these and other shipments.

Approximately 15 percent of the general-use truck fleet of motor transport and a large number of departmental motor vehicles are occupied on long-range and extremely long-range shipments. If the shipment of such freight could be organized by the railroads with the assurance of delivery in the determined time and if the rapid shipment of the basic mass of perishable freight could be ensured for great distances, the number of intercity motor vehicle shipments could be reduced by at least a third. And this would save more than 1.5 million tons of liquid fuels and lower transportation expenditures.

How can the problem be solved? It seems to us that A SHIPMENT SYSTEM OF ELEVATED QUALITY SHOULD BE INTRODUCED, WITH SHIPMENTS DIVIDED INTO THREE BASIC CATEGORIES.

The first is the regular (uniform) delivery of freight conforming to the conditions of the economic industry, typified by a continuous production process. The second is assured delivery by a determined time, calculated by the service of enterprises that operate on the basis of cooperative supply. And finally, the third category is the delivery of freight at increased speeds, when the subject is, for example, perishable goods.

It is possible to ensure the regularity of shipments by incorporating manufacturing routes that would serve major freight recipients in such a way that trains would depart and arrive on time and coordinated by shipment participant. The assured delivery of freight by an earlier-determined time is possible when the sections of freight trains circulate according to a strict schedule. In order to ensure the rapid delivery of freight, it is necessary to organize freight express trains at passenger speed.

And there is yet another important task: how to store the freight enroute, especially when the subject is free-flowing freight (coal in small particles, raw ores and some others) shipped in open rolling stock? A radical solution here would be the acceleration of the specialization and renovation of the car fleet. This would allow for the more effective mechanization and automation of the loading and unloading operations and the simultaneous provision for freight storage.

Where do the means come from for the planned development and reconstruction of the railroads? Basically from the expected growth in the volume of shipments and from the tasks of providing transportation service to developing regions of the country. But it is not enough to count on demand to improve service to

production and the losses that are inflicted on it by the poor operation of transport.

Research has shown that additional capital investment in the reconstruction of rail transport and the replenishment and renovation of the car fleet would be repaid in less than two years by the economic saving in the industries of the economy serviced.

The regular and assured delivery of freight in the recipient's needed time frame would allow enterprises to operate with significantly lower stocks of raw materials and semimanufactures and reduce the immobilization of material resources. And it must be kept in mind that the sum of working capital in these stocks, per ruble of national income, has grown by more than a third since 1970, or by more than 120 billion rubles. And this was due to a considerable extent to the shortcomings of transportation service.

The fundamental conclusion: when planning the reconstruction and development of the material and technical basis of transportation, it is necessary to be concerned not only with the growth of the volume of shipments, but also to an equal extent with raising the level of transportation service in the economy. Of course, time and additional investment are needed here.

This, of course, does not exclude the fact that much can be done now, without special expenditures, to organize operations and make use of potential. Thus, it is possible to introduce manufacturing routes on limited traverses of the railroad network and to begin the assured and rapid delivery of certain freight. It is fully practicable to enhance the repair and car preparation base.

Much here depends on the enterprises themselves, the owners of the freight. To plan correctly the sequence and times of unloading, naturally, with the availability of cars, and to meet times--all of this should become a system determining the interaction of supplier and recipient. On the enterprises in their turn depend the acceleration of car turnover and the thoroughness of their unloading.

Currently, operating on the basis of industry profitability and paying their own way, the railroads have been placed in conditions where the fulfillment of this or that freight owner requirement worsens the transport operation indices and requires additional non-compensated expenses. This question can only be resolved by applying differentiated rate schedules that are based on "quality category" and allot to the railroads a portion of the profits received.

We propose that the "Transportation and Communication" section of the Fundamental Areas draft begin with the following text: "THE BASIC TASK OF TRANSPORTATION IS HIGH QUALITY OF SHIPMENT SERVICE TO THE ECONOMY AND THE POPULATION OF THE COUNTRY IN ACCORDANCE WITH THE REQUIREMENTS OF THE PRODUCTION INDUSTRIES AND THE LABORERS AND RAISING THE ECONOMIC EFFICIENCY OF OPERATIONS BOTH IN TRANSPORTATION ITSELF AND IN SERVICE ENTERPRISES."

In the "Improving the Control of the Economy" should be written: "WITH THE DEVELOPMENT AND RECONSTRUCTION OF TRANSPORTATION SHOULD BE COMBINED PRINCIPLES OF INDUSTRY AND INTERSECTOR PLANNING, FULLY TAKING INTO ACCOUNT THE SAVING RECEIVED IN INDUSTRIES FROM RAISING THE QUALITY OF TRANSPORTATION SERVICE."

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## INTERSECTOR NETWORK DEVELOPMENT

### OFFICIAL ON TECHNOLOGICAL TRENDS IN TRANSPORT SECTOR

Moscow GUDOK in Russian 3 Jan 86 p 2

[Interview with Nikolay Ivanovich Shinkarev, chief of the Transportation Department and member of the USSR State Committee on Science and Technology, by GUDOK correspondent M. Kosolapova: "Discussing the Draft of the New Version of the CPSU Program and the Fundamental Areas of Economic and Social Progress of the Country: Accelerators of Technical Progress"]

[Text] The rapid development of the country's economy projected in the upcoming five-year plan and further into the future makes great demands of transportation and all of its forms. Their coordinated development, precise coordination and considered technical re-equipping, as it is envisaged in the draft of the Fundamental Areas, will give great rhythm to the operation of the shipping system. It is necessary to adopt such a pace that will guarantee the timely, high-quality and full satisfaction of the shipping needs of the economy and the population.

Our correspondent asked Nikolay Ivanovich Shinkarev, the chief of the transportation department and a member of the USSR State Committee on Scientific and Technical Progress, to discuss the major trends of scientific and technical progress in the industry.

[Question] Nikolay Ivanovich, what is the main accelerator of progress in transportation?

[Answer] I think the following analogy is appropriate here. In the last century, some people, to increase speed, added a fourth, fifth or sixth horse to the famous troika, while others worked at the same time on the creation of the steam engine which could take the place of many "horsepower." So it is today. One of the basic trends of scientific and technical progress remains increasing the power of transportation equipment. And qualitatively new solutions will begin to operate alongside traditional ones.

For example, scientists and practical workers in railroad transportation place great hopes on the VL86 12-axle alternating-current electric locomotive. Its power is unprecedented--11,400 kilowatts. But that is not the main thing. Fundamentally new non-commutator traction engines with electronic control are

installed in the locomotive. It can be said that this is a new stage in the development of electric traction drive. An engine without a commutator--the unit most vulnerable in operation and labor-intensive in repair--will not only radically change the maintenance and renovation conditions of traction technology, but also will substantively raise the potential of electrical machinery and the reliability of its operation.

In the future, not only locomotives but metro cars, trams and trolleybuses will be equipped with the new engine.

Electric engines with traditional drive are also being improved. The VL85 12-axle alternating current engine with 10,500 kilowatts of power and the VL15, a direct-current engine similar to it, have been created.

It was no accident that I began the discussion of the power of transportation equipment with electric locomotives. They bear the palm on the railroads. Electrification was and remains an important link overall of technical progress on the mainlines of steel. It allows not only the successful assimilation of growing shipments, but also the automation of production processes, the assurance of the growth of labor productivity and an impressive real saving in liquid fuel.

The rate of incorporation of the most progressive traction will undoubtedly increase.

TE126-class diesel locomotives with 6,000 horsepower per section are being created for non-electrified sections with high traffic density.

Scientists and specialists have long posed the question of developing a special diesel for steamships, and Mintyazhmash [Ministry of Heavy and Transport Machine Building] continues to adapt a broad profile engine for this purpose. But this will not permit a qualitative advance in the development of national steamship construction.

The trend toward increasing the power of rolling stock is also typical of ships, aircraft and motor vehicles, that is, of practically all forms of transport. A great increase in power, after all, permits an increase in freight capacity and tonnage, an increase in speed and, consequently, the delivery of more freight and passengers more quickly.

But it means little to have great power if it is not implemented efficiently. Here is where progressive technology helps. On railroads, this is first and foremost the organization of train traffic at previously unprecedented weights. Thanks to the fundamentally new technology, a saving was received over a year such as could not be achieved earlier over a five-year plan. Moreover, the relative expenditures on labor, energy and materials for the upkeep and operation of rolling stock fell sharply.

[Question] So the most important trend is an increase in power and speed. What other areas of technical progress merit especial attention?

[Answer] Another important trend in the development of transportation equipment is the specialization of rolling stock and its adaptation for rapid and mechanized loading and unloading. And this is emphasized in the Fundamental Areas of Economic and Social Development of the Country. The percentage of specialized cars in the operational fleet of the railroads is projected to increase by 1.3-1.4 times. The shipping fleet will be replenished with highly-productive, economical and specialized vessels.

The progressive technology of cargo shipment with RO-RO ships--vessels with horizontal cargo processing--as well as LASH ships will be further developed in maritime transport.

The creation of the optimal structures for the rolling stock fleet will acquire paramount significance. This can be graphically demonstrated by the example of motor vehicle transport. Let's say a small batch of freight weighing a ton is planned. Tell me, is there a difference: ship it in a one-and-a-half ton truck or send it by eight-ton truck?

Thus, using research into the batching of freight and the requirements for its shipment, the optimal structure for a motor vehicle fleet was composed. It is now established that for every hundred vehicles, a portion should have a carrying capacity of 1-1.5 tons, a certain percentage--8 tons and so on. Specialization was also considered. A portion of the motor vehicles is container carriers, some percentage is tankers, etc. The transition to such a structure will provide, in the opinion of specialists, an annual savings of billions of rubles.

Much is planned to improve the transshipment of freight from one form of transport to another. Steam ferries have demonstrated their viability. Steamers ply the Caspian, operate the ferry to Sakhalin, are active on the vigorous international Ilichevsk-Varna ferry, and a similar one being erected between Klaypeda and Mukran (GDR). Combined river-ocean type vessels also permit the avoidance of labor-intensive transshipment, and their number will grow.

And certainly, container technology aids in the effective solution of this problem. It cements, unites and connects all forms of transport.

The delivery of 1 million tons of freight in containers produces a sizable saving for the economy: 3.5-4.0 million rubles. Therefore, an increase of 1.4-1.5 times in the shipment of freight in containers is projected in the 12th Five-Year Plan.

[Question] What is the main criterion in the future selection of transportation equipment?

[Answer] Priority will undoubtedly remain with the most economical locomotives, vessels and aircraft. In aviation, for instance, preference is currently given to more economical ducted-fan engines. Aircraft with turbofan engines, providing 20-25 percent fuel economy per work indicator, will occupy a deserving position in the future. This aim is also served by the special-

ization of the motor vehicle fleet and the significantly greater application of bottled-gas vehicles. The operation of transportation should be intensified taking into account resource- and, first and foremost, energy-conservation technology.

[Question] In connection with the enormous intensification in the use of transportation equipment, more demanding requirements are placed on it in both reliability and safety. How are tasks connected with this resolved?

[Answer] It is understandable that every design or its units wear out. Moreover, the losses from idle time and expenditures on repair frequently exceed the cost of the design itself. By raising reliability and potential, these losses can be sharply decreased; although additional expenditures are required of the producing plant for this, they do not compare with the saving.

Reliability can be increased not only by improving the design, but by the application of new and progressive materials. These materials are now revealing broad opportunities for creating designs that need no repair.

It is also necessary to bring into operation such potentials for raising reliability as the unification and standardization of the assemblies and parts of assembled products. Economic unification programs have been prepared for railroad cars and ships. One is in the creation stage for locomotives. Effective diagnostic equipment for monitoring reliability is being developed and incorporated.

[Question] Technical progress is not only new machinery and technological processes. Isn't it also the improvement of management?

[Answer] Certainly the intensification of shipping, requiring serious technological restructuring, should be combined with a higher level of management. Means for this exist--modern computer technology, on the basis of which management automated systems (MAS) already operate.

The next step will be the transition from uncoordinated MAS to an management automated system for the whole shipping process. Such a MAS will enter the operating ranks in civil aviation in the 12th Five-Year Plan. Processing is still taking place in the railroads on individual systems. The launch of the first Moscow-Kalinin railroad section with automated management utilizing microprocessor technology will be a significant step forward.

I will not linger on the problems associated with shipping management, but common to all is the creation of an information system for locating every moving unit of transport at any moment. This task has practically been resolved in air, maritime and river transportation. Many thousands of people in the railroads to this day collect information by hand on where every car is located. Imagine, when the models are composed and the data is transmitted to the railroad computer center, totaled there and sent to MPS [Ministry of Railways], how radically the picture will change.



Scientists have proposed the incorporation of integrated information processing from the original source for the management of operations. Included in it is an automatic readout system for rolling stock. Versions of this apparatus are already being approved.

[Question] What is the role of technical progress in the improvement of passenger transportation?

[Answer] The specific nature of the conditions of our country--the expanse of its territory, the intensive assimilation of new regions of the North, Siberia, and the Far East plus raising the living standards of the Soviet people--requires the further development of passenger transportation. Railroad transportation will remain fundamental in the future notwithstanding the significant utilization of aviation.

Positive advances exist in passenger service in railroad transportation. But much remains to be done. Questions of creating a Tsentri-Yug [Center-South] rail line especially for rapid transit will have to be studied. The design search for the creation of modern high-speed electrically powered trains, two-story railroad cars, passenger locomotives and other technology should be reinforced.

[Question] Nikolay Ivanovich, a few words about high-speed ground transportation of a fundamentally new type.

[Answer] Fundamentally new transportation systems are being developed in a number of countries in the world. In the Soviet Union, work is being conducted on the creation of suburban transport using magnetic suspension. At the basis of the system are a magnetic cushion and linear electric traction drive. The advantages of this form of transportation are well known: they are comfortable, quiet, ecologically clean and operate using electricity. And so, if the 19th century gave mankind railroads and the 20th aviation, then how to know if the 21st will be marked by the use of magnetic planes?

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## INTERSECTOR NETWORK DEVELOPMENT

### PROBLEMS IN ODESSA 'TRANSPORT-90' PROGRAM

Moscow VODNIY TRANSPORT in Russian 11 Jan 86 p 2

[Article by V. Bakuyev, manager of the Combined Transport Research Laboratory of the Interdepartmental Coordination Council of the Odessa Economic Transportation Region: "Strengthening the Cooperation of Fellow Transport Workers: The Combined 'Transport' Program: Problems and Prospects"]

[Text] As is well known, in July of 1985 the "Transport-90" combined special-purpose scientific and technical program for intensifying the shipment of cargo and improving passenger services in the Odessa Economic Transportation Region in the 12th Five-Year Plan was developed, published and distributed to executors. It became a natural continuation of the "Transport" program which was described in detail in the 6 May 85 issue of this newspaper.

The "Transport-85" program has basically been fulfilled. It allowed for the provision of accelerated cargo delivery and its preservation, a lowering of cost and greater economic efficiency. It gave impetus to the further development of cooperation between transport workers and made possible the fulfillment of plans and targets for increasing labor productivity, cost reduction and fulfilling socialist obligations.

There were, of course, shortcomings in the formulation and realization of the program, which were taken into account in the development of the "Transport-90" program and should be eliminated in its realization. One of its basic shortcomings must be referred to as the absence of developers and executors of passenger transport.

Unfortunately, in an oblast where millions of passengers are transported every year by all forms of transport disregarding the operation of the tram and trolleybus system, there are no subunits that are occupied with the problems of everyday operation and future development of passenger transport and the coordination of its activity, if you do not take into account the especially industry-oriented Pasflot Scientific and Research Laboratory of OIIMF [Odessa Institute of Maritime Engineers] which solves narrow departmental problems.

There are also problems with the realization of the "Avtodor-85" and "Promzheldor-85" programs. An executor could not be found among the oblast's higher educational institutions to assist the road workers in developing the

theme of resecuring sources of raw material for road-work enterprises. These and other problems, unfortunately, still await solution.

Whereas the "Transport" program envisaged achieving the balanced development of all oblast transportation enterprises, "Transport-90," if it can be so expressed, goes beyond its bounds and encompasses transshipment centers formed on the basis of the maritime trade ports in the Crimean, Nikolayev and Kherson oblasts.

The "Transport-90" program is managed by the Interdepartmental Coordination Council of the Odessa Economic Transport Region, which is made up of the managers of transportation enterprises, leading scientific and research institutes and higher education institutions and soviet organs. The council is headed by S. Lukyanchenko, chief of the Black Sea Shipping Company, deputy of the USSR Supreme Soviet and member of the Odessa Obkom Buro of the Ukrainian CP. The management of the scientific and design and methodological work is entrusted to Soyuzmorniiprojekt [All-Union Maritime Scientific Research and Design Institute] and TsNIIMF [Central Scientific Research Institute of the Maritime Fleet] and in particular to their Black Sea branches--Chernomorniiprojekt [Black Sea Maritime Scientific Research and Design Institute] and ChFTsNIIMF [Black Sea Fleet TsNIIMF].

The development and incorporation of industrial transport complexes (ITC) are projected in the plan. The first one is already in operation. This is the oil tank complex at the Odessa Transshipment Center. It has already produced positive results in the beginning stage of its operation: fleet idle time while awaiting liquid cargos and hoppers have been reduced and the production and financial indicators of all sectors have improved.

Next are the creation of a sugar and grain ITC at the port facilities, a sugar refining plant and a port elevator at the Odessa Transshipment Center. The new ITC will be set up on the basis of the Yuzhnyy Port and the Odessa Port Plant.

Great attention is devoted in the transport region to the development and incorporation of management automation systems using the newest computers. These plans are being carried out by the specialists of OIIMF.

Also planned in the program are the preparation and execution of an experiment to improve the management mechanism of participants in the transport process of the region, the aim of which is to accelerate and raise the quality of cargo delivery and to lower transportation outlays. Operating documents regulating the interaction of participants in the transport process, standard regulations, and the form of the economic and social development plans of collectives and of socialist competition should be reshaped and approved in the course of the experiment in accordance with the level of production development achieved.

Many interesting solutions are also proposed for the development of the scientific and technical basis of the transport workers. These are the construction of high-capacity container terminals at the ports of Odessa and Ili-

chevsk, an interport container repair base and a second rail line to Ilichevsk, the electrification of railways and the centralization of switches, the introduction of new complexes for chemical and bulk cargo shipment at Yuzhnyy Port, and the construction of motor transport enterprises in Ilichevsk and Yuzhnyy.

Chernomorniiprojekt has developed proposals for expanding and modernizing the Port of Odessa by constructing a new protected harbor designated for the receipt and handling of specialized vessels: LASH ships, container ships, RO-RO and RO-FLO ships and the shipment of containers and heavy or large-sized cargos. The construction of a plant to repair LASH ships and port transshipment equipment is also proposed here. The construction of a deep-water access channel is proposed for the petroleum harbor.

All of the enumerated problems are being solved in the complex with regard to related transport workers, as rail lines and motor transport access routes are being constructed in the ports.

The Port of Reni is undergoing broad development. The construction of modern transshipment complexes is continuing here. Now the main task for this port is the transfer of the oil tank plant and the reconstruction of railroad access lines to the port with coast protection. The non-fulfillment of this work could lead to the closure of the port in the event of landslides.

The program also envisions the accomplishment of tasks associated with passenger services. This is the placing into operation of the Sirena-2 and Ekspress-2 automated ticket-selling systems at Aeroflot and the railroads respectively. The expansion of the cashier center network with ticket sales for several forms of transportation is planned.

Up to 80 percent of the "Transport-90" program is presently included in the 12th Five-Year Plan. The remaining 20 percent demands urgent resolution. This regards first of all such most important themes as the design and construction of an oil transshipment complex for large vessels and a complex for the receipt and processing of LASH ships in Odessa. It is necessary to make use of scientific and technical developments produced by leading scientific research institutes and published in handbooks. This is one way of accelerating scientific and technical progress.

The question of creating a center on passenger transportation problems in the oblast and the region should be studied seriously.

The resolution of the cited problems and the elimination of the enumerated shortcomings in short order is necessary so as to fulfill clearly the measures projected in the "Transport-90" program. Therefore I PROPOSE TO BEGIN THE THIRD PARAGRAPH OF SECTION VIII OF THE FUNDAMENTAL AREAS PLAN WITH THE FOLLOWING WORDING: "TO ENSURE THE COORDINATED DEVELOPMENT OF THE COUNTRY'S UNIFIED TRANSPORT SYSTEM ON THE BASIS OF THE COMBINED SPECIAL-PURPOSE REGIONAL SCIENTIFIC AND TECHNICAL PROGRAMS" AND FURTHER ACCORDING TO THE TEXT.

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