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# USSR Report

TRANSPORTATION

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14 AUGUST 1986

USSR REPORT  
TRANSPORTATION

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## CIVIL AVIATION

### MINISTRY STRESSES ROLE OF PILOTS, CREWS IN FLIGHT SAFETY

Moscow VOZDUSHNYY TRANSPORT in Russian 24 Jun 86 pp 1-2

[Statements by Chief Marshal of Aviation B. Bugayev, minister of civil aviation, and other officials at conference of aircraft commanders in Moscow 20 June under the rubric "With the Course of the 27th CPSU Congress": "The Role of the Aircraft Commander in Increasing the Quality and Efficiency of Flights"]

[Excerpts] Today the vigorous efforts of civil aviation collectives are being focused on successful implementation of the large-scale tasks set by the 27th CPSU Congress and the June (1986) Plenum of the party's Central Committee. The concept of fundamental reorganization and acceleration of socioeconomic development permeates all the activity of our sector, which has been called upon to implement a broad range of measures to completely meet the requirements of the national economy and the people for air transport and PANKh [use of aircraft in the national economy] operations. In the 12th Five-Year Plan, we will have to provide for an increase in passenger turnover of 17-19 percent, increase efficiency in utilizing fuel and power resources, decrease the relative consumption of aviation kerosene by 3-5 percent, and reduce the production cost of aviation operations by 3 percent. The entire range of this many-sided work should be implemented with high performance, with the assurance of complete flight safety.

The individual factor--the cockpit personnel and especially the aircraft commanders of civil aviation--plays a key role in carrying out these vital tasks. A conference of aircraft commanders held in Moscow on 20 June 1986 was devoted to resolving the urgent problems of ensuring flight safety and to the process of reorganizing, accelerating, and searching for ways to improve flight work.

Taking part in the work of the conference were Chief Marshal of Aviation B. BUGAYEV, minister of civil aviation; V. ZAMOTIN, head of a sector of a department of the CPSU

Central Committee; I. MASHKIVSKIY, chairman of the Gosavianadzor [Flight Safety of Civil Aviation Commission] attached to the USSR Council of Ministers; V. KOLCHANOV, chief of the Political Administration of Civil Aviation; A. GRIDIN, chairman of the Aviation Workers Trade Union Central Committee; deputy ministers of civil aviation; and other responsible party and soviet officials.

#### THE PRINCIPLE OBJECTIVE IS PRACTICAL RESULTS

B. BUGAYEV, the minister of civil aviation, stated in opening the conference that we are all under the influence of the recent CPSU Central Committee Plenum, which discussed how the general line defined by the 27th Congress of the party is being realized. At the Plenum, preliminary results were summed up, lessons were learned from the postcongress work, and the basic goals of the party for the near and long-term future were defined.

In the report by M. S. Gorbachev, general secretary of the CPSU Central Committee, and addresses by Plenum participants, the activity of all party committees, soviet and economic organs, public organizations and labor collectives were examined from the viewpoint of practical affairs and results.

"Precisely such an approach," noted Mikhail Sergeyevich Gorbachev, "will make it possible to be correctly oriented not only in what is taking place, but in bringing practice farther into line as well."

Our work also should be distinguished by precisely such an approach. The essence of reorganizing the work of civil aviation--in achieving high end results, first of all--is high performance. And the most important high-performance result is the assurance of a high degree of flight safety. I would say that this is, on the whole, a high level of flight efficiency.

The Central Committee of the party essentially covered practically all aspects of the many-sided work to ensure flight safety, referred to the shortcomings and omissions, and pointed out the directions to overcome them.

In conformity with the CPSU Central Committee requirements, a special-purpose program has been worked out in the sector to increase flight safety. Implementation of it has begun. By perfecting methods of preparing and training flight personnel, increasing their exactingness toward themselves and their subordinates, and reinforcing discipline and good organization, we have to bring the sector's work to the level of current requirements in short periods of time.

I have to say with full adherence to party principle, the minister stressed, that practical implementation of the CPSU Central Committee requirements still has not become a law of life for all our key personnel, including flight command personnel, political workers, and party and public organizations. Reorganization in the sector is proceeding more slowly than I would like. Many supervisors continue to live by old knowledge and work in the old way.

A fundamental change in consciousness and practical affairs and active and conscientious work are needed. Life does not give us time to swing about. We must reorganize in the course of fulfilling the plan for 1986.

In order to summarize the experience in work to organize implementation of the CPSU Central Committee requirements in Aeroflot, the Ministry of Civil Aviation collegium considered it necessary to convene a conference of aircraft commanders--the production leaders. We attach a great deal of importance to counsel with you, B. Bugayev told the gathering. And this is completely understandable. You are the foundation of the cockpit crew, its pride and glory. To a decisive degree, flight safety, the reinforcement of discipline, and the increased quality and efficiency of flights depend on you.

The purpose of the conference, frankly, is to discuss in a party manner the status of flight safety and reinforcement of discipline and ways to improve them in light of the party and government requirements, and to exchange positive experience in this work.

It is very important that the status of the work of all links in the system--the people, the equipment and the organization, and their interaction to ensure flight safety--be taken up and objectively and scientifically examined at the conference from the viewpoint of practical affairs and results. The emphasis must be put on increasing the significance of aircraft commanders in this work.

In requiring high exactingness of cockpit personnel in improving the reliability of their work, we should be continuously concerned, in light of the party congress' requirements, about improving aviators' working and living conditions and relaxation. These matters should be in the field of vision of our conference.

The human factor is decisive in implementing the program to accelerate our country's development. It also is decisive in ensuring flight safety. It can be stimulated only by the unity of well-reasoned economic strategy, a strong social policy and purposeful ideological and educational work.

As is generally known, the speaker continued, the Politburo of the CPSU Central Committee adopted a decision to establish political organs in civil aviation. Their formation is being completed at present. These organs have been entrusted with managing party-political and ideological-educational work and improving the activity of party, Komsomol and public organizations of Aeroflot. They have a large role in organizing party-political work to ensure flight safety.

The establishment of political organs is a manifestation of the party's Leninist concern for the development of civil aviation and for increasing the level of ideological and political education of aviation workers. The political organs will make an important contribution to reinforcement of party influence in all the areas of activity of civil aviation.

The role of aircraft commanders in ensuring flight safety and in reinforcing discipline and instilling qualities of high morality and resoluteness in crew

members was the topic of addresses from the conference rostrum by administrators of the Ministry of Civil Aviation and representatives of cockpit personnel. I. VASIN, deputy minister of civil aviation, delivered the basic report on the role of aircraft commanders in ensuring flight safety.

V. KOLCHANOV, chief of the Political Administration of Civil Aviation, devoted his address to the necessity for aircraft commanders to reinforce discipline and instill qualities of high morality and resoluteness in crewmembers.

V. GORLOV, deputy minister of civil aviation, acquainted the gathering with the basic directions in the work of the engineering service to improve the reliability of aircraft equipment and measures to prevent aircraft accidents caused by violation of the rules for its operation.

M. TIMOFEYEV, deputy minister of civil aviation, dwelled on the problems of operating conditions in ensuring flight safety.

#### A TASK OF STATE IMPORTANCE

Ensuring flight safety is a task of state importance, I. Vasin said. A cockpit crew executes this mission continuously and purposefully, utilizing the achievements of scientific and technical progress and the experience of our sector's subunits in accident-free operation.

An important, decisive role in this many-sided work belongs to those who organize and conduct flights and those who control air traffic. The successful execution of the tasks that have been set, ensuring the high reliability of each flight, depends to a large extent on the level of professional preparation of cockpit and controller personnel and their ideological tempering and discipline. After all, work in aviation, and flight activity first of all, have their own peculiarities. Even the slightest violation or error here may turn into irretrievable physical and morale losses. And because the problem of ensuring flight safety is a complex one, it should be resolved in many directions.

Civil aviation has a detachment of many highly skilled flight specialists. All Il-86, Il-62 and Il-76 aircraft commanders and an absolute majority of the Tu-154 commanders are first-class specialists and have wide experience in accident-free flying. An increase in the ranking and educational level of all cockpit personnel, both in transport aviation and in the use of aircraft in the national economy, was noted in the 11th Five-Year Plan.

It must be said that the overwhelming majority of flight specialists are performing their duty in an exemplary manner. Examples of high-performance and highly productive flying work, and even heroism if required, have been demonstrated by the crews of Heroes of the Soviet Union and Heroes of Socialist Labor Boris Vasilyevich Lyalin, Akhmatger Bukhulovich Gardapkhadze, Anatoliy Nikolayevich Migalkin, Nikolay Petrovich Ryabinin, Yuriy Aleksandrovich Redkin, Grigoriy Ivanovich Tskhovrebov, Anatoliy Nikolayevich Kulakov, Anatoliy Yefimovich Turbin, Viktor Vasilyevich Priymak, Vasilii Mikhaylovich Shcherbinyuk, Anatoliy Aleksandrovich Yakoventsev, Honored Pilot of the USSR and Supreme Soviet Deputy Anatoliy Sergeyeovich Kaledin, and many,



many crewmembers who have been awarded the highest decorations and honorary titles of our great Motherland for their feats of arms and labor.

#### HIGH RESPONSIBILITY AND SELF-DISCIPLINE

If one asks what is dominant, what feature stands out the most, in the character and life of the guardsmen of aviation shock work, the answer should be this: the high sense of responsibility--personal and collective, of the entire small collective, the crew; continuous improvement in flying skill; and unflinching implementation of the documents which regulate flight work. Of course, they also should have such intrinsic qualities as relentlessly searching for what is new, continuous initiative, and support for everything that is advanced and progressive in flight work. But a high sense of responsibility for the execution of each flight assignment and just as much deliberate high self-discipline have been and continue to be predominant for all of them. The concept of responsibility is primarily fulfillment of the sum total of demands made of aviation specialists, and made of flight specialists first of all, by the party and the people.

What kind of aircraft commander would we like to see? Chiefly one who knows his job thoroughly, of course, a good specialist, a fair and responsive person who inspires his small collective by personal example, and one who is capable of being both a leader and a trainer. Features such as profound ideological conviction, moral maturity, and high professional and political effectiveness are also of no small importance. It is very important that they have been able to lead people and have served as an example for crewmembers. After all, an excellently trained commander who knows his responsibilities and is competent politically, tempered ideologically, and demanding of himself and his subordinates always will find the correct solution, even under the most complicated circumstances.

A necessary condition and integral part of the reorganization and renovation under way in the party and the country is improvement of work with personnel. Much is being done in civil aviation to enhance the role and authority of the aircraft commander. Their role and importance is particularly emphasized in the NPP [flight manuals] and reference documents of the Ministry of Civil Aviation. Their priority in matters of ensuring flight safety is indisputable.

Success in the job depends to a large extent on how commanders organize their work, how the crew is adjusted to the flight and how it is imbued with the complexity and responsibility of the tasks with which it has been entrusted; as the work proceeds, so each flight will be completed. And conversely, if you show even the slightest disregard for the organization and conduct of the flight, if you tolerate an insignificant violation of flight rules and regulations, you can expect trouble right here.

Precisely oversimplification and deviation from the requirements of reference documents led to serious omissions in the activity of flight subunits and traffic services in the Krasnoyarsk, Ukrainian, Tyumen, Far East, West Siberian, Georgian and Yakutsk Administrations of Civil Aviation.

We have wide experience in accident-free flight work at our disposal. More

than 40 percent of the joint detachments and 50 percent of the flight detachments have been working steadily without aviation accidents over the past 10 years (Vnukovo, Domodedovo, Simferopol, Mineralnyye Vody, Kuybyshev, Sverdlovsk and others). It is necessary to disseminate their experience more vigorously and to make it the property of others.

The inspectorate and pilot-navigator departments have to promptly identify dangerous tendencies and deviations, to devote more attention to preventive work and continuously analyze the role of the human factor.

It is necessary to utilize public inspectors and the help and experience of Aeroflot veterans and honored pilots and navigators of the USSR more actively in resolving the problems of flight safety.

The status of the supervision and organizational work of services engaged in ensuring flight safety is subject to serious reexamination. Preference must be given to active organizational work in crews, subunits, shifts and services.

The quality of flights involving the use of aircraft in the national economy continues to be an alarming problem. The principal reason for such a situation is the poor organization and supervision of flights by commanders at all levels.

Particular attention has to be paid to violation of established weather minimums:

Violation of the procedure for examining sections being treated, disregarding the requirements on preparing instructions for treatment on each complicated section, and violation of the safe altitude have a detrimental effect on the condition of flight safety in airborne chemical treatment operations.

The main link in civil aviation activity is the flight crew, which controls the aircraft and ensures the success and safety of flights. For this reason, flight safety depends to a large extent on the crewmembers' level of training and their discipline and moral and political qualities.

The problems of searching for active and effective means of resolving the tasks that have been set are in the foreground today. All the work quality indicators of Aeroflot are in their focus of attention. They are worried about fulfilling plan targets with quality, economizing GSM [fuels and lubricants], and the safety and high efficiency of flights, and they are devoting a great deal of attention to increasing their productivity. These very indicators have been reflected in the Conditions for Socialist Competition in Civil Aviation for model collectives and for transforming Aeroflot into the standard for transport.

This is why the aircraft commander, as the main figure in ensuring flight safety, is assigned the central place in the minister of civil aviation's orders and his directives on practical steps to eliminate accidents in Aeroflot.

The greater the technical complexity of airplanes and helicopters and navigation and landing systems, the more significance is attached to the professional training of cockpit personnel. The CPSU Central Committee and the Ministry of Civil Aviation collegium are devoting a great deal of attention to this matter.

Requirements for selecting candidates for training in flight schools and for retraining in new aircraft have been increased. Training of pilots and navigators for transport aircraft is being conducted in higher educational institutions. The Kremenchug Flight School for training helicopter pilots is being readied for transition to training in accordance with VUZ programs. However, analysis indicates that there are still many problems in the professional training of aircraft commanders and crewmembers.

#### OBSERVANCE OF FLIGHT RULES

The task of increasing flight safety should be resolved by the joint efforts of flight and traffic control services.

When the "controller-crew" link, and primarily the aircraft commander and air traffic controller, strictly and unfailingly implement the requirements of standardized documents which regulate the conduct of flights and air traffic control, flight work is carried out on a high level and complete flight safety is ensured even when aircrews get into complicated operating conditions.

It is necessary to point out at the same time that the "crew-controller" link is not always maintained reliably, and in a number of cases this takes place through the fault of the aircraft commander. Radio transmission violations in areas with high air traffic density are particularly intolerable.

The job of aircraft commanders consists in seeing that flight regimes are maintained, radio communications regulations are strictly adhered to, and a high degree of discretion is observed in radio use [radioosmotritelnost] continuously in all stages of the flight and carried out without fail by all crewmembers.

The high reliability of air traffic control and flight safety in the country's airspace can only be ensured by aircrews and air traffic control personnel working together efficiently.

We have to restore the unjustified loss of verification of the condition of an aircraft in the preflight inspection by each member of the crew and add the appropriate supplements to the RLE [flight manuals].

The interaction of crews and flight attendant services (brigades) in matters related to preparation for a flight, the flight itself, and its completion with high performance has to be improved.

The ministry's requirement that preliminary and preflight preparations and the postflight critique be conducted jointly and under the strict supervision of

the KVS [aircraft commander] must be implemented in all flight subunits, which should have a qualitative effect on the training role of the aircraft commander with all crew personnel taking part in the flight as well.

The aircraft commander should be an example of good performance and supervise the implementation of reference documents by all crewmembers in every aspect.

Some aircraft commanders are mistaken in thinking that a policy of forgiving everything in the crew, a mutual guarantee, and work under the principle of "not washing one's dirty linen in public" enhances their authority among crewmembers. As a rule, these errors in work with a collective grow into unscrupulousness, irresponsibility, lack of discipline and slipshodness, which leads to violation of flight regulations. An aircraft commander's attempt to color the true state of affairs in the crew gives rise to complacency and conceit.

It is appropriate to mention here that an aircraft commander should not lose the moral right to check correctness and accuracy in implementing flight rules, directives and regulations. If a commander himself showed lack of principle somewhere, even if only once, and violated flight rules, and this became known to the other crewmembers, that commander automatically would become dependent on circumstances, losing the crewmembers' respect at best, and at worst, he would embark on the path of continued violations for his part, as well as on the part of the crewmembers.

Precisely such crews are gradually slipping to positions of continuous violations not only of flight rules, but the standards of communist morality and socialist society; the most flagrant violations of discipline, such as failure to rest before a flight, coupled with the consumption of alcoholic beverages, are being discovered in these very crews.

This flourishes especially in aviation enterprises where an attitude of intolerance toward members of a cockpit crew who consume alcoholic beverages has not been established, where the struggle against the causes and conditions which contribute to drunkenness is not carried out consistently. Leisure time and sports have not been organized at clinics and hotels for preflight relaxation, elementary cultural and personal service conditions do not exist, and the command and management personnel are not supervising the observance of discipline and conditions for the preflight relaxation of cockpit personnel (the Uzbek, North Caucasus, Ukrainian, Far East and other administrations of civil aviation). As a consequence of the deficiencies enumerated, as well as the irresponsibility of the commanders of the crews and their low exactingness toward their subordinates and personal lack of discipline, cases of drunkenness at clinics and hotels do not cease from year to year, and the attention being devoted by managers of flight services and public organizations to the health of cockpit personnel, improvement in their social and everyday living conditions and establishment of a healthy way of life is highly inadequate.

The discipline and ideological and moral tempering of cockpit personnel is a subject of paramount concern in civil aviation. In civil aviation, the cockpit personnel--basically highly skilled specialists--are models of

selflessness in their work. But there are other examples, when entire collectives are stricken with the infection of money-grubbing, misappropriation and poaching.

The aircraft commander should be constantly aware of the necessity for the crewmembers' thorough mastery of Marxist-Leninist teaching, their conscientious participation in carrying out party and government decisions, and the ideological-political, labor and moral growth of each member of his crew.

The aircraft commander has been given the duties and rights of a person in charge, who bears responsibility for the quality of professional preparation, discipline and training of crewmembers and for ensuring the successful completion of each flight.

It is necessary to raise the level of professional training for crews, particularly for actions under special flight circumstances. Unquestionably, an important positive result is provided by the method of developing crew responses under special flight circumstances on complex simulators. But these measures are not enough at present. It is time to introduce training in specialized simulators and functioning units [deystvuyushchiye stendy] in the development of each crewmember's responses. Before training in the complex simulator, each crewmember develops his responses on such a functioning unit (simulator), and after that, as part of the crew, he develops his responses in all stages of flight on the complex simulator.

Our industry has begun turning out specialized simulators for flight engineers of Il-86, Il-62 and Tu-154 aircraft. But this is just a beginning; there are not enough simulators at present. A functioning Il-62 cockpit has been developed by a group of enthusiasts in the Domodedovo PO [production association]. Functioning simulators of aircraft systems and engines have been set up in the methods class of the Belorussian Administration of Civil Aviation. A functioning mockup of a Tu-154 fuel system has been set up in the methods class of the Georgian Administration of Civil Aviation. Such initiative can only be welcomed.

The advanced technical training of crews assumes considerable importance in the operation of modern types of aircraft. For this reason, the aviation engineering service of enterprises and administrations should take charge of this process: provide cockpit personnel with technical classes, graphic manuals, procedural materials for equipment, statistics on equipment failures, and recommendations for operation. And particularly with competent, highly skilled instructors, Deputy Minister V. Gorlov said.

The chiefs of ATB's [aviation technical maintenance bases] at enterprises and the chief engineers in administrations bear the responsibility for this process. The work has been organized precisely this way, creatively, in the Arkhangelsk Administration of Civil Aviation. And results are available: there have been no flagrant violations by crews of the rules for operating aircraft equipment there in recent years.

It must be said that work is being conducted by operations enterprises and the GosNII GA [State Scientific Research Institute of Civil Aviation] to expand the diagnostics laboratories and strengthen them, and to provide them with equipment, diagnostics methods, and facilities for nondestructive inspection of aircraft equipment. Computer equipment and the diagnostics system "Analiz-86" for evaluating NK-86 engines and the "Kontrol NK-8-2U" system based on it are being widely introduced, problems of establishing engineering centers are being studied, and the "Poisk" automated system is being developed and introduced by stages in the TsUMVS [International Air Services Central Administration], the GosNII GA, and the TsNII ASU [Central Scientific Research Institute of Automated Control Systems]. The significance of this is that, after detecting a breakdown, the crew finds the code for the failure according to the collector [sbornik] and transmits it to the engineering center on the ground.

There the code is interpreted, a troubleshooting program is taken from the computer memory, specialists are readied to correct the problem, and the necessary recommendations are given to the crew. Circulation of the system to all aviation technical maintenance bases will be determined, and it may be manually operated at small enterprises.

The "Nadezhnost" unified sector-wide automated control system also is being developed. Under this system, enterprises will send a magnetic recording with data on equipment failures to the GosNII GA (the unified center) and in return will receive a tape with the processed data on reliability for the entire fleet.

So each person who is dreaming about flying in new aircraft should set himself the task of learning and learning. Only competent commanders, trained to operate advanced equipment, will be able to ensure flight safety.

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CSO: 1829/225

## CIVIL AVIATION

### CHIEF ON CIVIL AVIATION SECTOR PROBLEMS IN FAR EAST

Moscow VOZDUSHNYY TRANSPORT in Russian 3 Apr 86 p 2

[Article by V. Nacharov, chief of Far East Administration of Civil Aviation under "Man for Acceleration, Acceleration for Man" rubric: "From Milestone to Milestone"]

[Excerpts] The 27th CPSU Congress set major important tasks for the country's workers. We aviation personnel have much to do. The Far East is considerably inferior to many regions of the country in development of the railroad and highway network. We performed our task rather well under the past five-year plan. The administration covered the planning quotas and pledges for all basic indicators and for the majority of accounting indicators. Some 800 million passenger-kilometers were fulfilled above the plan and around 200,000 passengers were carried above the quota. In comparison with the previous five-year plan, the growth in passenger turnover volumes was 22 percent, ton-kilometers were over 20 percent, and PANKh [use of aircraft in the national economy] was over 30 percent. The five-year quota for labor productivity was successfully fulfilled. In five years over R12 million of above-plan profit was paid in to the state budget.

Just what factors assured the collective's successful work and will unquestionably play their part in fulfilling quotas of the next five-year plan?

Reliance on the personality traits of our people. The following example is typical in this sense. When we made the pledge to work two days on saved fuel and physical resources some of our managers doubted its reality, and there were certain grounds for this in general. For example, we often eliminated a hitch in fulfilling the plan by overexpending fuel. Life, however, faced us with the need for a mental reorientation in methods of conducting economic activity, but this reorientation was impossible without specific practical steps and without painstaking work with people in every sector of production.

We reconsidered questions of efficient planning, accounting and information in production work and expanded the publicity given this information. We required that all commanders and all chiefs of services and subunits have a precise knowledge of all economic management issues. This also helped managers at the highest level always to be informed and to resolve particular problems promptly.

Here is another example. During July and August 1985 a critical situation developed in the Khabarovsk air enterprise at the height of mass movements. Up to 40 percent of the inventory of Il-62M's--the aircraft handling almost half of the administration's passenger turnover volume--began to stand idle because of a lack of engines. What was there to be done? We couldn't sit twiddling our thumbs awaiting the arrival of engines. Then we shifted a portion of the flights to the Tu-154 and Il-18 aircraft awaiting transfer to other administrations. We organized the work of the ATB [air maintenance facility] in a new way in order to increase serviceability of the aircraft pool. Engineers and technicians worked without regard for time, reducing the turnover rate and servicing time of the pool to a minimum. As a result of these and other measures we succeeded in avoiding interruptions and in ensuring third-quarter plan fulfillment.

We cannot allow ourselves to be complacent in evaluating what has been achieved. We are seriously disturbed by the status of flight regularity and the culture of passenger services. Rebukes are justified for frequent personnel replacement, poor training of reserves for advancement, and gaps in training production commanders in economic management and indoctrinational work practices. Discipline still is slow to be strengthened, production organization is improving at insufficiently high rates, and the brigade form of labor organization and wages is not being adopted as quickly as the time demands.

There are serious deficiencies in capital construction. We often do not cope with construction plans, which is explained not only by the unsatisfactory work of contracting organizations, but also by our sluggishness, low exactingness, and absence of proper contacts with contractors. The dissipation of capital investments to numerous projects with all the consequences stemming therefrom also seriously affects the state of affairs.

It is quite obvious that if we do not get rid of these deficiencies and if we do not radically reorganize the work style, then it will be no simple matter to cope with tasks of the 12th Five-Year Plan as well. And these are major tasks. For example, we plan to introduce direct flights to Moscow from Komsomolsk-on-Amur and Yuzhno-Sakhalinsk. There will be an increase in the number of nonstop Il-62M flights to the country's central and southwestern areas, which gave a good account of themselves, and an expansion in the use of L-410 aircraft on local air routes. It is planned to prepare the Khabarovsk and Yuzhno-Sakhalinsk airports for flights under ICAO [International Civil Aviation Organization] categories II and I, and to raise the class rating of at least half of the flight personnel. All this invariably will have an effect on flight regularity and there will be fewer landings at alternate airfields, which means fuel will be expended more productively.



There also are many problems, the solution to which depends not just on us. For example, there is an acute issue of the timely replacement of aircraft being "retired" for local air routes. Modern medium-distance mainline [srednemagistralnyy] aircraft are needed in the next five-year plan as much as the air we breathe. The An-2 on the northern routes is aviation's yesterday.

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CSO: 1829/186

## CIVIL AVIATION

### PROBLEMS IN URALS CIVIL AVIATION ADMINISTRATION WORK

Moscow VOZDUSHNYY TRANSPORT in Russian 12 Apr 86 p 2

[Article by VOZDUSHNYY TRANSPORT correspondent M. Makarov, Sverdlovsk, under "Course of the 27th CPSU Congress" rubric: "With High Exactingness"]

[Excerpts] The party aktiv meeting of the Urals Civil Aviation Administration collective which discussed tasks to fulfill 27th CPSU Congress resolutions was permeated with a spirit of acute self-criticism, high exactingness toward its affairs, and thirst for a creative search for new approaches to improving work effectiveness and quality.

CPSU Central Committee Member B. Bugayev, minister of civil aviation, delegate to the 27th party congress, took part in the work and spoke at the party aktiv meeting, and representatives of party and soviet organs of Sverdlovsk and oblasts of the Urals region took part.

L. Panchenko, chief of the Urals Civil Aviation Administration, gave a briefing to those assembled.

The administration collective was awarded a challenge red banner of the CPSU Central Committee, USSR Council of Ministers, AUCCTU and Komsomol Central Committee three times during the 11th Five-Year Plan. The briefer's primary attention was focussed on a strict analysis of deficiencies and omissions hampering the work, and on those problems which are to be resolved by Urals aviators.

The most important of them is to ensure high quality of flights. Not everything went well in the past five-year plan in this regard in a number of the administration's air enterprises--Ustinov, Chelyabinsk, and Second Perm, where very serious violations were committed in the organization of flight work. This became possible as a result of self-complacency and placidity, a relaxation of political indoctrination work, and a lack of proper exactingness on the part of managers and of party and public organizations toward violators of labor, flight and production discipline.

Deficiencies in methodological work of flight command cadres remain serious. Flight critiques still have not become a school of indoctrination for aviation personnel. With the exception of the classroom in the Magnitogorsk air

enterprise, training methods classrooms do not meet the demands being placed on them. The administration's flying methods training room also is not performing its immediate functions.

The serviceability of aircraft has a great influence on air traffic regularity and the culture of passenger services. Last year this indicator was below the norm for the Tu-154, the basic type of aircraft in the administration, for the most part because of the lengthy downtime of equipment for modifications. There also are other reasons reducing the effectiveness of using the aircraft and helicopter inventory. In 1985, for example, there were four instances of damage to aircraft on the ground through the fault of flight personnel of the Sverdlovsk, Kurgan and Chelyabinsk air enterprises.

The 27th CPSU Congress pointed out that increased effectiveness of capital construction is an effective tool for implementing the party's economic policy. The collective has many debts in this matter. In 1985 the capital construction plan was not fulfilled in the administration through the fault of the Sverdlovsk and Kurgan air enterprises, which did not cope with established assignments. Although the principal project, the No 2 Runway in Koltsovo, will be turned over soon, the progress of capital construction continues to cause serious concern. Last year the collective of the Chelyabinsk air enterprise did not cope with plan fulfillment, and the Kurgan air enterprise has not been fulfilling assignments for capital construction from year to year.

Bugayev's speech placed great emphasis on tasks of developing the sector with the help of new methods and approaches developed by the party congress. They require the most serious attention today.

In his speech Bugayev dwelled in detail on improving work style and methods, raising the responsibility of personnel for the assigned job, strengthening discipline, and improving political indoctrination and ideological work. The minister emphasized that strict monitoring of the fulfillment of decisions, a mandatory on-the-spot check of execution, and development of criticism and self-criticism must become the norm of activity for management cadres and the party and public organizations of air enterprises.

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## CIVIL AVIATION

### WAYS TO IMPROVE RADIO COMMUNICATIONS FOR AGRICULTURAL PLANES

Moscow VOZDUSHNYY TRANSPORT in Russian 12 Apr 86 p 2

[Article by B. Chushinskiy, engineer of ERTOS [operation of radio technical equipment and communications] Department of Belorussian UGA [Administration of Civil Aviation], Minsk, under "Scientific-Technical Progress Dictates" rubric: "Departmental 'Interference' with Radio Communications"]

[Text] There is no need to prove the importance of radio communications in aviation. Its uninterrupted operation is a guarantee of flight safety. Reliable radio communications aids to no small extent in the performance of chemical spraying operations. The real contribution of specialists of ERTOS services in raising the yield in rural fields is seen in this.

The air enterprises of our Belorussian Civil Aviation Administration have gained solid experience in past years of the five-year plan in assuring reliable communications of light-engine aircraft during flights over farm fields. Twenty retransmitters are in operation with control over wire channels, and four retransmitters function under control of radio-relay stations. Some of them are installed on the poles of television- and radio-retransmitters of Minsvyaz [Ministry of Communications]. Thus over half of the republic territory has reliable communications with light-engine aircraft. This produces a positive result, although today it is no longer possible to limit ourselves to this. It is no less important to achieve a decrease in the cost of providing radio communications for PANKh [use of aircraft in the national economy] aviation.

Accomplishment of this difficult task depends on engineering and design thinking. Along with this, however, the interdepartmental interference which still often serves as the armor of inertia and lack of initiative also is a great hindrance. It is worthwhile discussing this more objectively.

From the standpoint of our specialists, a reduction in physical inputs is possible through a substantial increase in radio communications range, but use of special Chinara-0.25 antennas in the retransmitters does not provide this. It is necessary to mount the devices at an enormously greater height, such as on the Ministry of Communications television- and radio-retransmitter poles.

At first glance the solution has been found, but everything rests on the fact that industry isn't putting out radiotechnical equipment for such purposes.

The skilled craftsmen and innovators of some ERTOS bases adapted series-made transmitters and are inventing control equipment. This was the route taken by communicators of the Gomel, Vitebsk and Grodno air enterprises. There are even some positive results. Nevertheless, it stands to reason that we cannot regard the amateur approach to solving such problems directly connected with low-altitude flight safety as absolutely acceptable. The imperfection of radios, interference from Ministry of Communications radio facilities, and a large number of technical and organizational problems arising in the work hamper the matter.

But the social order of air enterprise communicators to the designers probably shouldn't be limited to the development and series production of small retransmitters in containers. An acute need has matured for developing antenna-mast arrangements which would be simple to maintain and construct for efficient control of small aircraft flights.

Radio networks in the decameter wave band have been established as a reserve in our administration's air enterprises. With a certain organization of the work, this permits us to preclude "dead zones" and provide radio communications over the entire territory. The active use of decameter waves allowed a considerable reduction in expenditures for electric communication. But here too the imperfection of this band's radios and of aircraft antennas has an effect. There is no two-way communications between airport and aircraft. There must be a replacement of obsolete decameter aircraft radios by the modern Yadro-1. Specialists of the UVD [air traffic control] scientific-experimental center also arrived at that conclusion. Their finding is based on results of a status check of ground and aircraft radio equipment at MVL [local air route] and in chemical spraying in the Minsk air enterprise last year.

We have one other problem for which the need for solution matured long ago. I have in mind a proprietary, thrifty attitude toward use of state funds.

Let's say our air enterprises expend a sum total of over R600,000 annually for leasing telephone channels to control PANKh retransmitters. The whole paradox is that, as we know, the light-engine aircraft fly only during hours of daylight, while the lease is paid for a full 24-hour period. The attempt to resolve such a discrepancy on a fair basis encounters bureaucratic impediments. A need quite obviously has matured for revising the instructions and terms of such cooperation with consideration, naturally, for demands of the time.

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## CIVIL AVIATION

### LONG DELAYS IN MAKING EKIBASTUZ AIRPORT OPERATIONAL

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 30 Mar 86 p 1

[Article by KAZAKHSTANSKAYA PRAVDA correspondent V. Stupak under the rubric "Construction Starts--Monitored by KAZAKHSTANSKAYA PRAVDA": "Cracks on the Runway"]

[Text] Ekibastuz--Once again, the question asked of political speakers most often at the last unified political day in Ekibastuz concerned the new airport. Why was the pregress pledge on its commissioning broken? Who is responsible for the failure? When will the first Tu-134 finally land at Ekibastuz?

It is not out of idle curiosity that construction and power workers and miners are so concerned with trying to find out about the airport. For them, direct flights to Moscow, Alma-Ata, Omsk, Karaganda, Novosibirsk, Petropavlovsk, Semipalatinsk, Ust-Kamenogorsk and Central Asia are critically necessary. Especially now, when a rapid buildup in operations at GRES-2, where more than 90 million rubles now must be utilized, is under way. During the summer, dozens of duty brigades from practically all main administrations of the USSR Ministry of Power and Electrification will be taking part in the project. Planning institutes and machine building associations supplying equipment are continuously sending supervisory groups and experts here. The transfer through Pavlodar and Karaganda with a 4-hour bus trip is making these relationships more complicated at present.

The airport in Ekibastuz has been under construction for over 6 years and since 1984 has been mentioned as a construction start. The last time the pledge to turn it over was broken by both sides--the client, the Kazakh Administration of Civil Aviation (KUGA), and the general contractor, the Kazakh SSR Ministry of Highways. The construction workers did not succeed in completing finishing work on accommodations in time, and airmen did not provide for the delivery of radio navigation equipment and its installation and adjustment by specialized subunits of Aeroflot.

Now, at the end of February, all the work has caught up finally, and the opportunity to conduct a proving flight is at hand. However, the state commission headed by G. Niyazov, deputy chief of the KUGA, suddenly acknowledged the unsatisfactory condition of the runway: they found cracks in

the asphalt paving. There's nothing surprising in this. The runway was built and approved in accordance with a formal document of the working commission as far back as 1981. Even more serious disruptions were able to take place over the 4 years without operations maintenance and construction inactivity. So everything points to the fact that the problem does not concern these small breaks in the asphalt. Usually the airmen have caulked them easily with mastic. It is worse that a deep rift has existed in relations between the client and the contractor from the very beginning. Executives of the Ekibastuz Gorkom and Gorispolkom cannot find common ground with the airmen, and even the oblast party committee is at a loss.

"Aside from unnecessary trouble and losses, we are not expecting anything from the new airport," said V. Krasnov, commander of the joint aviation detachment, without concealing his attitude toward the construction project.

The Alma-Ata representatives of the Kazakh Administration of Civil Aviation also have held a similar opinion. Such a position also has shaped a corresponding attitude. The airmen have not wanted to take over the buildings and have not put together a work force.

The situation seems to be changing for the better now. The airmen have been convinced after prediction estimates that passenger eagerness exists in Ekibastuz, and operating large airports for a distance of just 150 kilometers is not in itself new: they have been operating this way in the Ukraine for a long time. In March the Kazakh Administration of Civil Aviation finally provided Ekibastuz with 50 staff employees, that is, the majority of operations personnel. Residents of the city promise to provide them with housing in the near future. Apparently everyone has now arrived at a single decision: Ekibastuz should handle the first proving flight of a Tu-134 at the end of May. This will make it possible to begin regular operation of the airport in June.

The matter depended on a small point: that executives of the Kazakh Administration of Civil Aviation, the Ministry of Highways and Ekibastuz finally found common ground and united their efforts. Final completion of the lengthy undertaking now is being held up by three projects not being ready--the crash rescue station, a half-kilometer collecting main for melted snow runoff, and an expanded ramp. They are extremely minor compared with other structures of the Ekibastuz Airport, and not to complete their construction in April and May means to disrupt the start of the only republic project of the ETEK [Ekibastuz Fuel and Power Complex]. How can this be called anything but irresponsible?

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CIVIL AVIATION

GLISSADA LASER LANDING SYSTEM TESTING IN KUYBYSHEV

Moscow TRUD in Russian 12 Jun 86 p 4

[Article by N. Chaykovskiy under the rubric "Experiment": "A Laser is Helping the Pilot"]

[Test] Kuybyshev-- Testing of the prototypes of the "Glissada" laser landing system are being completed in Kuybyshev. It is making it possible to improve flight safety substantially.

An aircraft is landing. At this crucial moment the pilot's contact with the ground is visual--with reference points, and at dusk and at night, with airport lighting. But what if there is fog over the ground? Or drifting snow? Under poor visibility conditions, the runway lights appear to the crew of a landing aircraft as an unbroken carpet of light--dazzling and irritating. Here is where "Glissada" comes to their assistance.

Dusk is gathering over the airport. I am departing on a flight together with the crew of an An-24 commanded by Ye. Nikolayev. We gain altitude. A turn, and another turn... We're coming in for a landing. Suddenly from below, "ruby-colored feelers" appear out of the scattered blinking lights on the ground, cutting through the night sky along the course of the aircraft. This is when the airport ground service turned on the laser units set up near the runway. Their powerful beams, as if drawn by a red grease pen, form a clear corridor of light: two beams position the boundaries of the runway, and two others passing upward at a precise angle outline the "air track" from which the aircraft should not depart. A fifth midposition beam lays out a course for the aircraft. From above the combination of ruby-colored beams looks like the traditional wind tee familiar to all pilots.

"What are the advantages of landing by laser beams?" repeats the aircraft commander. "They correct the landing path, provide more assurance for the pilot, and ensure high accuracy in flying. The slightest errors and deviations are immediately apparent."

The laser landing system has been tested at airports in areas of the country with different climates and has been evaluated highly by pilots. It has been patented in 14 countries, including the United States, France, the FRG and Japan. Several simulated approaches are enough for pilots to learn how to land with laser beams. Moreover, no additional equipment needs to be installed on the aircraft. "Glissada" guarantees a landing for all types of aircraft from all states.



## CIVIL AVIATION

### IMPROVED FLIGHT OPERATIONS, PROCEDURES MANUALS URGED

Moscow VOZDUSHNYY TRANSPORT in Russian 22 May 86 p 2

[Article by Pilot First Class V. Gerasimov, candidate of technical sciences, under the rubric "For Flight Safety": "The Quality of a Flight Manual"]

[Text] The effectiveness of the air transport system's work, and flight safety above all, depend to a large extent on the quality of the documents which fix both the rules themselves and the method of implementing them. At the same time, any shortcoming in a reference document literally entangles in a web everyone who performs a duty, regardless of the level of his vocational training or discipline.

The basic working document for aircrews in civil aviation is the flight manual, but even it is not devoid of deficiencies, which are arbitrarily divided into three categories.

In the first category may be placed the complete lack of any recommendations to deal with certain aircraft equipment failures. The main reason for this, apparently, is that the degree of risk in some failure of aircraft equipment is a problem which is continually exaggerated among the specialists of different organizations and departments who are concerned with the questions of preventing aircraft accidents. Even the opinion that the failure of an engine or gyrohorizon in a modern aircraft does not represent a threat to flight safety, since sufficient backup is available, is well known.

Those who advocate a reduction in the number of recommendations advance the argument that there is a low degree of probability for dangerous failures such as a simultaneous shutdown of all engines in flight or the failure of reverser doors to function on landing when the automatic engine shutdown system fails at the same time. However, such arguments are shattered fundamentally by the intolerably high cost of such incidents.

Recommendations that are contradictory and sometimes incompatible with each other are in the second group. Thus, for example, in the Tu-154 flight manual, there were nine (!) different recommendations for crew actions in the landing run for 9 years (from 1972 to 1981). This deficiency has now been eliminated. However, recommendations for actions when three generators fail remain on 17 (!) pages; these can easily be reduced to about one-tenth as many.

Thus far there has been a far-fetched division into flying in the flight director mode and flying with the control wheel. Although it is obvious that flying in accordance with flight director indicators is flying with the same control wheel, and differs only in the landing approach system.

Until recently, several climbout conditions existed which did not take deviations in the outside air temperature at altitude from the MSA [international standard atmosphere] into account, and which did not rule out an aircraft arriving at its operating ceiling. A ban on flights in icing conditions when the outside air temperature is plus 5 degrees Celsius and below has been in the Tu-134 RLE [flight manual] for over 20 years. The temperature indicated is observed all the time, only the altitude of the isotherm depends on the season and the condition of the air mass. For this reason, practically every flight is made in violation of the absurd restriction cited. At the same time, there is no such restriction in the Tu-134 flight manual for foreign airlines.

Not until 1981 did they finally come to a single opinion on how to hold one's feet on the pedals in flight and in taxiing. But how many tire casings were torn apart for this reason, and how many overruns there were! An explanation made its appearance, but for some reason it concerns only Tu-134 and Tu-154 aircraft. What about the other types?

Until now, the question of who controls the engines' operation has not been resolved or stipulated in one document. A line is clearly drawn between twin-engine and four-engine aircraft. On the former, the aircraft commander controls the engines' operation. On the latter, the flight engineer in accordance with the aircraft commander's commands. But the Yak-40 and Tu-154 three-engine aircraft are "ownerless." The division of responsibilities among crewmembers here depends completely on the commander's adherence to one method or the other. And this is typical--if the commander has been flying twin-engine aircraft, he controls the engines himself. And if he was retrained from an Il-18, let us say, he just gives a command for the necessary operating condition to be established for the flight engineer to control, and takes the throttles only as a last resort.

The ambiguous interpretation of these actions is cause for particular concern in the Il-86 flight manual, where it states word for word that the aircraft commander gives the command to the flight engineer to maintain engine operating condition or speed.

What is the danger of this recommendation? First of all, the ambiguous "either-or" recommendation is similar to "neither-nor." Secondly, the flight engineer, who is not in a position to evaluate the motion dynamics of the aircraft, is certain to delay in changing the engines' operating condition to maintain speed, since he is observing only the end result of the changes that have evolved, that is, the current speed itself. Whereas anticipatory actions are required of the crew for exacting flight on a glidepath.

These ambiguities in the flight manual must be eliminated at once. The flight engineer should carry out his responsibilities to monitor the condition of the aircraft and maintain the engines' operating condition in accordance with the aircraft commander's commands.

For more stable flight on glidepath, taking the engine arrangement into consideration, it is advisable to include a recommendation in the manual for crews to establish an averaged regime for outboard engines in a landing approach, and to change the condition of the center engines only when necessary.

More than 3 years have proved to be insufficient for adding supplements to the Tu-154 flight manual in the section on extreme forward center-of-gravity positions on takeoff and landing, as well as methods of utilizing reverse thrust to shorten landing distance. "Express-change" has been in effect all this time in the flight manual. Just what is this "express?"

We cannot help but dwell on an element of such importance in the system of flight documentation as the compulsory checklists which help the crew monitor the execution of individual procedures in the most critical stages of flight. There is absolute confusion here. It is enough to say that it is a real gypsy camp in the cockpit of a Tu-154 on a landing approach, but in the Il-62 or Il-86, on the other hand, it is quiet. The point is that the first checklist has four paragraphs (but there were seven, by the way), and the second one has none. And four questions--there are about 10 responses, that is, 20 sentences in 3 minutes of the flight. In addition, it is necessary to monitor the radio, respond to the controller's requests and give commands to crewmembers, and to fly the aircraft in "free time."

There are also serious complaints about the composition of flight manuals. Nearly half of them are made up of graphs and nomographic charts which are practically not being utilized. Instead, operations subunits independently calculate tables which are convenient to use and which do not have the force of law, since they usually haven't been approved by anyone. Apparently there is no one who opposes putting tables in the manuals instead of graphs and nomographic charts, but like the thistle, they live and thrive. Isn't it time to update those manual pages that are worn out from constant use and to remove those that have stuck together because no one has ever opened them and replace them with several tables?

And of course, it is necessary to resolve the main problem--who is the lawmaker for this document? It would be logical to assume that specialists of the design bureau prepare the first edition of a manual for a period of operational testing. But it is advisable that all subsequent editions and changes and supplements to it be prepared by operations personnel in coordination with the OKB [experimental design bureau].

Of all the numerous flight documents, it has become urgently necessary to retain only the Flight Manual, which should state what is to be done and when, and the Operating Procedures for each member of the crew, which should describe each operation in detail.

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## MOTOR VEHICLES AND HIGHWAYS

### RAF VAN WORKS MODERNIZATION EFFORT UNDER WAY

Moscow PRAVDA in Russian 15 Apr 86 p 3

[Article by PRAVDA correspondent O. Meshkov, Yelgava, Latvian SSR: "Impetus to Action: Accelerating Technical Progress"]

[Text] The technological process and organization of production at the RAF Minibus Plant in Yelgava have been under way at rapid rates. The plant is preparing for the series production of a modernized model of the vehicle. Its merits have been highly rated by delegates to the party congress -- 20 such vehicles produced in the experimental shop have been serving them.

The plant collective puts its emphasis on the intensive factors of production development. For example, two more shops will soon become operational, but the number of workers, thanks to the broad application of machinery and improved technological schemes, will not increase. What is the contribution that the enterprise's scouts have been making to this situation?

"Here is the plan for the technical re-equipping of the plant," A. Makarov, the deputy chairman of the enterprise's people's control group, says, pointing to a rather thick folder. "It contains technical-organizational measures and developments dealing with the introduction of robots and machine tools with ChPU [digital programmed control]. A few things have also been done in excess of what was planned -- on the basis of the initiative and recommendations of the motor-vehicle builders themselves, including the people's controllers. Because it is much easier for the immediate executors, the people standing behind the machine tool, to notice any bottlenecks or reserves.

As long ago as the beginning of last year a large group of scouts, including deputy to the USSR Supreme Soviet, milling machine operator Ye. Sokolov, and the experienced technologists and designers studied the manner in which the preparation for the production of the new minibus was proceeding. The results of the study were discussed at a session of the party committee.

The scouts, obviously, did not limit themselves simply to carrying out a large inspection. They keep under their daily supervision everything that, in one way or another, is linked with the re-equipping of production.

In the small-components assembly shop, the attention of the activists was attracted by what were, in general, simple operations -- the cutting and sewing of the material for the upholstered seats for the minibus. The sector is small and, as the expression goes, not a decisive one. The sewing machines are old, and they operate poorly. The scouts analyzed their work, took into consideration the losses from defective output and the frequent idle-time periods, and proved that it would be cheaper and more profitable to buy new equipment than to keep wasting time and money repairing the worn-out equipment. Currently new and more productive sewing machines have arrived at the sector. Now that is the way that people should operate.

I recall a conversation with people's controller, senior foreman O. Voskoboynikov. He was complaining that the introduction of ideas and innovations was frequently hampered by a stagnant mental attitude, by the habit of working in the old way, of traveling along a well-traveled path. In the body shop they had recently encountered the following situation. The plant's specialists had developed a new and improved design for the vehicle's roof arches. The innovation not only increased the reliability of the design, but also made it possible to save annually 2.5 tons of metal.

"But then we members of the new technology and technological processes sector, of the NK [people's control] group, went to the body shop," Oleg Ivanovich relates, "and what do we see? Everyone is riveting away by the old method. It was as though they had not even heard of the new design... We had to have a heart to heart talk with a few people."

The shops have begun receiving equipment which, one can say, is exponentially better than the previous equipment. However, this does not testify to the fact that technical progress has been guaranteed. Much depends upon the hands that receive the technology, and the conditions under which it will be exploited. In a word, it is a matter of activating the human factor, and of the reserves which are "at hand." That is why the plant's scouts have devoted attention also to the enterprise's rear areas. A group of activists headed by production veteran N. Turushev inspected the manner in which the equipment arriving for one of the new shops was being warehoused and stored. It turned out that metal structurals had been heaped on the ground without any spacers between them, and were rusting. In the course of another surprise inspection they say that the fittings for the new model of minibus were not being stored in the best manner. The managers responsible for this tried to justify their actions by saying that there were not enough storage areas available.

Then the people's controllers studied the status of the warehouse management as a whole. After a thorough inspection it became clear that there was very little order there. The workers at the warehouses have been convinced of the scouts' rightness, and order is being introduced.

The work carried out by the activists in such an important area as the intensification of production requires a well thought-out, analytical approach to interpreting the processes occurring at the enterprise. It sometimes happens that, in the emphasis upon current operations, the engineer service looks sight of a certain problem, but the scouts are "listening": it comes knocking on their door... They noticed, for example, that, not infrequently,

the modern, expensive equipment with digital programmed control and the robots are used to process very simple parts. Is that desirable? They spoke to the workers, foremen, and engineers. It turned out that it is not such a simple matter to determine that desirability immediately. It is necessary to carry out a painstaking economic analysis.

In this regard they became interested in the activity of the plant's robotics bureau. They came to the conclusion that its level was lagging behind the present-day requirements. In order to correct the situation, it was necessary, instead of the relatively weak bureau, to create a department from well-trained specialists. The plant's management and party committee supported the scouts' recommendation. A group of young engineers with a creative spark were selected, and that group currently is undergoing the appropriate training. And soon it will constitute the nucleus of the new robotics department.

Using the new equipment and advanced technological processes to produce the most up-to-date machines -- that is the goal that the Yelgava motor-vehicle builders have set for themselves. It is what determines the concerns of the enterprise's scouts.

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## MOTOR VEHICLES AND HIGHWAYS

### TRUCK TRANSPORT ECONOMIC EXPERIMENT MEETS RESISTANCE

Moscow IZVESTIYA in Russian 3 Jun 86 p 2

[Article by IZVESTIYA scientific commentator B. Kononov, under rubric "Reorganization: From the Worker to the Minister": "Motor Transport at the Crossroads: Why There Has Been a Slowdown in the Experiment at the Motor-Vehicle Enterprises That Have Chosen an Economic Indicator That is Beneficial For the Entire National Economy"]

[Text] The ancient philosophers taught that three paths leads to knowledge. The path of meditation is the most noble path. The path of imitation is the easiest, and the path of experience is the most bitter.

This abstract truth is being implemented in a rather curious manner for the participants in the experiment which is currently under way at many motor-vehicle managements throughout the country.

The initiators of the experiment arrived at it by the most noble path -- by meditating about the imperfection of the existing system. What is the purpose for which the general-use motor transport is intended? That is the question that the people at RSFSR Minavtotrans [Ministry of Motor Transport] meditated about. In essence it is an element of the services sphere in the national economy. Its chief task is the timely and completely intact shipment of freight being sent out on customers' work orders with minimum expenditures.

At USSR Ministry [Ministry of Construction], which also has begun an experiment at its motor-vehicle managements, they came to the conclusion that motor transport is one of the technological links in construction. Its chief purpose -- as in a school problem -- is to deliver freight from point A to point B, within a definite period of time and in exactly the quantity and variety that are needed for the smooth operation of the construction conveyor belt.

At the Transport Department of USSR Gosplan, the thinking was broader than this. Also by taking the noble path of meditation, the people there long ago came to the conclusion that is necessary not simply to fulfill the customers' work orders or to observe technological discipline, but it is also necessary to strive for the maximum performance from each truck per ton of freight-carrying capacity. In the ideal situation, the truck was viewed as a unit,

filled to absolute capacity with freight, dashing continuously along the highway. Of course, those doing the meditating realized that the ideal is far from real life, but they wanted all the motor-vehicle managements in the country to strive for it, taking one step after another to increase their plans "from what has been achieved." And, in order for the goal to be clearer for the people in motor transport, they introduced into the state plan the indicator "freight turnover, computed in ton-kilometers."

But when that indicator, which gradually converted motor transport into some kind of monster that "devours ton-kilometers" without a consideration of the interests of the national economy, began to be criticized from all directions, USSR Gosplan introduced, effective 1 January 1986, a new one -- "volume of freight shipments in tons." The more shipments the driver and the motor-vehicle management has, the better they are working and, correspondingly, the more blessings of all kinds they will receive.

Those who chose the path of simple imitation of the Gosplan indicators waited for the banners, bonuses, honor, and respect. But those who took the path of experiment were soon able to be convinced that truly "the path of experience is the most bitter one."

The official purpose of the experiment that is being conducted under the aegis of USSR Goskomtrud [State Committee for Labor and Social Problems] was the improvement of the system of paying for the labor performed by truck drivers. Life has shown that this can be done intelligently only by changing the indicators of the economic interrelationships between the motor-vehicle enterprises and the customers. And it was here that the great "mystery story" lay, because, instead of the Gosplan ton-kilometers and tons, the managements participating in the experiment introduced a new indicator -- "volume of transport services in paid truck ton-hours." The purpose was to make the service system profitable to everyone: the customer, the motor-vehicle enterprise, and the driver.

Previously the drivers were paid on a piecework basis and received wages on the basis of payment rates per shipped ton and ton-kilometer. In the event of idle time in excess of norm, which was the fault of the customer, they were paid only 37.5 percent of the standard rate. That encouraged them to "get their hands on" shipped tons by any means. The customer knew that if, today, the driver was left without any "wages," then tomorrow he (and, consequently, his comrades also) would no longer come. But in the experiment the decision was made to convert the drivers to a method of payment based on time plus a bonus for the fulfillment of the shift assignment.

The operating scheme at the motor-vehicle enterprise today looks as follows. The customer sends out a requisition for the necessary volume of shipment of freight in tons to the places that he needs. On that basis a determination is made of the necessary number of trucks of a definite freight-carrying capacity and the overall volume of transportation services in paid truck ton-hours, proceeding from the existing norms that govern traffic speeds under urban conditions, on the highway, and along rural roads, as well as the norms for idle time at points of loading and unloading. In other words, norms are used to compute the time necessary for the loading, delivery of the freight from



point A to point B, and unloading. This volume of transportation services is also indicated in the contract between the motor-transport enterprises and the customers.

The driver, every day, receive a specific assignment for which norms have been established, and the customer noted how he fulfills it. If he has delivered the freight more slowly than has been stipulated by the norms, he is not paid a bonus. But if, at no fault of his own, he has stood idle in excess of the norm while the truck is being loaded or unloaded, he receives 100 percent of the payment rate. It now becomes unprofitable for the customer to allow any idle time in excess of the norm or to pad the drivers' figures by adding on extra trips, because this will exhaust more rapidly the services limit stipulated by the contract. And the trucks will simply stop being provided to him.

The scale of the experiment is very impressive. At RSFSR Minavtotrans, ten motor-vehicle managements in Leningrad, in Moscow Oblast, and in Bryansk, Kuybyshev, Kurgan, and Omsk are taking part in it. The total number of participants is more than 9000 persons. The number of trucks involved is 4800. The results attest to the benefit of the new system. In 1985 the plan for shipments by the motor-vehicle managements participating in the experiment, judged on the basis of the contract pledges, was fulfilled by 99.8 percent (in 1983, before the beginning of the experiment, it was 86 percent). Moreover, the number of the necessary trucks was reduced by 4.7 percent; the number of drivers decreased by 2.7 percent; and the absolute fuel expenditure dropped by 18 percent. The reduction in the transportation costs of the freight shippers is estimated in the amount of 5.9 million rubles and the operating expenses of the motor-transport enterprises in the amount of 4.9 million.

Those are the results of the work performed by the managements in RSFSR Minavtotrans, which serve any customer. But what has occurred in the departmental transport, which fulfills a more specialized task? At USSR Minstroy also a similar experiment has been in progress for two years. In 1984 two motor-vehicle bases began operating according to the new system -- at Murom and Saratov. I was told at the Transportation Administration of USSR Minstroy that at those motor-vehicles bases in one year the total mileage driven by the trucks dropped by 30 percent and there was a corresponding reduction in the expenditure of fuel for executing the same volume of construction-and-installation operations. In 1985 the Vladimir and Saratov motor-vehicle trusts (already more than 2500 drivers), as well as Gorkiy Motor-Vehicle Base No. 5 and one one of the Leningrad motor-vehicle bases, converted completely to the experiment. The results are similar -- the transportation costs are reduced, while fulfilling the same volume of construction operations. There has been a sharp improvement in the state of morale in the motor-vehicle managements.

Therefore RSFSR Minavtotrans and USSR Minstroy are requesting the expansion of the experiment conditions to all their motor-vehicle managements. It would seem that this is advanced experience, and the sooner you use it, the more you can expand its scope. Especially since the ministries which we usually accuse

of being stagnant in their way of thinking are themselves showing the initiative. But no. We keep hearing "doubtful" voices and the decision is being postponed. Why?

Well, it is because it is already completely obvious that the new indicator "explodes" the system that took decades to form.

For example, it has become obvious that a considerable share of the volume of the freight shipments that have allegedly been fulfilled is nothing else but figure-padding. Having existed a long period of time, this "system" artificially formed a rather high level of report indicators for the use of motor vehicles for freight purposes and an overestimation as compared with the real needs of the national economy for volumes of motor shipments.

It is not by accident that, according to the official documents alone, the law-enforcement agencies annually revealed instances of figure-padding involving many millions of ton-kilometers, on the basis of which gasoline was illegally written off and unearned wages were paid.

And now, for the managers of motor-vehicle managements whose work is evaluated in the tons that have been shipped, the only freight shipments that are profitable are heavy ones, such as shipments of earth, sand, and gravel. Those customers whose freight shipments are lighter will once again have to "search out" various kinds of methods, which are not always legal ones, for getting their hands on trucks for their shipments.

The experiment has shown that the system that was tested in it is, as a whole, beneficial for the national economy. But there is a decrease in the traditional indicators of the "effectiveness" of the work performed by motor transport: there is a reduction in the fulfilled volume of shipments; and the individual output per ton of the truck's freight-carrying capacity. This is bad, the opponents of the experiment say: with the same wage fund, the motor-transport enterprises ship less freight, that is, there is a reduction in the labor productivity. In reality, however, this occurs because the figure-padding disappears and the shipment structure changes in the interests of the national economy. But people do not yet want to admit this.

RSFSR Gosplan is hindering the expansion of the scope of the experiment. For example, last year authorization was refused to convert all the motor-vehicle managements of Mosoblavtotrans to its conditions. And currently those which are participating the the experiment are "pulling" the other ones down. Because, according to Gosplan procedure, it is necessary to consider only the volume of freight shipments in tons, whereas the managements in the experiment also take into consideration the quality of the services provided to the customers. For them, there are no heavy or light freight shipments. The only thing is the customer's order. Therefore there is a broader variety of freight shipments here; there is no attempt to select the profitable routes; and the contractual pledges are fulfilled strictly. The shipment of freight is being changed from work to achieve a certain indicator, to work for the national economy. Why, then, do people not want to take this into consideration?

The 27th CPSU Congress called for a sharp change in the economic policy, and the introduction of a mechanism in the national economy to resist expenditures. But the implementation of this intention is no simple matter. How does not admit publicly that, over a period of decades, essentially speaking, figure-padding was encouraged? Are we really to believe that people at Gosplan did not know that the enterprises were forced to engage in that figure-padding? We talk about reorganization, but the middle management link, which at one time "introduced" the expenditure mechanism, does not yet want to admit the errors, is still opposing that which is new, is opposing the abolition of figure-padding and unsubstantiated expenditures, and is trying to force people to conduct "business as usual."

In the course of the experiment, many acute problems were revealed.

It was ascertained, for example, that the enterprises had practically no norms set for them for transportation expenditures per ton of output produced by them, and the branches could calmly provide Gosplan not with accurately substantiated requisitions for transportation services, but rather arbitrary ones.

When the actual amount of time involved in idle time during loading and unloading operations was ascertained, it became obvious how much loading and unloading machinery was not available. Industry has been producing a very small amount of that kind of machinery. RSFSR Minavtotrans does not allocate it, so that the "small-scale" customers can be served in a centralized procedure. It became completely obvious that the enterprises are little concerned about access roads or warehouses, or rapid loading or unloading in general.

When the customers' assignments began to be fulfilled without the figure-padding that smoothed out all problems, one became aware of the degree of imperfection in the motor-pool structure that the automotive industry has been forcing on the country. There has been a buildup in the production of eight-ton trucks, but what has replaced the old 1.5-ton truck that is so needed by many customers for hauling small freight shipments? Meanwhile, according to statistical data, throughout the world approximately 70 percent of shipments are made by trucks with a freight-carrying capacity of 1.5-2 tons. Where are the trucks with large, voluminous bodies for hauling light-weight freights such as yarn and artificial fur? The mindless race for the increase in the number of shipped tons is hindering the formation of the optimal structure for our motor pool.

The new economic indicator for transport -- "paid truck ton-hour" -- is perhaps not completely improved, but it clearly reveals these and many other shortcomings. It contains time as an organic element. Not only the time for the effective operation of motor transport, but also our era itself, an era that requires the renunciation of everything that is hampering our country's

development. Time does not tolerate delays. The experiment has been carried out, its effectiveness for the national economy has been proven, and we must lose no time in reorganizing the entire system of operation of motor transport.

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CSO: 1829/216

## MOTOR VEHICLES AND HIGHWAYS

### ISTOCHNIK BATTERY PRODUCTION HALTED DUE TO POOR QUALITY

Moscow EKONOMICHESKAYA GAZETA in Russian No 14, Apr 86 p 17

[Article: "Production Halted"] -

[Text] The Leningrad Storage-Battery Plant, which is part of the Istochnik Production Association (Minelektrotekhprom [Ministry of the Electrical Equipment Industry]), is one of the country's largest manufacturers of storage batteries and various sources of current. At the same time it is a lagging enterprise in the branch, and the plant that has been guilty of the increasingly felt "battery shortage."

An inspection by Gosstandart [State Committee for Standards] has confirmed crude violations of the requirements that have been established by state standards for starter-type storage batteries for trucks, motor buses, and tractors at that plant (director, V. Kozlov).

The production cycle here involves the use of imperfect equipment that is suffering from wear and tear, and of obsolete technological processes of manufacture which, in addition, are regularly disregarded. Moreover, the metrological support of production is in an unsatisfactory condition.

Serious violations of the requirements stated in the standards and of the technological processes were established here repeatedly by previous inspections, but the proper measures to eliminate the shortcomings at the plant were not taken.

On the basis of the results of the inspection, approximately 200,000 storage batteries have been removed from the plant's reports concerning fulfillment of the sales plan. Those batteries have a total value of 11.14 million rubles. In addition, profit in the amount of 443,400 rubles has been withdrawn, for payment into the state budget. By order of Gosstandart, the production of storage batteries, types ZST-215EM and 6ST-132EM, at the Leningrad Storage Battery Plant has been halted, pending the complete elimination of the violations.

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## RAIL SYSTEMS

### RAILROAD TRANSPORT STATISTICS FOR JANUARY-MARCH 1986

Moscow GUDOK in Russian 15 Apr 86 pp 1, 2

[Article from documents of the Administration of Statistics and Accountability of the MPS, author unnamed: "Working Productively and Efficiently"]

[Text] Railroad workers together with the entire Soviet people are working in an atmosphere of great political momentum, brought about by the historic decisions of the 27th Congress of the CPSU. Railroad workers carried out the task of the first quarter with honor in terms of the major volume indicator. The sector completed its plan for total freight shipping three days ahead of schedule. More than 990 million tons of national economic production were transported. This exceeds the planned target by 35.7 million tons and is 93 million tons more than for the same period last year.

The plan for shipments of all freight items on the annual products list has been overfulfilled, including that for bituminous coal by 2.2 million tons, metallic-ore raw materials by 7 million tons, grain shipments by 1.4 million tons, chemical and mineral fertilizers by 2 million tons, and timber shipments by 0.8 million tons.

The greatest contribution towards overfulfillment of the plan for first quarter shipments was made by the Donets Basin, Moscow, Central Asian, October, Dniepr, Southwest, Lvov, Belorussian and Moldavian routes.

At the same time, the Kuybyshev route, unable to make up January's deficit in performance, has fallen short of plan by 216,000 tons since the start of the year. The remaining routes, while fulfilling the total plan for shipments, did not pay enough attention to the quality of the type of shipment and were found wanting even in the most important freight shipments for the annual products list. For example, the Transcaucasus route lagged behind in 6 of 16 planned shipments, the Sverdlovsk route in 11 of 18, the Gorkiy route in 8 of 13.

Freight turnover in the first quarter was 939 billion ton-kilometers. That is 4.9 percent higher than per plan and 11.5 percent more than for the same period of last year. Almost 96 percent of the growth was achieved through an increase in the volume of shipments and 4 percent as a result of increasing

the mean distance of conveyance. In total in the system this distance increased by 4 kilometers. The distances for delivery of timber, bituminous coal, non-ferrous ore and sulphuric raw materials, coke, petroleum shipments and refractory materials have increased. The distance for conveyance of metallic structures, granulated slag, construction and grain shipments has declined.

Passenger turnover has grown compared with the first quarter of 1985 by 3.9 billion passenger-kilometers, or 5.4 percent. The planned target for this indicator has been overfulfilled by 4.4 percent. The schedule for traffic of passenger trains has begun to be met more fully. For the first quarter the schedule has been 96.5 percent met in terms of trips in progress, and 92.2 percent in terms of arrivals.

The level of conveyance by through-goods train in the first quarter has grown by 1 percent. Conveyance of shipments of bituminous coal, ferrous metals, farm machines, motor vehicles and construction materials has been developed at a rapid pace. Twenty routes have met their target for conveyance by through-goods train. The best results were achieved on the Belorussian, Odessa, Donets Basin, Western Kazakhstan, Alma-Ata and Eastern Siberian routes. At the same time, the October, Gorkiy, Northern Transcaucasus, Volga, Tselinnaya and a host of others did not meet their target.

Static loads. Significantly better use has begun to be made of carrying and general capacity of rolling stock. Static loads have grown by 920 kilograms compared to plan and by 1380 kilograms compared with the same period of last year. This has allowed for an additional conveyance in those same cars of more than 25 million tons. It is gratifying that the static load has grown through conveyance of mass shipments such as bituminous coal, petroleum products, mineral fertilizers, construction materials, industrial raw materials, cement, ore, ferrous metals, refractory materials and grain.

All routes succeeded in meeting the plan for static loads except the East Siberian route. Out of 24 lines, the static loads increased over last year's level by more than a ton. The best results were attained by the Dniepr, Baykal-Amur, Southern, Pre-Baltic, Moldavian, and Southeastern routes.

Heavy traffic was also developed further. The average weight per train as a whole in the system has increased by 78 tons since the beginning of the year. Eleven routes, including the Southern Ural, Tselinnaya, Southern, Belorussian and October lines surpassed the 100-ton mark. In addition, a number of routes did not meet the plan. The Azerbaijan, Alma-Ata, Sverdlovsk and Far East routes did not reach their target in any of the months in the quarter.

A host of other indicators for the use of rolling stock have improved. The Southern Ural, Central Asian, Western Kazakhstan, Alma-Ata, Southern and Moldavian routes consistently reached their targets for car use. Moreover, the latter two, plus the Tselinnaya, Moscow and Krasnoyarsk lines reached their target for locomotive use.

The daily run of a locomotive compared with the same period of last year increased by 5.2 percent, and its productivity by 6.7 percent. But this was not enough to fulfill the plan. Almost half of the routes in the system lagged behind, and the Trans-Baykal and Gorkiy lines made even worse use of locomotives than previously.

Upgrading of the mechanics of the repair process helped increase the operational reliability of the locomotive stock. The most important technical indicators have also improved. The percentage of defective diesel locomotives in the shop has declined, the average time for repair and maintenance in the shop has been reduced, and the amount of damage and number of entries for unplanned repairs to stock have declined.

The plan for shop repair of freight cars has been realized at 100.6 percent of projections and at 99.9 percent for passenger cars. At the same time, down time due to malfunctions has risen, e.g. on the Far East route by 17 hours, the Pre-Baltic by 8.5 hours and the Volga by 7.2 hours.

The plan for all types of track repairs has been fulfilled. At the same time, the condition of the tracks on many sections of the system is hampering the speeds of rail car runs. There are still many warnings issued to rail traffic for speeding. The number of warnings rose on 17 routes, and especially significantly on the Moldavian, Alma-Ata, Far East, Trans-Baykal and Southeast lines.

The tasks done by "Glavpromzheldortrans" (Main Administration of the Railroad Transportation Industry), metro systems and industrial enterprises successfully met their targets for the main technical and economic indicators. However, a number of the TsTVR plants are not doing an entirely good job of fulfilling the plan for the products list.

The overall rise in transportation and operational work has had a positive influence on all economic indicators. As a result of the decline in the production cost of conveyance, more than 30 million rubles of profit over plan has been received.

Labor productivity of workers involved in shipping rose by 11.8 percent compared to the assigned 3.3 percent. The entire increment in shipments has been attained through an increase in labor productivity. A large contribution towards realization of the task for this indicator has been made by the collectives of the Belorussian route, plus 8 other routes which have undertaken a large-scale economic experiment as of this year. Labor productivity on the Belorussian route has grown 30.6 percent for the first two months of this year with an increase in salaries of 20.8 percent.

Throughout the system and on a majority of routes the correct relationship between the rate of salary increase and labor productivity is being observed.



Organization of labor has improved. The quantity of overtime hours has declined by 16.5 percent and of down time by 17.8 percent. There are 2.3 times fewer trips by locomotive crews which interrupt work and vacation schedules.

The results of the work of the railroad transportation sector in the first quarter have been analyzed in detail at the extended meeting of the collegium held a few days ago.

With a critical assessment of what has been achieved, the railroad workers are fully determined in the future as well to seek out opportunities and reserves for the stable fulfillment of plans and the improvement of overall activity, and to bring about an upsurge in the work of the railroad transportation sector onto a new, higher level as required by the decisions of the 27th Congress of the CPSU.

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## RAIL SYSTEMS

### SUCCESSFUL EXPERIMENTS WITH 36-CAR PASSENGER TRAINS

#### Official Explains Experiment

Moscow PRAVDA in Russian 20 Apr 86 p 3

[Article by A. Davydov and D. Chechel, city of Moscow: "A Consist About a Kilometer Long"]

[Text] Simferopol-Moscow-Leningrad-- a giant passenger train has covered this route; two electric locomotives pulled behind them a 36-car consist with a length of almost a kilometer....

Not only passengers at many stations but also railroad workers themselves followed it with their eyes with curiosity. They began to accustom us to this when consists of 24 cars were sent from the capital's railroad stations. It is convenient for people at peak hours (they are not in an agony of suspense in the railroad stations waiting for a spare ticket).

The first trip of the unusual train over the Simferopol-Moscow route was conducted at the end of February. The consist travelled without passengers; scientists were in the cars. They studied how the express behaved over the entire length of the route with the help of special equipment.

And here -- new tests. We asked Professor V. Inozemtsev, the rector of the Moscow Institute for Railroad Transport Engineers, to comment on this case.

He said: "The February experiment was successful but deficiencies in the operation of the braking system were detected. Especially during emergency braking and also when the emergency stop valve was used at low speeds, the consist shook sharply. This could have been rather dangerous for passengers. Therefore, it was decided to use modernized devices which are capable of insuring smooth braking."

"How will these consists be dispatched and travel?"

"It is planned to dispatch two standard passenger trains of 16-18 cars from the railroad stations of the country's large cities one after another with an

interval of 15-20 minutes. They will then be coupled together into a super-long train at the closest station. Shortly before its destination, the consist will be uncoupled. Two passenger trains will again arrive at the railroad station's platforms. In our opinion, such trains should primarily connect Moscow with the Crimea and the Caucasus."

The testing of the passenger express train with a length of almost a kilometer is continuing. The time is not far distant when it will be give a "green light."

#### Further Details, Comments

Moscow IZVESTIYA in Russian 30 Apr 86 p 3

[Article by V. Loshak: "Car No 36"]

[Text] It is possible that the day is not far off when these car numbers will appear on railroad tickets... as yet, a passenger train with 36 cars has completed only an experimental trip from Simferopol to Leningrad and back. The 4,000-kilometer route ran over sections of the Dnepr, Southern, Moscow, and October Railroads.

An IZVESTIYA correspondent talked about the experiment's results with Ministry of Railways specialists that participated in it.

Ye. Blokhin, the director of the operation and pro-rector of the Dnepropetrovsk Institute for Railroad Transport Engineers, says: "I think that it is understandable why such large passenger consists are needed. Many have experienced for themselves how difficult it is to get a ticket on a train going south in the summer. Routes have already appeared where the roads are overloaded not only during peak time but also year round-- for example, the Moscow-Leningrad route.

"The trip by our non-standard train completed a two-year cycle of work. We are now summing up a whole series of measurements which were obtained on the road. If everything goes as planned, these passenger consists will appear next year on the timetable."

"What are the main problems that remain to be solved before the beginning of regular trips by the superconsists?"

"The compressed-air brakes are hindering the increase in the number of cars in a consist. We are counting on electro-pneumatics. Instruments, which permit controlling electro-pneumatic brakes on such a long consist, were tested during the experimental trip."

"Thirty-two cars plus two locomotives -- this is almost a kilometer. Are our railroad stations designed to accept a train of this length?"

"Yes, this is a serious problem. Nevertheless, it is not worthwhile to wait until platforms are reconstructed for this superconsist. It seems to us that there is another way out: For example, two standard trains are dispatched from Simferopol and they are combined into one consist along the way. Then, they are again disconnected near the final station. The length of the freight lines of many stations permit this maneuver to be conducted."

"What is the gain?"

"A 'thread' is freed for another consist in the traffic schedule and, finally, a window for repair work on the line will appear."

"Trains do not spoil us with the punctual observance of the timetable. Will these doubled consists not become the most arbitrary among them?"

"I will tell you that we covered the 4,000 kilometers exactly on schedule. Generally speaking, the scheduled speed can be raised: Stretched consists will not be able to make stops at small stations and will be express trains."

The opinion of G. Fomin, deputy chief of the Ministry of Railways Passenger Main Administration:

Increasing the number of cars not only on freight consists but also on passenger consists is a process which has been taking place for a long time with us. Several years ago, 18-car trains were the longest, and this summer 210 trains with 24 cars are travelling on the railroad. This is 70 more than in 1985. Nevertheless, how convenient is a consist of 36 cars for passengers and railroad workers? It is still necessary to investigate this. First, the use of these trains is limited by the impossibility of stopping at stations along the way. Sufficient direct passenger traffic is required -- for example, Moscow-Gorkiy, Moscow-Leningrad.... It seems that there is still no accurate calculation of time lost. Coupling and uncoupling consists on the railroad--all of this requires dozens and dozens of minutes....

The opinion of V. Sidorenko, an engineer instructor at the October Depot of the Southern Railroad:

I drove the experimental consist from Kharkov to Kursk. Before that, in February, I participated in the same experiment, but with a train having 32 cars. The task is an unusual one for us, passenger train locomotive engineers. For example, I am accustomed to seeing the end of my train in the arc and here I only see the middle of it.... The coordination of the two locomotive teams becomes very complicated. One travels in the front and the second in the middle of the train. Stable communications and synchronization when braking are required. These trains demand highly rated engineers.

The opinion of A. Kazarinov, senior scientific associate in the All-Union Scientific Research Institute for Rail Transport:

A great deal of work was performed before the test train was sent on the line. Everything was worked out not only on models. A total of 3,500 tests for braking and as many for traction were carried out on experimental consists. Those situations, in which glass would fly from the windows of the cars and shelves would rip off in the sleeping compartments, were created.

The responsibility of those who service consists grows on trains with 36 cars. The electric line (the control of the electrically operated air brakes passes over it) which goes between the cars, must always be in good condition. Today's experiment shows that whereas this care is assured on the October Railroad, it is usually lacking on our southern roads.

Thus, a giant train will soon be sent on the line. The doubled consist requires perhaps twice as much care from those who will service it and from those on whom the dispatch and receipt of passengers at the end of the line depend. The technical problems are likely surmountable. It seems important to us that 36-car consists are not transformed with time into a panacea against all peak overloads on transportation no matter where they occur and that passengers, who are hurrying to work, do not remain at stations where the "long" express trains do not stop. When giving them a green light, one should not forget standard trains which do not always sparkle with movement accuracy today.

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CSO: 1829/198

## RAIL SYSTEMS

### COORDINATION TO IMPROVE RAILROAD TRAFFIC FLOW IN SOUTHWEST

Moscow GUDOK in Russian 30 Apr 86 p 2

[Article by F. Batkin, M. Gorbis and V. Denisenko, GUDOK special correspondents, Odessa-Kiev-Lvov: "Only By the Efforts of Five Lines: Is it Possible To Accelerate the Passage of Railroad Car Traffic On the Donbass-Krivbass-Carpathian Avenue"]

[Text] More than a fourth of the net's shipments occur on Ukrainian lines. Of course, this places a great deal of responsibility on the railroad workers. It is noteworthy that seven million tons of freight in addition to the plan managed to be transported during the first quarter. This is primarily the result of a successful search for reserves to increase the through-put and carrying capacity of the steel main lines.

The 12th Five-Year Plan provides for a further intensification in the railroad main lines that connect the main cargo generation centers -- the Donbass and Carpathians, with the western oblasts, the CEMA member countries, the Caucasus, and the ports on the Black and Azov Seas.

It is extremely important to emphasize that the rapid growth in the volume of shipments is mainly taking place by increasing efficiency in the use of transport systems and actively improving technologies especially for driving heavy and long trains.

Today, however, there is not one thing that will decide the success of the affair. The inter-line junctions remain a bottleneck. It is worthwhile to remember that the question of how to make them thoroughfares and not tolerate large losses here has been discussed repeatedly at different levels. The collectives of the Kazatinskoye, Rovenskoye, Lvovskoye, Shevchenkivskoye, and Znamenskoye divisions tried not so long ago to organize a competition under the slogan "Open wide the gates of the junctions." However, the unhindered passage of consists throughout the entire Donbass-Carpathian route has again encountered obstacles. Formalism and localism have again impeded the vital creative work.

Scheduled speed on the testing ground is falling. For example, it was 31 kilometers an hour instead of 42 (it was this earlier) from Shepetovka to

Zdolbunov. The turnover of a car is slowing down. As before, a lack of coordination is making the introduction of complex intensive technology for the operation of the avenue more difficult. Losses are great because the achievements of scientific and technical progress have still not found wide usage.

Meanwhile, the times require decisive actions. Alarmed by the situation that has been created, progressive Ukrainian railroad workers have suggested through GUDOK making the Donbass-Krivbas-Carpathian avenue a model one. This initiative, which has been approved by the Ministry of Railways and the trade union central committee, has enlivened contacts with neighbors at all levels.

#### A Full Load

What response has this call found?

It has inspired the proprietary interests of the work collective in improving matters. Although a small one, a return is already being felt today. For example, the hump yard tracks are being lengthened in Znamenka on the Odessa Railroad. This will permit 70 cars to be stretched out immediately and not in parts as has to be done now. A transit park and a third braking position on the hump will be constructed.

They have begun capital repairs on the entire line of the Kazatinskoye Division of the Southwestern Railroad. In order to improve operations in Mironovka, the lines in the parks are being reconstructed in order to make it possible to send doubled trains to the Odessa Railroad. The same thing is being done also in Kazatin.

The Lvov people are also performing a great deal of preparatory work. They are lengthening the lines in Zdolbunov. This will permit long trains to be received. They are searching for reserves to increase the capacity and processing capability at the stations of Kletarov and Lvov.

Simultaneously with the technical re-equipping, they have begun to look for ways to work more effectively, placing stress on the qualitative aspect. They are primarily concerned about the massive expansion of heavily loaded train traffic. For example, almost a quarter of a million heavily loaded trains passed over the Kazatinskoye Division during the last five-year plan.

The beginning of the new five-year plan is characterized by a great deal of dynamism. Now, a hundred heavily loaded trains more than previously are being dispatched each month. The average weight of a train has been increased by almost 200 tons. Not only the Kazatin people are operating this way. Trains weighing 5,000-6,000 tons are being formed on the Kievskoye and Zhmerinskoye divisions.

On the Odessa Railroad, the weight of trains, which are made up there, has been increased by adding one car to them. It seems like an insignificant addition, but they managed to deliver almost an additional 80,000 cars last year. During the first quarter of this year -- 30,000.

The Lvov Mainline has begun to receive trains weighing 6,000-10,000 tons at the station of Zdolbunov from the Southwestern Railroad. Part of them are re-made up in Kleparov. Consists weighing no less than 5,000 tons are now travelling through the Carpathians. In its turn, the railroad is sending doubled empty trains to the Donbass for coal through the Southwestern.

As we see, quite a bit has actually been done. Today, however, the times require other, more energetic and bolder approaches and actions.

This aroused the commanders of the Southwestern Railroad to propose to the directors of the Odessa and Lvov railroads, their services, divisions, railroad committees of the rail transport workers trade union, and enterprises and progressive engineers and dispatchers that they meet in Kazatin.

#### Be Concerned About One's Neighbor

A sharp and highly principled discussion took place. Together they searched for ways to resolve problems which had arisen and which could be eliminated locally. For example, I. Shevernayev, the chief of the Odessa Railroad, raised the question of transferring engineers, who operate the main route, to work somewhere else. Incidentally, such experience already exists on the Lvov Railroad. B. Oleynik, chief of the Southwestern Railroad suggested organizing work over the entire territory in accordance with the brigade method and incorporating costaccounting where possible.

Thanks to common efforts, the Odessa people struck off the question concerning interruptions in the operation of the Mironovka junction. It is now operating accurately. Unfortunately, however, that, which has been begun, is not always completed. The Znamenka and Shevchenkovo railroad carworkers guaranteed the passage of trains over their section without uncoupling. What is such a guarantee worth, however, if they uncouple 1,151 cars during the year in Mironovka; -- 139 of them even included replacing wheel pairs. The Kazatin people are also doing their bit. This year, they have already sent 200 trains with violations of the plan for making up trains.

In noting the commendable desire of the Kazatin people to expand heavy traffic, it is necessary to mention that they sometimes solve this problem "at any cost." For example, doubled 10,000 ton trains are good during line "windows", but there is no urgent necessity to combine them under normal conditions-- too much time is lost on this operation.

#### Assume the Burden a Little More Seriously

The development of increased joint obligations was a natural result of the meeting that was held. What additional burden did the neighbors assume on themselves? They decided to fulfill the annual plan for dispatching cargo ahead of time -- on 30 December -- and to transport no less than 605,000 tons above it. This number included 250,000 tons for the Southwestern Railroad, 240,000 tons for the Odessa Railroad and 115,000 for the Lvov Railroad.



It was also decided to accelerate the turnover of a freight car by 0.06 days as opposed to the norm and to free 125,000 cars on the Southwestern Railroad, 250,000 on the Odessa and 9,500 on the Lvov for additional loadings thanks to this. It was planned to ship no less than 135 million tons of freight on trains that are heavier and longer than the norm: 40 million tons on the Odessa, 65 million on the Southwestern and 30 million on the Lvov.

It is particularly important to point out the determination to completely eliminate the dispatching of trains, which are not completely loaded and made up, on the Pyatikhatki-Mironovka-Zdolbunov-Lvov and Pyatikhatki-Vapnyarka-Podvolochisk-Ternopol-Khodorov-Stryy-Chop avenues. The Southwestern Railroad will daily accept from the Lvov Railroad no less than four combined freight trains and five doubled trains made up of empty gondola cars at Zdolbunov. In turn, this railroad will hand over to the Lvov railroad no less than five 6,000 ton trains.

The collectives planned to insure a growth of 20 percent in labor productivity for the railroads during the five-year plan and to carry out the entire increase in shipping volume by increasing labor productivity without raising the number of workers.

#### A Broken Chain

When you analyze the decision adopted by the three railroads, you automatically come to the fact that two important links in the chain on the main route have fallen out. Is it possible to exclude two key railroads: the Donetsk and Dnepr which deliver coal and ore, from the entire avenue? You see, it is here that freight traffic is born and it is here that the empties return. It is no less strange that the directors of these main lines did not participate in the discussion of the urgent problems on the main route. It was not that they did not wish to participate -- they simply were not invited. But to tell them what was ....

Let us try to fill this gap. Last year, 2,154 trains, which were not fully loaded and on which more than a million tons of freight was not transported, arrived on the Odessa Railroad from the Donetsk Railroad through Pyatikhatki. The Dnepr Railroad failed to transport more than 90,000 tons. True, the situation has improved somewhat during the first quarter, but losses are still great.

Why is this happening? Until recently, there was no unified weight for a train prescribed over the entire avenue. In order to correct the situation the Odessa people proposed to the traffic workers on the Dnepr Railroad that they hand over to them 6,000-ton trains. This capability had been proven through test trips. Unfortunately, however, this question was not resolved. We got in touch with A. Smorgun, the deputy chief of the Dnepr Railroad. He replied that they had not received any letter from Odessa.. The matter, however, was now not even any business of his but of the engineers at the Znamenka Depot who had refused to accept trains weighing more than 5,000 tons.... Even consists transiting with coal, which the Dnepr Railroad is

shipping to the Donets Railroad, must be shortened by several cars at the station of Verkhovtsevo so that the Odessa Railroad will be able to accept them. In addition, the coal route from the Donets Railroad often has a weight of only 3,200-3,400 tons.

Recently the ministry supported the initiative of the Kazatin heavy train workers and authorized the formation of ore exit routes destined for the Lvov Railroad with a weight of 5,300 tons and a length of 57 standard cars and the handing over of such special purpose trains from the Dnepr at Pyatikhatki in order to increase the carrying capacity on the main route in the Ukraine: Donbass-Krivbass-Carpathians.

It would seem that this order of the ministry should have been strictly carried out. A decade has passed, however, and the new weight norm remains on paper. Although the traffic managers of the Dnepr Railroad have informed their neighbor about the fact that they are beginning to form exit routes with a weight of 5,300 tons at ore-loading stations and have asked them to confirm their capability to receive them, the reply has gotten stuck in the document case of V. Daminov, deputy chief of the Odessa Railroad.

How are things then with the initiative of the progressive engineers who are in favor of driving 6,000-ton trains? They have proven the benefit of this in practice. This has been confirmed by technical and economic calculations. Let us point out that we are not talking about individual sections but about the entire avenue.

What do these calculations show? The Odessa Railroad can save more than 650,000 rubles a year from running only five of these heavy trains daily. The capacity of the route is increased by one and a half consists. Seven locomotive teams and three electric locomotives are freed under these conditions.

Let us add to this the fact that the requirement for pushers on the Korsun-Sotniki segment falls off in connection with the removal of warnings.

The Southwestern Railroad should be able to bring the percentage of 6,000-ton trains to 40 percent of the total number. This would permit the average weight of a train to be raised by 30 tons and 10-11 engines and locomotive teams to be saved every day.

Regarding the Lvov Railroad, it is taking trains with an even higher weight, including 6,000-ton ones to Kleparov.

This, however, is still only a half-way solution. You see, we are talking only about ore -- but what about coal?

There are also other problems. For example, the Dnepr Railroad and especially the Donets Railroad are still continuing to receive the main stream of empties at the end of the reporting period. Gondola cars arrive with the remnants of freight and a significant portion of them are defective. In a word, they have their own problems here. This once again confirms the need

for the participation of the Donets and Dnepr directors in the recent discussions which were held in Kazatin.

Let us say right out that it is impossible to fundamentally resolve the problem of intensifying shipments on this avenue without the participation of the five Ukrainian railroads.

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## MARITIME AND RIVER FLEETS

### SHIPYARD BUILDING FOURTH NUCLEAR-POWERED ICEBREAKER

Moscow KRASNAYA ZVEZDA in Russian 23 Mar 86 p 4

[Article by I Belyayeva, correspondent of BALTIIYETS, plant newspaper of the Shipyard imeni Sergo Ordzhonikidze, under the rubric "Your Brothers-in-Arms Are Working Here": "The Rossiya's Younger Brother"]

[Text] Baltic shipbuilders built the nuclear-powered icebreaker Rossiya and turned it over for operation a year ahead of schedule. It is already operating on Arctic routes. But the slip of the four times decorated Baltic Shipyard imeni Sergo Ordzhonikidze is not vacant. The keel of a new nuclear-powered giant has been laid here. For the present, it does not have an official name. Shipbuilders are affectionately calling it the younger brother of the Rossiya.

The future giant is growing not by the day, but by the hour. The icebreaker is being provided with machinery and equipment at the same time that the hull is being shaped. The main turbogenerators, which together with the nuclear reactor will become the "heart" of the ship, have been installed ahead of schedule.

"The new icebreaker," said N. Gafarov, captain third rank, reserve, the yard's senior shipbuilder, "is similar to the Rossiya. Its power installation has 'harnessed' 75,000 horsepower. Advanced equipment conforming to the latest achievements of science and technology is being installed in the nuclear-powered giant."

The flexible automatic production line recently put into operation at the yard, which is turning out hull components for the icebreaker, is contributing to the accelerated construction rate. The new complex has already turned out the first batches of blanks obtained with the aid of the "Granat" plasma gas cutting machines.

I was on the slip when shipwrights completed one of the most complicated and critical operations--installation of the sternpost. The steering gear and the main propeller shaft with the screw will be made fast to this massive 140-ton component. The slipway workers brigade headed by experienced shipbuilder I. Vasilyev coped with the task undertaken successfully.

Nearby, the fore and aft ends of the icebreaker are taking shape. The Komsomol and youth brigade headed by one of the best brigade leaders in the slipway shop, communist V. Vasilyev, is working here. The brigade was established when the keel of the Rossiya was laid, and now has enough experience to perform complex operations. The quality of the work is excellent, as a rule. Reserve servicemen and highly skilled specialists P. Zavgorodnyy, S. Vinogradov and A. Bobin form the backbone of the brigade.

Recently, twin brothers Igor and Valeriy Gurylev returned to their local plant after being transferred to the reserves. They served in one of the subunits of the limited contingent of Soviet troops in Afghanistan.

"We joined in the work at what is termed full speed," the brothers say. "They gave us a good welcome in the brigade. Our instructors, Petr Zavgorodnyy and Sergey Vinogradov, are always ready to come to our assistance if something doesn't turn out."

I listen to the workers and am convinced once again that the persons who have come to the shipyard after service in the army and navy are working conscientiously. They are distinguished by their high responsibility for assigned work, their feeling of mutual help and ability to work together.

Examples of the selfless labor demonstrated by the young shipbuilders during construction of the nuclear-powered icebreaker Rossiya are still fresh in my mind. During the dockside trials of the icebreaker, for example, a malfunction was discovered in the shaft-turning gear. The situation was complicated by the fact that one of the most experienced brigade leaders of the fitters and riggers had fallen ill.

Yu. Nikiforov, a communist and sergeant in the reserves, came to their assistance. On his day off, he took charge of a group of shipfitters on the spot. The repair and final adjustment of the shaft-turning gear was completed in record time.

The actions of another reserve serviceman, communist A. Vagin, when he stood up for double work shifts during tests of the auxiliary boilers, was also dictated by a sense of high personal responsibility for the state of affairs on the icebreaker.

Ship repair workers are working with much enthusiasm now as well. V. Vasilyev's brigade assembled more than 500 tons of irregularly shaped metal structures in a short period of time. This is a very good indicator.

The work of the shipfitters brigade headed by communist V. Orlov, which was engaged in putting together the icebreaker's central compartment, where the steam generating units will be located, is noted for its high productivity. The work here is according to specification, inasmuch as metal of considerable thickness has to be handled. And this means that the slipway workers must be familiar with several specialties in order to straighten the metal, make up

sections from separate components, and then join them together. When necessary, members of the brigade may be cutters, gas torch cutters, or electric planers.

The young workers learn all this right here, on the building slip. L. Yenin, a senior seaman in the reserves, went through this school, for example. He left for the fleet when the Rossiya was still being built, and when he returned, he found it afloat. With the help of senior comrades, Leonid quickly restored his skills and is now coping with plan targets successfully. In the brigade leader's opinion, service on a combat ship trained Yenin to be efficient in work and to fulfill his obligations.

An absolute majority of the shipyard workers possess all these qualities. This is why the pace of work at the building slip is so intensive and efficient.

The Rossiya's younger brother is acquiring more and more new sections. The smooth outlines of the hull and the beautiful contours of the new polar giant can already be visualized in the intertwined scaffolding. Putting the fourth nuclear-powered icebreaker in the Baltic squadron into service ahead of schedule will be a worthy response by shipbuilders in the city of Lenin to the decisions of the party's 27th congress.

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## MARITIME AND RIVER FLEETS

### KRASNOYE SORMOVO YARD BUILDING NEW RIVER-SEA SHIP CLASS

Moscow IZVESTIYA in Russian 25 Mar 86 p 1

[Article by IZVESTIYA correspondent A. Yershov, Gorkiy, under the rubric "Fact and Commentary": "For the Rivers and the Seas"]

[Text] Two ships are now being built at once on the slips of the Krasnoye Sormovo Shipyard. One of them--a 3,000-ton diesel vessel--is the last in the old series. In all, several dozens of these vessels have been launched, beginning in 1967. The second ship on the yard's slip is the first of type in a new series now being developed by the Sormovo shipbuilders.

"The demands of the national economy for shipping by more inexpensive water transport are constantly increasing," says V. Yakovlev, chief designer of cargo diesel vessels at the Krasnoye Sormovo Shipyard, "but the dry-cargo diesel vessels we have been turning out for such a long time have gradually ceased meeting current requirements with respect to their cargo capacity, economy, and many other features. For this reason, a plan has been drawn up by the enterprise's designers for a more powerful cargo diesel ship for combined "river-sea" navigation. It will be able to carry 4,000 tons of cargo for river operation and 5,500 tons of cargo at sea. The new diesel vessel has impressive dimensions: over 160 meters in length and a beam of 16 meters. Its cruising range is nearly doubled because of increased fuel reserves. The ship is equipped with two engine installations of 1,320 horsepower each."

The ship has four spacious holds which can carry cargo in bulk as well as containers. And the more convenient layout of the holds and improved hatch covers make it possible to conduct cargo operations simultaneously in all holds, which significantly reduces the time spent by vessels at the berth walls and speeds up the delivery of cargoes to consignees. Different hoisting machinery has been incorporated to make the crew's work easier and the living conditions for those who set forth on long river and sea voyages have been noticeably improved. Each member of the crew has a separate cabin with all the conveniences. A shower, an air conditioner and modern, comfortable furniture have been provided for. All living accommodations have been taken out to the second and third tiers of the superstructure.

For the sake of ecological "cleanliness," the ship for the first time is being equipped with special cleaning installations which will make it possible to prevent pollution of the water basin with different waste products.

The new vessel will be able to sail under winter conditions in the Baltic, North, Black and Mediterranean Seas and pass easily through areas of broken ice.

The Sormovo shipbuilders are now making every effort to ensure that the first diesel ship in the new series is launched this year.

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## MARITIME AND RIVER FLEETS

### PADDLEWHEEL RIVERBOAT DEVELOPMENT CONTINUES

Moscow IZVESTIYA in Russian 31 Mar 86 p 1

[Report by IZVESTIYA correspondent A. Presnyakov: "The Return of the Paddlewheel". Capitalized passage appears in italics in original.]

[Text] Novosibirsk--The model of an unusual vessel is moving about at high speed in the laboratory tank of the Novosibirsk Institute of Water Transport Engineers. According to a report from our correspondent A. Presnyakov, a wheeled propeller enables it to move at such speed.

What prompted researchers to return to the type of propeller used in the past? Paddlewheel steamers, which developed enviable thrust at shallow depths, could not negotiate heavy waves--that was their Achilles' heel.

Screw propellers came to replace the wheels. However, as it turned out, they cannot be used for all purposes, either. And shipbuilders again returned to the concept of paddlewheels, developed on a higher technical level, of course.

"The efficiency of the screw and water jet propellers is reduced up to 40-50 percent in shallow rivers," says F. Mikhaylov, the Moscow engineer-shipbuilder who invented the high-revolution wheeled propellers. "Consequently, roughly half the engines' power is lost and fuel is consumed uselessly. The water jet propeller erodes the banks as well. The paddlewheel eliminates these disadvantages."

A special decision was made at one time on measures for developing river transport, and in particular, the task of opening up the small rivers in the regions of oil-bearing deposits in Western Siberia was undertaken. Researchers of the Gorkiy and Novosibirsk Institutes of Water Transport Engineers have been theoretically and experimentally testing the designs of new paddlewheels most suitable for shallow-draft vessels.

We can visualize the earlier paddlewheels from old drawings and photographs--huge things over 3 meters in diameter provided with fully a dozen heavy paddles. The Moscow inventor's new high-revolution wheels do not resemble their early ancestors at all. They have two or four blades. With the aid of a lever-and-hinge mechanism, each blade of the propeller is set at an angle to

ensure that it enters the water "without impact." The kpd [efficiency] of the new propellers ranges from 70 to 80 percent, and compared with the old paddlewheels, the number of revolutions has been increased by three or four times as much and the dimensions have been reduced to two-thirds to one-half as much. They are capable of providing a vessel with a speed of up to 40 kilometers per hour.

SPECIALISTS' ESTIMATES INDICATE THAT WHEN THE NEW WHEELED PROPELLERS ARE INTRODUCED ON GENERAL-PURPOSE RIVER VESSELS, THE ANNUAL ECONOMIC GAIN MAY AMOUNT TO TENS OF MILLIONS OF RUBLES BECAUSE OF THE DIESEL FUEL SAVED!

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## PORTS AND TRANSSHIPMENT CENTERS

### LENINGRAD FLOOD BARRIER RAISING NAVIGATIONAL SAFETY ISSUES

toscow MORSKOY FLOT in Russian No 3, Mar 86 pp 30-31

[Article by V. Shuvalov, deputy captain of the Leningrad Maritime Port: "The Leningrad Seawall and the Safety of Shipping"]

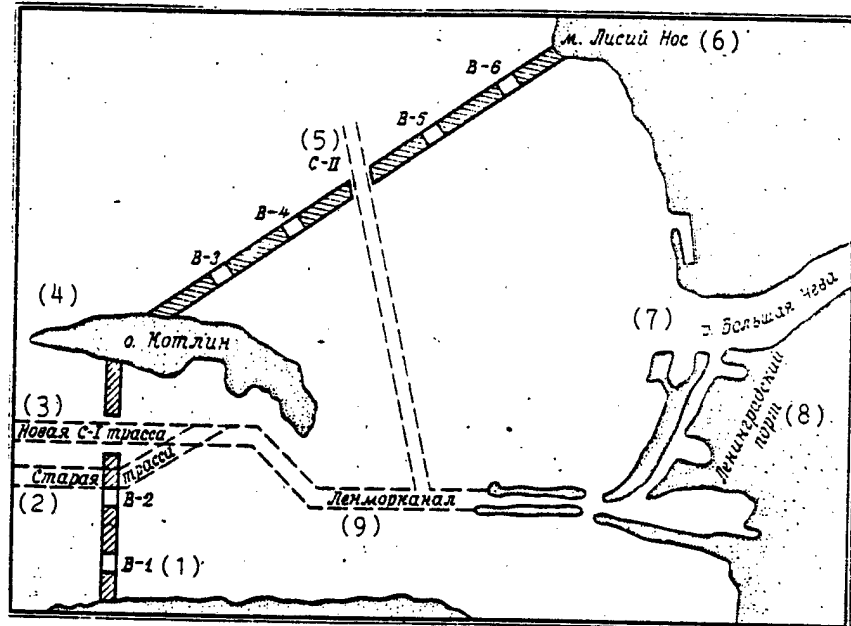
[Text] The structures to protect Leningrad from flooding consist of rock and earth seawalls extending from the Lisiy Nos Cape across Kotlin Island to the southern shore of Neva Bay to the Lomonosov area and two ship channel and six floodgate structures (see drawing). The overall length of the structures is 25.4 kilometers.

The northern ship channel structure will permit passage of ships with a draft of up to 7.0 meters, and the southern ship channel structure (200 meters wide) will permit passage of ships with a draft of no less than 13.0 meters. Passage of large-capacity ships will be permitted under a wind force of up to 25 meters per second.

Erection of the seawall has been completed at present in the section from Lisiy Nos to Kotlin Island at an elevation of 2.0 to 2.5 meters above the normal water level. This has now made it possible to establish routine passenger vehicle and truck traffic between the mainland and Kronshtadt. About 3 kilometers of the seawall was built from the southern shore of Neva Bay. All six of the floodgate structures are in various stages of construction.

The ship channel structure for route No S-1, as well as the section of motor vehicle tunnel under it, will be built by the open method. A dam screening off part of the Neva Bay has been measured off for this purpose in the vicinity of route No 1. Construction is moving forward at a rapid pace this way.

Inasmuch as Leningrad is supposed to be protected from flooding forever, all structures naturally are designed to last many hundreds of years. For this reason, all problems related to their construction should be resolved by taking the distant future into consideration. This fully applies to the assurance of shipping safety as well.



Key:

1. [B-1 through B-6] Floodgates
2. Old ship route
3. New ship route No 1
4. Kotlin Island
5. New ship route No 2
6. Lisiy Nos Cape
7. Neva River
8. Leningrad port
9. Leningrad Sea Channel

Our services have been raising the questions of shipping safety with regard to construction of the protective structures beginning with the project planning stage. Some of them are reflected in the plan. Thus facilities for accommodating personnel of the traffic control services, pilots, coastal seamen, and technical equipment personnel have been provided for in administrative buildings near both ship channel structures. Berths for mooring pilot launches, tugs and the port icebreaker have been made on the eastern side of the seawall in the region of route No S-1.

Unfortunately, a number of questions raised by us both during the planning of the protective structures and in the first stage of their construction have not been resolved to date: the nature of the currents, the routine under icing conditions, places for ships to be separated, reorganization of the ship traffic control system (SUDS), and protective breakwaters on the approaches to route No 1.

Let us examine these unresolved questions in more detail.

In connection with spanning a substantial part of Neva Bay with protective structures, we had to expect changes in the variables of the current (speed and direction).

Being concerned about the problem of shipping safety, we repeatedly raised the question of making information available to us both during the construction period and upon its completion, especially during extreme periods, that is, when the outflowing current of the Neva coincides in direction with a surge current after flooding. Data from the Gidroyekt [All-Union Planning, Surveying and Scientific Research Institute imeni S. Ya. Zhuk] for January to March 1985 does not satisfy us, since they do not reflect extreme conditions.

Observations of the currents conducted at our request by the Northwestern Territorial Administration of Hydrometeorology and Environmental Control also were made under normal weather conditions, without determining extreme magnitudes. At the same time, messages began coming in more and more frequently from the most experienced pilots concerning currents (especially after flooding) which were not observed before the protective structures were built. However, we have not received data on these same extreme currents to date.

Such currents cause the most serious concern between buoys 23/24 of the Lenmorkanal [Leningrad Sea Channel] and 7/8 of the Kronshtadt Ship Channel, that is, in the section which is the most complicated for navigation even without currents on the entire route from the receiving buoy to the port. The complexity of navigation is determined here by the narrowness of the channel, the presence of submerged obstacles in the immediate vicinity, turns from one reach to another, exposure of marine lights to illumination from Kronshtadt, intersection of the main channel with auxiliary ones, and so forth.

It was discovered in the autumn of 1985 that in line with the dam measured off for construction of the gates for route No 1, the width of the channel with a guaranteed depth was decreased by 35 meters on the northern edge. Similar effects were not observed previously.

In our opinion, one of the reasons for this is the intensified crosscurrents in this area. And although the previous depths established by dredging operations have been restored, construction workers and project planners still have not responded to our question: what steps have been taken to prevent similar occurrences in the future?

The absence of data on currents under extreme conditions forces the pilots to operate "by feel," guided by their personal experience and by observing the actual behavior of the ship. But such observation is not always possible. For example, it is practically impossible in restricted visibility.

Another important question is the routine under ice conditions in the water area. A definite operating procedure has been worked out in the Leningrad port's many years of year-round operation.

When they are as ready as possible, the ships are led away from the berths and brought out to the receiving buoy by port icebreakers, where they wait for icebreakers of the line to approach to lead them to the west to open water. The procedure is reversed when ships are led to the port.

The method of operation adopted provides the most safety for transport ships, since they pass through the most complicated section with the guidance of powerful icebreakers of the line.

Since planning of the protective structures was begun we have repeatedly raised the question of the need to analyze and define the routine during ice conditions more precisely at the completion of construction. The point is that in the vicinity of the Kamennaya Shoals, the shallow water comes nearly right up to the Leningrad Sea Channel, creating conditions by natural means that are close to those which are to be expected in the vicinity of the No 1 ship channel structure.

And all years during the winter we experience particular difficulties when ships pass the very area of the Kamennaya Shoals: the channel is clogged tightly with ice to considerable depth because the blocks of ice are unable to escape under the shore ice on the edge.

During the winter of 1984-1985, when construction of the northern section of the seawall was close to completion, the area of Neva Bay from the closed part of the channel to the receiving buoy proved to be extremely complicated for navigation. The port icebreakers Ivan Kruzenshtern and Semen Dezhnev were not in a position to provide for continuous movement of ships in this area. We had to shift immediately to new methods of operation: caravan pilotage of ships by icebreakers of the line directly from the port to the edge of the ice and back. Because of this, the duration of a trip by each icebreaker of the line was increased by 16-24 hours.

We believe that the routine under ice conditions in the vicinity of ship channel structure No 1 when construction of the protective structures has been completed will be more complicated because of the ice hummocks piled up, and this in turn will make work difficult even for icebreakers of the line.

We suggested that the planners also make provision for a matter as important for shipping as establishing places for ships to be separated.

It is about 27 miles from the port to the receiving buoy. Taking into consideration that this is 5 to 6 hours of running for a ship of maximum dimensions, we set forth a requirement as far back as when the project was being studied that two separation zones be established: west of the southern gates near the breakwater and farther east, in the vicinity of the open part of the Leningrad Sea Channel, on the approach to Kotlin Island.

The first zone provided for expansion of the channel in the vicinity of the breakwater, which protects the approach to the southern ship channel structure on the Gulf of Finland, and equipment of separation areas with pile moorings parallel to the breakwater at depths on the order of 15 meters, as well as mooring bollards directly on the breakwater.

The second zone required additional expansion of the channel up to 100 meters in a section 350-400 meters long. Both edges of the separation zone should be equipped with pile moorings no more than 50 meters apart, which would enable large and medium-sized ships to tie up.

Establishment of such separation zones will make it possible not to discontinue navigation until the very last moment--the closing of the southern gates. Even in the event of an unexpected, urgent closing of the gates, ships would not get into an emergency situation because of the opportunity to be moored and separated in the zones. Unfortunately, the separation zones were not included in the project plan.

The ship traffic control system (SUDS) has existed at our port for over 2 decades. It is based on the "Raskat" coastal radar station (BRLS) on the southern shore of Neva Bay in the vicinity of Staryy Petergof.

At present, the BRLS parameters provide for safe passage of ships along the approach breakwaters. At the time that construction of the protective structures is completed, it will not be meet these requirements. The ship traffic control system is therefore being eliminated, as it does not have a base--the BRLS.

The station will not be able to meet the requirements for safe passage for several reasons, and three of the fundamental ones must be noted.

First of all, the protective structures crossing the southern part of Neva Bay on the meridian of the Konstantin fort will screen off the ships located farther to the west. Secondly, the resolution (in bearing and range) of the existing coastal radar station provides for safe passage by ships along the breakwater, but will be completely inadequate for their passage through both ship channel structures.

Ship traffic control with the availability of two ship channel structures should be organized on a higher level to rule out the appearance of a moving ship heading for closing gates.

In this connection, it is critically necessary to establish a single ship traffic control system based on a system of modern coastal radars covering the entire water area of the Neva Bay and approaches to it from the Gulf of Finland.

As far as our proposals with respect to the protective breakwaters are concerned, they were based on the considerable experience in using dams in the closed part of the channel in the section from the 132d benchmark to the oil tanks.

Long before construction of the protective structures was begun we made the demand that protective breakwaters be built on both sides in the vicinity of the southern gates, with the one on the west being no less than 1,000 meters long.

With the prevailing southwest winds, these breakwaters would screen ships in passing through the most dangerous section and would enable them to follow at minimum speed. During the fall and spring season the breakwaters would be a barrier for the dangerous ice drift across the channel. In that way, the protective breakwaters would contribute to the safety of shipping and, in the final analysis, would safeguard the ship channel structure from ships accumulating under complicated navigation conditions. At the same time, the presence of a kilometer-long western breakwater will make it possible to create a place for ship separation.

In stormy weather, when it is impossible to receive or release pilots in the outer roads, these operations may be carried out under cover of the breakwater. Today we are conducting them in the Bolshoy Kronshtadt roads, where a ship is taken through with a pilot ship in the lead.

With the availability of a ship channel structure, this method has to be rejected, since a ship's passage through the gates without a pilot is fraught with serious consequences both for the ship and for the structure itself.

Based on the weather restrictions on pilot operations under the conditions of open roads and statistics on storms, the conclusion may be drawn that the lack of a western breakwater will lead to a significant amount of idle time for ships.

The demands made for breakwaters also have not been taken into account in the project plan.

In conclusion, I want to draw an inauspicious conclusion: the absence of a section in the plan to build protective structures which stipulates that shipping safety is to be ensured may lead to a reduction in the frequency of ship traffic and an increase in the accident rate in the Leningrad transport hub.



There is still enough time before operations are fully completed in the Gulf of Finland. For this reason, it is necessary that the many organizations carrying out the project planning and construction of the seawall (the Lengidroproyekt and Lenenerg gidrospetsstroy, first of all) analyze the observations that are being provided and eliminate the shortcomings. After all, the safety of ship navigation, and hence the normal operation of the largest transport hub on the Baltic--the Leningrad cargo port--depend on this.

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## PORTS AND TRANSSHIPMENT CENTERS

### CHIEF URGES COMPLETION OF ILICHEVSK PORT CONTAINER FACILITIES

Moscow VODNYI TRANSPORT in Russian 22 May 86 p 2

[Article by B. Grabovoy, chief of the Ilichevsk maritime commercial port: "A Container Complex Is Required"]

[Text] The ways to intensify production, which were outlined by the 27th CPSU Congress, have become a specific program of action for the Ilichevsk port collective. Perhaps the establishment of a powerful base container transshipment complex is the most important thing not only for us but also for maritime transport throughout the country's entire southern area. Shipments through the ports of the Black Sea-Azov Basin during recent years have expanded steadily at rather rapid rates. Thus, containerized cargo turnover has steadily increased by 10-12 percent annually in the port of Ilichevsk. Shipments on the Soviet-Bulgarian maritime container line have grown 1.7-fold when compared with the last year of the previous five-year plan; 2.3-fold-- on the Cuban; and 1.7-fold-- on the Indian.

Last year, we transshipped more than 89,000 large-capacity containers. The calculations of the Black Sea Shipping Company and the results of work during the first quarter show that this figure will exceed 100,000 containers in 1986. This corresponds to the maximum capacity of the existing container complex. At the present time, the port is already coping with the cargo turnover with a great deal of strain. You see, the vessels of 11 long-distance maritime lines, not counting the feeder ones within the basin, must be serviced at the complex which has two berths with a total length of 235 meters.

When processing the upper deck of Ro-60 vessels, it is impossible to place a single container carrier at the berth besides the small-capacity "Pioneer Odessa" Motor Vessel and river vessels. Ro-Ro ships must be re-moored two or three times by the side to the berth in order to process the upper deck and by the stern during the period of their processing. Nevertheless, it does not seem possible to avoid the non-productive idle time of the expensive specialized fleet. In our opinion, the development of a berthing line for handling vessels with containers is urgent. In addition, the question of expanding and developing a container warehouse has acquired special importance recently.

During this year and next year, the port's first transshipment complex with berths 1-2 will be freed of coal and ore cargo traffic, which is being switched to a new special transloading complex in the port of Yuzhnyy. With a berthing frontage link of more than 600 meters and unlimited opportunities for expanding the territory in depth, it is generally recognized that this complex is the most favorable place in the Black Sea-Azov Basin to establish a base container terminal. On the basis of a decision adopted by the government, preliminary measures by the ministry and pre-design work by Chernomorniiprojekt, preparations for reconstructing the complex were begun during the years of the last five-year plan. The formation of the territory has almost been fully completed through mobilizing internal reserves. At the present time, a portion of the container warehouse and the railroad freight frontage have practically been built and are already beginning to operate.

The completion of the development of the plans and specifications by Chernomorniiprojekt before 1 June of this year and the beginning of reconstruction in 1987 are the most important tasks for today. Unfortunately, we have run into incomprehensible slowness by the institute in completing the design work. The question of finances from the first quarter of 1987 has not been decided in the subunits of the Morstroyzagrannostavka All-Union Association. On its part, the port's collective is ready to provide all necessary help to the institute. The port has completely assumed upon itself the development of an automated control system for the complex, is actively participating in the development and substantiation of optimum technologies and mechanization schematics, and has defined the structure and lay-out of the main and auxiliary items. The construction organizations are ready to begin work from the first day of 1987.

It seems that the collectives of Chernomorniiprojekt and the Morstroyzagrannostavka All-Union Association should not tolerate a derangement in work beginning in 1987. The situation, which has taken shape, requires the taking of urgent steps. The lessons of the past, for example, the unreadiness of ports to receive and handle vessels and lighters, must not be repeated.

Construction and installation work is basically required only for replacing the territory's covering and for bringing the berths into accordance with modern requirements. The replacement of the transshipping equipment pool and the assimilation of the optimum and advanced -- considering the achievements of world-wide practices -- technologies lie at the basis of the reconstruction. The most effective systems for controlling both planning and accounting and the basic operations in the technological process will be introduced.

The establishment of a powerful container complex will permit the plans for the development of containerization on the Soviet-Bulgarian, Soviet-Cuban and other lines to be realized and the development of feeder shipments in favor of the other ports in the basin and in the Danube countries to be assured. An opportunity will appear to use the freed capabilities of the port's second cargo area for forming a highly efficient special complex for handling large and medium-tonnage Ro-Ro ships which carry out shipments of

general cargo using various consolidation systems (on roll trailers, flats, etc.). It is of no small importance that the opportunity will appear at this complex to mark out an operational storage area and to organize the handling of Ro-Ro ships using prepared ship's lots with an intensiveness, that exceeds that which has been achieved at the present time 1.5-fold.

The recently changed foreign trade shipping conditions have served as the basis for disseminating views on forming capacity reserves in the country's ports. A reserve has actually appeared in the port of Ilichevsk; however, I would like to point out that it is in the traditional wrappings with respect to bulk poured and certain packaged piece cargo. Concerning container, Ro-Ro ship, and lighter shipments and other new transport processing systems, not only is there no reserve but a significant shortage of port production capacities exist in any event in the country's Black Sea-Azov Basin. If it is not eliminated at the most rapid rates, it will increase catastrophically. In our view; it is necessary to eliminate this shortage in accordance with the decisions of the 27th party congress by reconstructing freed capacities.

At the same time, the assimilation of such new transport processing systems as vehicular ferry [avtoparom] communications, conceals large reserves. Not only favorable conditions but also a genuine need for this exists on the Soviet-Bulgarian line. This question has already been examined and has encountered support in the ministry. The appropriate fleet was required. It is now arriving in the Black-Sea Shipping Company. I have in mind vessels of the RO-8 type. A special Ro-Ro ship complex for equipment using pneumatic action is basically ready in the fifth area of the port of Ilichevsk to receive vehicular ferry [avtoparom] freight. The same thing can be said about the Ilichevsk Soyuzvneshtans port base. The sailors' between-trip rest base in Ilichevsk could provide part of the places for the drivers of the transit articulated vehicles. In addition, Bulgarian vehicular ferries [avtoparom] can be used.

It seems that the technical and technological conditions have been established at the present time. Organizational questions are left. Evidently, it is time to begin to solve them.

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## PORTS AND TRANSSHIPMENT CENTERS

### CHIEF ON ODESSA PORT IMPROVEMENT PROJECTS

Moscow VODNYI TRANSPORT in Russian 25 Mar 86 p 1

[Interview with N. P. Pavlyuk, Odessa port chief, by I. Medvedovskiy; date and place not specified: "Reconstruction is on the Agenda"]

[Text] There was a time when the question of closing the port of Odessa and converting it into a purely passenger one was seriously raised. However, a practical appraisal of the state of affairs, trade conditions and the stress placed by the party on the need to modernize existing enterprises clearly determined that it was necessary to maintain the port and to reconstruct it with a consideration not only for today's but also tomorrow's requirements.

How is the port's reconstruction being carried and how are the problems of intensifying production being solved? Our conversation with N. P. Pavlyuk, the Odessa port chief, concerned this.

[Question] Nikolay Panteleymonovich, the government has allocated tens of millions of rubles and the necessary materials for the above-limit construction job in Odessa from 1983 to 1988. What did the reconstruction begin with?

[Answer] With the Karantinny Pier in accordance with the general plan. This is the oldest pier; not only the port but also the city essentially began with it. It is clear that the structure has not only been ravaged by time but also does not satisfy today's tasks. The installation is now being rebuilt and modernized and the port's open storage area will grow more than twofold with the commissioning of a section which abuts the Karantinny Pier and which has been reclaimed from the sea. For example, the container terminal, which has been equipped with all the necessary equipment and which has been supplied with railroad communications, has begun its own independent life: Our port already accepts container carriers.

Of course, the task is not limited only to the Karantinny Pier. Our goal is to reconstruct all of the port's installations. I will name the main ones. We are extending the pier by 50 meters for the first and still only mechanized

line in the country for the transshipment of raw sugar. This will provide a capability to handle large-capacity vessels.

We are reconstructing a unique complex -- the station for cleaning ballast water and we are installing non-standard equipment here which the Odessa Ship Repair Plant imeni the 50th Anniversary of the Soviet Ukraine is manufacturing. We will increase the average daily amount of water cleaned two-fold as a result of this and will thereby satisfy the requirement to protect the environment. The Khlebnaya, Arbuznaya and Prakticheskaya harbors and the Voyenny Pier-- everything will be put at the service of goods turnover here -- are undergoing modifications.

[Question] How is the port's reconstruction connected with the intensification of cargo operations?

[Answer] These concepts are inseparable. While we are carrying out the reconstruction, we arm ourselves with innovations in technical progress-- yes, and not only innovations but also all developments that have received recognition and that are required by us. In this, we have the necessary support of the leadership of the Black Sea Shipping Company and the Ministry of the Maritime Fleet and consider the fact that it is impossible to solve a number of problems without the participation of fellow transport workers, the Ministry of Railways and the Ministry of Foreign Trade.

Recall: The port of Odessa was the first to begin handling the vessel Yulius Fuchik, with which the Soviet lighterage fleet began. However, we were already thinking at the time about a broader transition to handling cargo delivered in lighters. A berth for "floating containers" from the Indira Gandhi is now already operating. Odessa is the port of call for this vessel.

The majority of the gantry cranes have become obsolete. In replacing them, we reduced their number. Since we are touching upon transshipping equipment, I will mention several measures which have been carried out and which are contributing to the intensification of the freight process. The mechanization services, which were previously scattered, have been combined into two centralized ones -- the intra-port mechanization garage (lift trucks) and a structural subunit which is responsible for the gantry cranes. In the very near future, they must be freed of unnecessary equipment and shifted to the most advanced equipment. We are already receiving a little.

In carrying out the party's directive on incorporating complex mechanization, we are not only acquiring new equipment but we are also training and retraining the people who will control it. Today, we practically do not have any dockers or operating workers who do not have a secondary education. It is they who have taken upon themselves the introduction of the accomplishments of scientific and technical progress.

[Question] Your port receives and dispatches vessels around the clock. How is safe navigation being assured? You see, interruptions can also cause unevenness in the operation of the transport center.

[Answer] Here, it is necessary to return to the reconstruction of the port and, in particular, to that of the Karantinny Pier. It is here that a new building for the vessel movement control center has been constructed. It has been filled with very complicated modern equipment and is able to service the entire northwest region of the Black Sea-- this consists of eight river and maritime ports and more than 60,000 ship passages a year.

In this regard, I will not note only the radar guidance of vessels under any visibility conditions. The industrial television, electronics and communications systems provide the workers in the center -- the port's main control room -- with an opportunity to control all of the vessel arrival, handling and departure processes. The post for regulating the movement of vessels, which previously existed here, in no way compares with the new one. Incidentally, there is no installation similar to this in the country and -- strange to say-- it turned out that it was easier to solve the questions concerned with incorporating and using very complicated equipment than to insure the equal temperature, which was required for its operation, etc., inside.

The saturation of enterprises with expensive modern equipment, that is, the creation of conditions for intensifying production, should provide an economic effect-- a return.... Unfortunately, I still cannot say that everything is fine with us. There are still errors and unresolved questions. For example, the pneumatic grain reloaders are not being used at their full capacity. The question of the electronic scales is also not resolved -- the railroad workers simply do not trust them as yet ....

We have expended a great deal of effort to create production transshipment complexes with whose help it would be easier to achieve a speed-up in cargo processing. Even here, however, this needs work. For example, the Vietnam complex moved to its designed rate in September of last year; however, it turned out that it was necessary to resolve quite a few organizational problems, in particular, to learn how to store freight, for its stable operation. Now, such a section and a specialized brigade for storing and sorting small-lot cargo have been established.

In a word, there are enough problems and we are eliminating them during the reconstruction and learning how to flexibly rearrange production depending on the situation. You see, large tasks face the port during the 12th Five-Year Plan: the collective has obligated itself to increase the carrying capacity of the berths by three million tons of freight. I think that, we have every chance to cope with what has been planned.

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## PORTS AND TRANSSHIPMENT CENTERS

### IMPROVEMENTS UNDER WAY AT VYSOTSK PORT

Moscow MORSKOY FLOT in Russian No 3, Mar 86 pp 20-22

[Article by correspondent V. Gusev: "The Berths of Vysotsk"]

[Excerpts] Ships have been mooring at the point where the port of Vysotsk lies, on the approaches to Vyborg, since ancient times. For the most part, lumber cargoes were transshipped through Vysotsk. But the small unequipped berth and shallow depths severely limited the port's abilities. Today it may now be said that this situation has changed and continues changing. A new port cargo region is being built here. And although construction has not yet been completed, the port is in operation, receiving and dispatching ships with export and import cargoes.

Having assumed part of the cargo turnover of the Vyborg port, Vysotsk is being built not only with the forces of the Sevzapmorgidrostroy, which became the contractor for the new construction project, but with the active participation of the Vyborg port workers. Longshoremen, engineers and technicians of the port are working on the areas under construction as construction workers and are engaged in their primary occupation on the berths that have been put in operation. They are succeeding at both.

The region began planned cargo-handling operations as soon as construction was completed on part of the new berth at the end of 1983, when a diesel vessel with large-diameter pipe from the FRG was delivered to it for unloading. And as early as the following year Vysotsk handled 160,000 tons of cargo. Since January 1985, the longshoremen decided to shift to a complete cargo-handling plan. Overfulfillment of plan targets in the first quarter of the year totaled 2,000 tons. And as early as the second quarter they had succeeded in exceeding the plan by 40,000 tons. For the end of the year the collective decided to develop the region to its planned capacity and bring the cargo handling up to 400,000 tons so that the funds for construction are partly recovered until the project is turned over completely.

In time, the front of the berths at Vysotsk will be extended hundreds of meters. Deep-draft ships will be able to tie up at the new berths. But considerable attention is being devoted not only to construction of the berths here. Development of logistics is the most important task. Three railroad lines pass along the front of the berths. The same number of lines will also



be in the rear storage areas. Highly productive cranes and a fleet of port machinery will provide the dockworkers with the necessary means for work with advanced technology.

Timber, metal, and large-diameter pipe for import and export are now passing through Vysotsk. Ships engaged in coastal navigation are delivering sand and gravel from here to Kronshtadt for building the levees which will protect Leningrad from flooding. But planners and port workers are dreaming of the time when Vysotsk will be able to accommodate not only 5,000-ton ships, but even larger vessels. Inasmuch as the area of the region is three times as large as the territory of the Vyborg port within the boundaries of the city, a large volume of cargo can be handled here. And it has not been ruled out that in time, large-capacity ships will pass through Vysotsk in deepened channels for cargoes and with cargoes which only Leningrad is capable of handling on the Baltic at present. But that is the reality of the future. In the meantime, the priority tasks which inevitably precede any modern construction serve as reference points for the residents of Vyborg. It is necessary to complete installation of pipelines and a water supply line, erect sewage disposal structures, an administration building with a block for everyday services, and machine shops. And of course, housing. There will be five apartment buildings with all the conveniences. So that the people live comfortably. So that modern living conditions are provided for those who are to work in a renovated and developing Vysotsk.

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## PORTS AND TRANSSHIPMENT CENTERS

### GIPRORECHTRANS INSTITUTE'S ROLE IN RIVER PORT UPGRADES

Moscow VODNYI TRANSPORT in Russian 19 Apr 86 p 2

[Interview with Nikolay Vasilyevich Seleznev, chief engineer and chairman of the scientific and technical department council of the State River Transport Design Institute, by I. Yefremov, VODNYI TRANSPORT correspondent; date and place not specified: "Designs of the Future"]

[Text] A large role in solving the tasks, which were posed during the 27th CPSU Congress in accelerating scientific and technical progress, is being allocated to branch science and design organizations. The State River Transport Design Institute, Giprorechtrans, is one of the leading ones in the Ministry of the River Fleet system. Dozens of ports, berths, plants, riverside stations, locks, dams, underwater pipelines, and other installations are being built and reconstructed according to its designs. I. Yefremov, our correspondent, asked Nikolay Vasilyevich Seleznev, the chief engineer and chairman of the institute's scientific and technical department council, to talk about what the institute's collective is now working on and what tasks it is posing to itself.

[Question] Nikolay Vasilyevich, we often say that tomorrow is being born in today's designs, associating this "tomorrow" with scientific and technical progress and improved technology and equipment. There are still often cases, however, where projects become old during the construction stage because of the low quality of the work of designers. This question was raised with great urgency during the 27th CPSU Congress. How do you regard this problem?

[Answer] There cannot be two opinions here: Designers must work at the very edge of progress. If this is not done, yesterday is born. It is no accident that the Basic Directions for the Economic and Social Development of the USSR During the 12th Five-Year Plan and During the Period Out to the Year 2000 pointed out the need to make wide use of advanced scientific and technological achievements; resource- and energy-savings technology and equipment; economic volume and planning solutions, designs and materials; and also progressive methods for organizing production and labor, in plans and specifications.

In its turn, our institute's collective last year developed and ratified in the combined technical council and the scientific and technical department council a complex plan for organizational and technical measures to accelerate scientific and technical progress during the 12th Five-Year Plan. In accordance with it, we pledge to use the most advanced of today's technical solutions in our designs: numerically controlled machine tools and robotics in shipbuilding repair yards, constantly operating transshipment machinery with a productivity of 1,500 tons an hour in ports, and automated control systems for production processes, that is, those items which will decrease construction costs, save material and energy resources and improve labor productivity.

[Question] To work at such a level, however, requires definite experience. Does the institute have it?

[Answer] Of course, I think that a number of our works completely satisfy today's high requirements. For example, there is the Konstantinovskiy Integrated Hydraulic Development on the Don River. In contrast to earlier constructed similar integrated hydraulic developments, there is no cumbersome and difficult to manage navigation dam, and a special small lock -- for the high-speed passenger fleet -- is included in the ship-passage structures in addition to the main lock.

The new constructive solutions and automated control systems for the locks have decreased construction costs and made their operation easier. The project has been submitted to the competition for an award from the USSR Council of Ministers.

The Urengoy-Pomary-Uzhgorod transcontinental gas pipeline was constructed ahead of time. Its most difficult sections over the Ob and Volga were designed by our institute. Many people -- including A. Babin, our chief engineer for the project -- were awarded the USSR State Prize during 1985 for this work.

Finally, a coal transshipment complex is being erected in Udmurti on the Kama River in the port of Kambarka. It consists of two rotary car dumpers and universal warehouse and cordon machinery which are all tied together by conveyor lines and which operate automatically. The productivity of the complex in loading a vessel when there is only one berth is 2,500 tons an hour. This is twice as much more than with the usual crane mechanization.

[Question] There is another urgent question today -- improving design and estimate work, in particular, the quality of the design plans and specifications. How do matters stand with you in this?

[Answer] We are working in this direction. A composite system for controlling product quality (KSUKP) has been functioning in Giprorrechtrans since 1981. Its basic organizational and technical documents are enterprise standards which regulate all of the institute's production activity. This "code of laws" has permitted the quality of the products produced by us to be improved considerably. Thus, 90 percent of all the work approved during

1985 received a quality rating of excellent during the year. This, however, is not the limit.

Now, with the appearance of new instructions on the composition and procedure for developing, coordinating and approving design estimate documents for the construction of enterprises, buildings, and structures (SNIIP 1.02.01-85), we immediately adjust our standards and simultaneously introduce changes in a statute on socialist competition so that the contribution of the specialists to the acceleration of scientific and technical progress and to the improvement of design quality will be more fully considered when summing up the results of the production subunit's work.

We intend to make greater use of computers. We are now only making estimates and engineer calculations with their help, but in the future -- after we have received and mastered plotters -- we will also complete the most complicated sketches. This will not only increase quality and speed up designing but it will also free more time for the creative work of the specialists.

[Question] How is one of the main avenues in the party's economic policy -- the concentration of state resources on the technical re-equipping and reconstruction of existing enterprises -- being taken into consideration in your institute's work?

[Answer] In the most direct way. The subject plan for the institute's design research work during 1986-1985 basically provides for the reconstruction of existing installations, among which are the ship repair enterprises in Moscow, Kuybyshev, Gorkiy, Perm, Chistopol, and Aksay; the ports in Sarapul and Levshino; the hydraulic engineering structures on the Canal imeni Moscow and the Moskvoretskiy lock system; the main communication lines of the Ministry of the River Fleet; etc.

Of the new large projects, we are only designing those which have a great deal of national economic significance and high capital investment effectiveness. The transport integrated water power development on the Lena River to create depths that would assure the unhindered delivery of cargo from the port of Osetrovskiy to the rayons of Yakutiya and the underwater crossings of the main oil and gas pipelines that feed the fuel, energy and chemical complexes of the country are related to these.

[Question] Finally, Nikolay Vasilyevich, I would like to recall inventions. Both party and state documents talk about creating favorable conditions for their very rapid introduction into the national economy. How is this matter being resolved in Giprotehtrans?

[Answer] More than 100 inventions for berthing and underwater structures, navigation locks and dams, and transshipping and vessel lifting equipment have been credited to our institute's specialists. When developing designs, we use them as well as the most effective technical solutions patented by other organizations. This provided an economic effect of four million rubles during the last five-year plan.

The new designs, however, have a great deal of difficulty in punching a road through for themselves because the customers and builders are not very interested in this. Additional incentives are required. A procedure should be established under which the users of inventions would be encouraged to no less a degree than their authors; and officials, who hinder the introduction of new designs, should bear strict personal responsibility.

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