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USSR REPORT

TRANSPORTATION

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USSR, JAPAN HOLD CIVIL AIR TRANSPORT DISCUSSIONS

Results Summarized

Moscow VOZDUSHNYY TRANSPORT in Russian 12 Feb 85 p 2

[Report on talks between the USSR Ministry of Civil Aviation and Japan's Ministry of Transport which concluded in Moscow 9 February]

[Text] In the course of the talks, which were held in a spirit of mutual understanding and constructivism, a joint document was signed which provides for the further expansion of collaboration between the two countries in the field of air services for the forthcoming 3-year period.

Under the agreement reached, Aeroflot will bring the number of flights to Tokyo up to 10 per week by the summer of 1987. In turn, the Japanese national airline JAL will have the right as of 1 April 1986, along with the three existing weekly flights in wide-bodied Boeing 747 aircraft which land in Moscow, to make four flights in 1986 and five flights in 1987 over the Trans-Siberian route without landing in USSR territory.

All Aeroflot and JAL flights, including the nonstop flights on this route between European points and Tokyo, will be made under the conditions of a pool arrangement.

Under the agreement, Aeroflot also has the right, as of 1 April 1985, to replace An-12's on the Khabarovsk-Niigata route with modern Il-76 cargo aircraft.

The document signed unquestionably will promote mutually beneficial relations between Aeroflot and JAL in the use of the Trans-Siberian route.

Official Explains Agreements

Moscow VOZDUSHNYY TRANSPORT in Russian 21 Feb 85 p 3

[Interview with G. Mirzoyan, deputy chief of the Foreign Relations Administration of the Ministry of Civil Aviation and leader of the USSR delegation to negotiations with Japan's Ministry of Transport in Moscow, by VOZDUSHNYY TRANSPORT correspondent I. Grigor'yev: "A New Step in Developing the Trans-Siberian Route"]

[Text] Talks have been concluded in Moscow between a delegation of the USSR Ministry of Civil Aviation headed by G. Mirzoyan, deputy chief of the ministry's Foreign Relations Administration, and a delegation of Japan's Ministry of Transport headed by (Mitsumasa Iwata), deputy director of the Department of Civil Aviation and Tourism.

Our correspondent requested the leader of the Soviet delegation to describe how Soviet-Japanese relations in the field of air services are being developed.

[Answer] To begin with, it should be stressed that for nearly two decades these relations traditionally have been stable and mutually beneficial and progressive in nature. And it is also necessary to note that these contacts are intended for the long-term future. The joint document which was signed the other day in Moscow by representatives of the USSR Ministry of Civil Aviation and the Japanese Ministry of Transport--a document which provides for further expansion of collaboration between the two countries for the forthcoming 3-year period--is eloquent testimony to this.

[Question] As is well-known, considerable attention is being devoted in these relations from both sides to developing and improving the Trans-Siberian air route...

[Answer] Absolutely. And this, in our view, is completely natural. I will remind you that three air routes extend from Europe to Japan: the southern route, through points in Asia with several intermediate stops en route; the northern, or polar route, via the North Pole and Anchorage; and finally, the Trans-Siberian route.

The route across Siberia is not only the shortest route from Europe to Japan, although it is by no means the important factor per se. Selection of the Trans-Siberian route is primarily a guarantee of high reliability and flight safety. After all, the flight is only over dry land, and the airway has a network of auxiliary airports; moreover, it is equipped with the most advanced air navigation facilities. In a word, the Trans-Siberian mainline is the shortest and most economical route for travel from European countries to Japan or in the opposite direction. And this fact is indisputable.

I will add that the airway across Siberia is 2,500 kilometers shorter than the polar route. Here is how this looks in practice: if you fly from Paris to Tokyo on the Trans-Siberian route you arrive at Narita Airport 4 hours and 20 minutes faster than if you had flown across the North Pole, and the time saved in the opposite direction is 2 hours and 30 minutes.

In accordance with documents signed at the beginning of the 1970's, JAL and a number of West European countries' national airlines (British Airways, Air France, SAS and Alitalia) acquired the right to fly the Trans-Siberian route to Tokyo. Since that time, questions related to developing and improving air service on the airway across Siberia have held a conspicuous place in relations between Aeroflot and its partners.

A basic condition for opening this air route for flights by foreign airlines has been Aeroflot's participation in flights between Tokyo and points in Europe. And the fact that by the summer of 1984 Aeroflot had brought the number of its flights on the Trans-Siberian route up to eight per week attests to the successful development of this main air route by the Soviet airline.

The second stage in development of the Trans-Siberian route came at the beginning of the 1980's when wide-bodied aircraft began flying on this route. In 1982, JAL and Air France Boeing 747's began scheduled flights from Tokyo to points in West Europe through Moscow. A year later DC-10 airliners of the Scandinavian airline SAS began flights on the Copenhagen-Moscow-Tokyo route.

With the appearance of wide-bodied aircraft on the route across Siberia, its prestige and importance were still further enhanced. The advantage of using aircraft with larger capacity on this route also is obvious--a substantial savings in time and fuel. And the interest which the foreign air carriers began showing in operating wide-bodied aircraft on the Trans-Siberian route also is understandable.

Nevertheless, despite the clear advantages of the air mainline acorss Siberia, our foreign partners have been far from utilizing the rights acquired for flights on this route to the full extent. Thus, JAL has been making only three flights on the Trans-Siberian route, although it has had the right to seven; British Airways, Air France, SAS and Alitalia have clearly preferred the polar route as well. In short, our partners have been continuing to make the overwhelming majority of flights over the North Pole.

And now we can boldly state that a new stage has begun in developing the Trans-Siberian route which can now provide worthy competition for the polar route.

[Question] What new opportunities will be opened up for JAL in light of the Soviet-Japanese document signed in Moscow?

[Answer] Extremely important ones. Henceforth the Trans-Siberian route will open up new opportunities for increasing the efficiency of international flights between Europe and Japan. The agreements reached in the talks between the USSR Ministry of Civil Aviation and the Japanese Ministry of Transport can confirm what has been stated.

I would like to explain certain conditions of this document. As we have already stated, JAL now has the right to make seven weekly flights to Europe. Under the newly reached agreement, the Japanese airline will be able to make four of these seven flights in 1986, and five of them in 1987, without landing in USSR territory. And what is especially noteworthy: all these nonstop flights which JAL will be making on the Trans-Siberian route will be transferred by the Japanese airline from the polar route. It seems that this fact speaks for itself.

Aeroflot, in turn, will bring the number of its flights to Tokyo up to 10 weekly by the summer of 1987. Let us add that all Aeroflot and JAL flights, including those that are nonstop between points in Europe and Tokyo, will be made under the conditions of a pool arrangement.

Now passengers heading for Europe from Tokyo or in the opposite direction will be able to choose the most suitable flight for their trip. Obviously, for some it will be more convenient to make a stop in transit in Moscow. Others will prefer the nonstop flight, which will save time, of course. This certainly is important if it is taken into account that on the route between Tokyo and London, for example, the flying time will be reduced by 3 to 4 hours on a two-way flight.

Unquestionably, the new stage in development of the Trans-Siberian route not only will still further consolidate the prestige of this shortest and most economical route between Europe and Japan, but it also will open an important page in the development of Soviet-Japanese relations in the field of air services.

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CIVIL AVIATION

CHIEF ON AVIAREMONT ASSOCIATION ACTIVITIES

Moscow GRAZHDANSKAYA AVIATSIYA in Russian No 2, Feb 85 pp 14-15

[Article by Ye. Kitov, chief of the "Aviaremont" Aviation Equipment Repair Industrial Association: "'Aviaremont' Is Stepping Up the Pace"]

[Text] The course toward intensification of the economic system and achievement of the highest end results with the least expenditures was determined by the decisions of the 26th CPSU Congress.

In order to put the party's directions into practice in the system of the "Aviaremont" Aviation Equipment Repair Industrial Association, a comprehensive plan of measures has been put together and is being steadily implemented for increased production efficiency and work quality and for the social development of aviation maintenance employee collectives. Its realization will provide up to the end of the five-year plan for an increase in production volume and an increase in labor productivity by more than one-third, an increase in the output-capital ratio by 12 percent, reduction of expenditures per ruble of commodity production by 8 percent, and an increase in profit in 1985 by 60 percent compared with 1980. The comprehensive plan covers the basic directions of the work of aircraft maintenance plant collectives, which is aimed at further increasing production efficiency and the quality of equipment repair. To begin with, this presupposes detection of internal production reserves, acceleration of scientific and technical progress, improvement in the norm-setting of labor, expansion of labor collectives' participation in production management, improvement in employees' working and living conditions, and reinforcement of labor and production discipline. Implementation of measures stipulated in the plan has made it possible for civil aviation plants to cope successfully with the targets of 4 years of the five-year plan and to establish the necessary conditions to carry out the plans of the concluding year.

The principal factor in intensification--the increase in labor productivity--is provided for at the level of 6.3 percent annually. Owing to the increased labor productivity, production volume has been increased by 87 percent. At the same time, development of the base of aviation maintenance has been continuing. At plants in the North, Siberia and the Far East, production areas have been increased by 20,500 square meters and repair volume has been increased by

38.5 percent as a result of the renovation and construction of buildings made of light metal structures (LMK). High results have been achieved at Plant Nos. 26, 73 and 406. In all, 105,000 square meters--about half of which in buildings made of LMK--will be put into use throughout the country up to the end of the five-year plan.

Expansion of the areas has made it possible for a number of plants to master the repair of new aviation equipment expeditiously, to build up production programs, and to increase plans for repairing detachable units. For example, over a 2-year period the collective of Plant No 420 established a production base and mastered maintenance of M-601B engines for the L-410UVP aircraft, so that demands by operations enterprises for maintenance of this type of equipment are being fully met today.

The planning, organization and management of production are undergoing substantial changes. All this work is being developed on the foundation of a standardized base of resources. The result is a steady decrease in repair time. Thus, with an increased maintenance program, the number of airplanes, helicopters and engines located in plants at the same time has been reduced by one-third as much.

Ensuring the high quality of aviation equipment repair always holds a special place in the collectives' work. Steps being taken are directed at improvement of the overall systems of maintenance quality control and provide for increased effectiveness of the defect-free work system, reinforcement of personnel responsibility, and more active participation by labor collectives in the struggle for maintenance quality. This work is being carried out most efficiently in collectives at Plant Nos 402, 404 and 410. Their experience is being given wide publicity.

Another aspect of production intensification is the savings in labor and material resources. The level of stability achieved in the technological process of maintenance has made it possible for Plant Nos 400, 401, 402, 404, 407, 410, 411 and 421 to shift to one-time assembly of engines and to cancel the trial flights of airplanes and helicopters by the customer's crews. This has made it possible to reduce labor inputs in maintenance and to substantially reduce aviation fuel consumption. The shift to one-time assembly at just Plant No 402 is making it possible to repair an additional 55 engines annually with the same number of personnel.

An important reserve for economy is expansion of the products list of repairable aircraft parts. Development of new methods of reconditioning and improvement of the ones that are well-known make it possible to decrease production of spare parts and consequently, to save on materialized labor, power resources and materials. New technological processes introduced at enterprises have made it possible in 1984 alone to recondition and repeatedly use 177 descriptions involving more than 50,000 parts. This has saved over 4 million rubles.

Pilot plants of the association, which are elaborating and turning out efficient means of mechanizing transport processes, are making their own contribution to shifting Aeroflot's economy to an intensive path of development. Since the beginning of the five-year plan, about a million such products have been turned out for the sum total of 210 million rubles.

The increased production efficiency is taking place simultaneously with accelerated social development of the collectives. Employees' public activity is increasing noticeably: every fourth one is taking part in production management, making suggestions in the formulation of plans and socialist pledges, and every fifth one is an innovator.

Considerable attention is being devoted in collectives to the improvement of working and living conditions. In this case, the steadily increasing (since the enterprises' profit is increasing) fund for social and cultural measures and housing construction serves as the material basis. Favorable results have been achieved in this work by collectives of Plant Nos 41, 73, 85, 400, 407 and a number of others.

Improvement has been noted in realization of the Food Program. By the beginning of 1985, 70 percent of the plants had organized subsidiary farms. Last year 1,900 quintals of meat were produced on these farms.

Widespread socialist competition is helping to ensure that the pace gained by the labor collectives and the general favorable attitude toward the work is not lost and to develop positive processes. The progress achieved in fulfilling pledges for an above-plan increase of 1 percent in labor productivity and an additional reduction in the production cost of output by 0.5 percent make it possible to judge its effectiveness. Overfulfillment of plans in accordance with these indicators has averaged 1.2 and 0.8 percent, respectively. Highest results were achieved by Plant Nos 243 and 402, which attained 1.4 and 1 percent for them. Reduction of the production cost of maintenance has made it possible to achieve savings of 46 million rubles.

However, the results achieved should be regarded only as the beginning of a big turning point in realizing the task set for a shift to an intensive path of development. Despite overall favorable results, some plants have indicators of activity below those that are average for the sector. To a significant extent, this has been the result of a slackening of attention by command and management personnel and party and public organizations to the technical reequipment of production and to the introduction of new advanced technologies and forms of labor organization, and from insufficiently effective steps to improve utilization of work time and equipment. As a result, the rate of increase in labor productivity turned out to be lower than the sectorial average at Plant Nos 21, 24, 403, 405 and certain others. Increased production volume through increased labor productivity at Plant No 406 amounted to only 47 percent, and at Plant Nos 421 and 67 it was 56 and 62 percent, respectively. The increased personnel turnover at Plant Nos 67, 405 and 425 also served as a reproof to the managers.

The question arises: are there reserves in these collectives, opportunities to rectify the situation? Unquestionably there are. Today all plants without exception have enough production and technical potential and highly skilled specialists at their disposal. Considerable favorable work experience has been accumulated for improving labor organization and production management.

However, today, on the threshold of the 12th Five-year Plan, the intensification of repair production and a further increase in labor productivity and work quality require more active introduction of the achievements of scientific and technical progress first of all. In other words, substantial reorganization in the activity of repair plants. When practically the only source of development is intensification of the production process and its judicious management, a decisive role is played by utilization of technical and organizational reserves. Bringing these reserves to light and efficiently using them without the participation of science, especially sectorial science, will not succeed. At the same time, the potential accumulated by modern science is capable of becoming, with the correct application, a powerful motive force in developing repair production.

The exhibition "Improvement in Technological Processes in Aviation Maintenance Production," based on the USSR VDNKh [Exhibition of Achievements of the National Economy], practical scientific seminars at plants and the concluding conference showed that there are a considerable number of scientific ideas and developments directed at improving the efficiency of aviation maintenance production, and utilizing them at plants is an urgent task.

It would be incorrect to speak of an absence of interaction between science and aviation maintenance production. However, the existing forms of links are incidental, and the process of developing them is unguided. We believe that they must be long-term, stable and planned in nature. And more: they must be established by taking into account the prospects based on joint operations and be oriented toward a practical end result.

Reinforcement of the links between science and production is impossible without clear-cut assignment of roles. Taking a consolidated approach, scientific institutions should play the role of general contractors, responsible for the end result of the work, the "Aviaremont" association should be the customer, and repair plants should be the subcontractors. It seems expedient that scientific management of the plant laboratories should be exercised by the appropriate departments of higher educational institutions, and that the GosNII GA [State Scientific Research Institute of Civil Aviation] should develop its own specialized laboratories and branches at plants. In this case, a closer link is possible between science and production from the research stage to the introduction stage.

Unfortunately, our scientists do not know the specifics of maintenance well enough and maintenance specialists do not possess modern scientific knowledge in full measure. Lecture courses and seminar lessons conducted by scientists at the plants and by production workers at VUZ's and the NII [scientific research institute], practical on-the-job training of scientists at aviation

repair plants, and finally, joint participation by scientists and plant specialists in the work of public design bureaus could improve the employee training situation. It is quite evident that in reorganizing the system of training at civil aviation VUZ's it is necessary to provide for the training of engineers for aviation equipment maintenance.

In order to establish prospects for efficient work by "Aviaremont" in the 12th Five-Year Plan, it is necessary today for sectorial science to develop precise recommendations for improving organization of the maintenance system and its management, to introduce advanced technologies, strategies and methods of repair, to develop plants' production and technological base, to equip the work places and to improve working conditions.

The development in recent years of a network of repair plants and complication of the economic and social tasks being resolved by them have given rise to the need to introduce management systems which cover all aspects of collectives' activity. Named first of all among them may be the comprehensive system of managing production efficiency and work quality, the comprehensive system of quality control in repairing aviation equipment with the system of defect-free work included in it, the system of managing socialist competition, and the system of managing labor discipline and maintaining the stability of labor collectives. Each one of them resolves its own tasks, although in the end the combination of actions is called upon to ensure that the goals confronting the entire collective, as well as plant subunits and individual employees, are achieved.

Lately the efficient action of the systems has leveled off, and has even been reduced here and there. Obviously, efficiency is ensured first of all by the employees' conscientious participation to provide for the functioning of the systems. And this may be achieved by appropriate measures to train and educate personnel at all levels. It has become urgently necessary to supplement the programs of party-political, economic and technical studies with the specific questions of ensuring the functioning of management systems. For periods of time training should precede specific activities by those being instructed in the management systems. Such experience exists at Plant No 400, for example.

Workers of aviation repair plants have embarked on the final year of the five-year plan. They have interpreted as an urgent program the materials of the CPSU Central Committee Politburo meeting and the session of the USSR Supreme Soviet, and the words of Comrade K. U. Chernenko concerning the fact that "the task of organizing efficient and purposeful work to put everything that has been planned into practice is now being pushed to the foreground." Successful fulfillment of the targets and socialist pledges will serve as a reliable basis for vital work in the 12th Five-Year Plan and as a pledge to carry out the task set by the party of shifting production to the path of intensive development.

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CIVIL AVIATION

CHIEF ON GEORGIAN CIVIL AVIATION ADMINISTRATION PROJECTS

Tbilisi ZARYA VOSTOKA in Russian 10 Feb 85 p 3

[Interview with Aleksandr Ivanovich Zedginidze, chief of the Georgian Civil Aviation Administration, Ministry of Civil Aviation, by a GRUZINFORM correspondent: "The Republic's Working Wings"; date and place not specified]

[Excerpts] Since the beginning of the five-year plan, Georgian aviators have carried nearly 10 million passengers and treated more than 1.89 million hectares of agricultural land. Important tasks are facing employees of the republic's air routes this year and in the forthcoming 12th Five-Year Plan.

A GRUZINFORM correspondent has held a discussion with A. I. Zedginidze, chief of the Georgian Administration of Civil Aviation, about the situation today and prospects for development of this most important transport sector.

[Question] It is well-known that intensification of the practice of economy has become of paramount importance today. How have Georgian aviators responded to the party's appeal to work this year for 2 days on resources that have been economized?

[Answer] The volume of our work in the concluding year of the five-year plan is continuously increasing; 4.77 billion passenger-kilometers and 456 million ton-kilometers--these are the targets set for the republic's civil aviation administration. This means that more than 2.5 million passengers will be flown from Georgian airports and that 450,000 hectares of fields and plantations will be treated from the air.

These targets will be reached by further increasing the economical work indicators of the fleet of airplanes and helicopters. A savings of 2,500 tons of aviation fuel has been called for. On 2 days this year--9 May, the 40th anniversary of the Great Victory, and 7 October, USSR Constitution Day--crews in our administration will fly on fuel that has been economized.

[Question] Aleksandr Ivanovich, how will the "air berths" of the republic--its airports--be renovated?

[Answer] A comprehensive program has been worked out and is in effect for developing civil aviation in the Georgian SSR in the period up to 1990 and the long-term future. Construction of new production projects or the technical reequipment of those in operation is being carried out or planned for the near future at practically all enterprises.

Thus, last year renovation was completed and operation was begun on the second phase of the runway in Sukhumi, designated to accomodate Tu-154 airliners. Construction of a runway to handle the wide-bodied 350-seat Il-86 airbus, which will begin flights to the capital of the Abkhaz ASSR on the eve of the Great Victory holiday, is being completed.

A map of new civil aviation construction in the republic is extensive. A passenger pavilion has been put into operation in Kutaisi, and a hotel complex has been put into use in Batumi. Preparatory operations have been begun for construction of a second runway to accommodate the Il-86 airbus.

Construction of a city air terminal with a capacity of 1,100 passengers hourly is being planned in the republic's capital, in a complex with a central agency and a hotel to accommodate 400 persons, and renovation of the air terminal at the Tbilisi Airport has begun.

We are devoting particular attention to development of local air routes. The number of them will increase significantly, and plans will be made for standard air terminals at small airports in Mestia, Chikhareshi, Shatili and other locations. Incidentally, the Mestia Airport will be radically modernized, and will be able to handle the more spacious An-28 aircraft.

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CIVIL AVIATION

ROUNDTABLE ON EFFECTIVE USE OF FLIGHT SIMULATORS

Moscow GRAZHDANSKAYA AVIATSIYA in Russian No 1, Jan 85 pp 12-15

[Roundtable discussion on effective use of simulators in civil aviation conducted in the training subunit of the TsUMVS [International Air Services Central Administration] by S. Sokolov, B. Orlov and I. Kazanskiy OF GRAZHDANSKAYA AVIATSIYA, with participants A. Timofeyev, deputy chief of the Flight Service Administration of the Ministry of Civil Aviation; O. Yermolov, deputy chief of the GlavUREO [Radio Electronic Equipment Main Administration]; Honored Pilot of the USSR V. Potemkin, deputy general director of the TsUMVS; V. Goryachev, chief of a department of the GosNII GA [State Scientific Research Institute of Civil Aviation]; Hero of Socialist Labor and Honored Pilot of the USSR A. Vitkovskiy, commander of the training subunit; Honored Pilot of the USSR V. Uzhov, deputy commander of this subunit; N. Sil'nitskiy, N. Golovin, S. Glazkov, Yu. Nosov, V. Shishkin and others, specialists in the ULS [Flight Service Administration], the GlavUREO, and the simulator section of the training subunit: "Maximum Efficiency for Simulators"; date not specified]

[Text] Through the cockpit windows the runway lights are racing relentlessly toward us. The crew is ready to carry out the landing, and everyone is focused, attentive, and performing with full efficiency... And suddenly the image seen through the windows faded away, and the customary sounds died out, as if the aircraft were suspended in the air. The instructor's voice is heard in the earphones: "Stop! Let's analyze your mistakes."

Thus different situations on the approach are played out time and again in the modern complex simulator for an Il-86 aircraft and the crew members master precise interaction. In all, there are dozens of aviation simulators for the most diverse purposes in operation at enterprises and the flight training institutions of Aeroflot.

The magazine's "roundtable" discussion in the training subunit of the TsUMVS was devoted to the problems and tasks of efficient utilization of simulators in civil aviation.

A. TIMOFEYEV:

Simulators have become an acknowledged means of training cockpit personnel at aviation enterprises and flight training institutions. Everyone knows how difficult it is to provide high-quality training for a crew on the scheduled flights. And mainly because it is impossible to repeat and play through again and again--as in a simulator--the many situations which a crew may encounter on a flight.

Training crews in simulators is not only a guarantee of flight safety. The other most important factor in their wide use is the substantial economy in fuel and lubricants and the savings in extending the service life of aircraft and engines. This is why increasing efficiency and quality in simulator use is a matter of great importance.

A special-purpose program has been developed in the Ministry of Civil Aviation to introduce simulator technology and use it efficiently in the daily activity of the operations enterprises and flight training institutions of Aeroflot. The collegium and key administrations of the ministry's central organization are monitoring the progress of this program's implementation continuously. Problems related to the introduction and efficient use of simulators are examined regularly at meetings of the Ministry of Civil Aviation collegium and the ministry's scientific and technical council, and at production conferences of representatives of the Aeroflot administrations and institutions which have been charged with putting this important work into effect and monitoring it.

Substantial qualitative and quantitative progress has been made lately in the further broad introduction of simulator technology. Modern simulator complexes have been built in Alma-Ata, Tashkent, Yerevan, Leningrad, Sverdlovsk, at the CEMA Civil Aviation Center in Ulyanovsk, and at other Aeroflot enterprises and educational institutions. Modern simulators for Il-86, Il-76T and Tu-154 aircraft in various versions and the L-410 airplane and Mi-8 helicopter are being utilized successfully. State testing of the complex simulator for the An-26 and specialized simulators for flight engineers on Il-86, Il-76T and Tu-154B aircraft has now been completed. New, more advanced simulators are being developed.

Methods documents for organizing instruction and training directed at improving the level of professional preparation of flight and controller personnel have been applied widely in simulator centers and sections.

Interesting and useful experience has been accumulated in preparing for and mastering Category II flights at the Leningrad enterprise, where a simulator complex designed for training in several types of aircraft has been put into operation. In the simulators, crews of Tu-134 and Tu-154 aircraft are becoming thoroughly familiar with their functions under instrument weather conditions. I would like to stress that a great deal of persistence and work is being contributed to this effort not only by instructors and other specialists of the simulator complex, but also by the flight navigation department of the Leningrad Administration, by flight subunit commanders Konashonok, Lesovoy, Komarov and others.

The flight methodology complex of the Armenian Administration may confidently be called a model for the concentration of equipment and the work being conducted. Its simulator section is equipped with everything necessary and provides high-quality training on schedule in the Tu-134, Tu-154, Yak-40 and An-2 simulators for practically all the administration's cockpit personnel. Sound training is provided in these simulators not only for the aviators of Armenia, but for specialists of other Aeroflot enterprises as well. In particular, more than 100 representatives of the cockpit personnel of other administrations have undergone simulator training here this year.

In a word, progress in this work is apparent. But it could be considerably more substantial if there were not an indifferent attitude toward such a serious matter here and there. The reluctance of some flight commanders to take simulator training is bewildering, and causes anxiety at times as well. This is obligatory for others, they say, but they can make allowances for themselves and undergo training in real flight. There have been such cases at the Alma-Ata, Kiev, Tashkent, Tyumen (Roshchino) and other aviation enterprises. Moreover, for example, through the fault of Yakutsk Administration managers, who were not able to ensure that cockpit personnel appeared for training in Tyumen, there was considerable idle time on the Mi-6 simulator last year. Doesn't this happen because of the negligence of command and flight personnel toward such an important matter? There have been cases of simulator training periods being disrupted in the Moscow Transport, Far East and West Siberian administrations and in some educational institutions of Aeroflot.

The Flight Service also has serious complaints about the technical maintenance of simulators. Not everything is running smoothly in the organization of scientific activity related to simulator use, either. Obviously, it is not coincidental that unproductive flying time accrued every year on training flights is still being redcuced extremely slowly.

Nevertheless, I would like to reemphasize that a great deal has been accomplished in the sector to further develop simulator work. The results of these efforts are having a positive effect on the work of many aviation enterprises, as well as of the International Air Services Central Administration, where we have been holding this discussion.

N. GOLOVIN:

As Aleksey Aleksandrovich Timofeyev has noted, training in a simulator today has become one of the basic methods of training crews to function under instrument conditions. Take for example, the training of crews for flights under reduced minimums, primarily the ICAO [International Civil Aviation Organization] Category II minimums: landing when the ceiling is 30 meters and the horizontal visibility is 400 meters. Some persons are of the opinion that it is better to acquire this skill on scheduled flights and to gradually "become ready" for landings in such weather conditions. But experience demonstrates that in only a simulator a crew's functions during an instrument landing can be mastered no less proficiently than in real flight.

Modern simulator equipment requires responsible handling both during operation and in technical maintenance. Many simulator sections have a reputation for first-class instructors and experienced engineers and technicians. Highly skilled specialists, true experts at their trade, make up their backbone. Together with the young instructors, engineers and technicians, they are doing a great deal to increase efficiency in training cockpit personnel, striving to achieve efficient productive organization in training sessions, and seeking to create conditions during the course of lessons which approximate real situations as closely as possible. The systematic nature of lessons and the unity of training methods in the simulator and on a training flight are considered to be of paramount importance. The best instructors, as a rule, observe the most important methodological rule--not to permit the formation of incorrect flying habits, to promptly make known the causes of flying errors, and to provide crew members on the spot with recommendations to eliminate them.

But not everything is proceeding smoothly in this important work. Thus far, methodological work in simulators has been poorly organized in a number of administrations. Basically it has been entrusted to senior simulator instructors and specialists of methods subunits, but not to check pilots of the LShO's [flight navigation departments]. The requirement that thorough inspections of simulator sections' work be conducted annually is not being implemented everywhere, either. In analyses of the condition of flight safety, the level of professional and methodological preparation of simulator instructor personnel sometimes is not evaluated, as this special methodology requires.

In our view, further improvement in lesson methods for certain simulators is required. We are placing much hope here on the highly experienced and highly skilled collective of the simulator complex at the CEMA Civil Aviation Center in Ulyanovsk. Especially as construction of the simulator complex here is being planned for completion soon.

O. YERMOLOV:

I would like to reproach our construction workers seriously in this regard. Unfortunately, certain SMU [construction and installation administration] managers of the "Aviastroy" Industrial Construction Association and deputy chiefs of construction administrations consider the erection of buildings for simulators a secondary matter. The time has long since passed when a cockpit simulator could be set up in any little booth, and this would suffice. The simulator complex of today is a combination of achievements in electronics, automation and engineering research. And it should be housed in an appropriate facility.

This is why the slow accommodation of the expensive apparatus in the Kazakh, Krasnoyarsk and Turkmen administrations is cause for concern. Simulator equipment is under the open sky in Novosibirsk. Precisely because of the lack of accomodations, the Kazakh Administration has been forced to transfer so many helicopter simulators which it needs to other administrations.

How else can we explain the fact that a simulator for the L-410 aircraft has not been installed since 1981 at the Kyzyl airport in the Krasnoyarsk Administration, if not because of mismanagement?

But even where simulators have been accommodated apparently satisfactorily, they have not been equipped for full capacity. Is it really economical to use such expensive equipment on just one shift, for 7 hours a day?

What is the matter here? Obviously, there are several reasons, and they involve various areas--organizational, scientific, and technical. To begin with, the problems of subunits' coordination of the work and their management by the aviation engineering service have not been completely resolved. True, an experiment was conducted at the Magadan Aviation Enterprise--they included employees of the simulator section as personnel of the air maintenance base. But it turned out that they were treated as outcasts.

A situation in which senior engineers of simulator sections are not materially interested in increasing equipment operating time cannot be considered normal; "flight time" is not reflected in their salaries, and a bonus depends on plan fulfillment by the administration.

The problem of staffing training subunits with engineering and technical personnel has not been resolved, either. True, the Kiev Institute of Civil Aviation Engineers is training specialists to maintain the simulators, but even the considerable number which it turns out do not find work in their specialty because of an indifferent attitude toward them. Such a situation exists in Tyumen, for example.

Simulators of functional systems are making it possible to resolve many tasks in training aircrew and controller personnel. In order to concentrate this equipment at aviation enterprises, its production must be organized at civil aviation plants. In the meantime, these problems are being resolved extremely slowly. For example, it took 4 years to handle an order at Plant No 20. But "Aviaremont" [Aviation Equipment Repair Industrial Association] has planned simulator output itself for the next five-year plan.

As far as solution of the organizational problems is concerned, it appears that here we must proceed to establish large (regional) simulator centers, where the necessary equipment and well-trained personnel could be concentrated.

The principal scientific problem in simulator construction is the approach to determination of the qualities needed for the facilities being established, which is inadequately substantiated. At times there is simply not enough raw data from the specialists engaged in training aircrews in simulators. Here is a most glaring example. When the program for a simulator for the flight engineer on a Tu-154 aircraft was developed, the State Scientific Research Institute of Civil Aviation determined its basic parameters and features. The program was passed to the developers. But much later, in the testing stage, additional wishes began pouring in--to change one thing, and to elaborate something else.

Among the technical problems, perhaps, we have to single out the difficulty of "tracing" the modifications of a real aircraft in simulators. It is very difficult to have modifications made by the staff members of training subunits, and representatives of manufacturing plants do everything possible to have nothing to do with them. In the meantime, the disparity between simulators and the real aircraft leads to false skills in flying teqhnique.

V. UZHOV:

How are the capabilities of simulators to be expanded? How is highly efficient and high-quality organization of crews' training to be achieved? What is needed so that simulators operate continuously at full efficiency? We are raising these and other questions in our simulator section.

We have already noted here that modern simulators are the latest word in domestic science and technology. So highly skilled persons with good engineering and flight training should be managing and operating them. I emphasize the flight training. For example, we have strived to ensure that not only instructors, but engineering and technical personnel, have a good understanding of the theory of flight and know navigation and the psychology of flying work. Owing to the knowledge--and mainly the efforts--of our specialists, such as Senior Engineer Shishkin, engineer Glazkov and instructor Nosov, who are present here, we have succeeded in utilizing more operating time in simulators than in other training subunits.

In just the past year our engineers, technicians and instructors introduced a number of suggestions and design modifications which have extended the capabilities of simulators for the Il-86, Il-62M and Tu-154, and again adjusted the features of training sessions and expanded the number of exercises performed in them. Henceforth we will be able to simulate situations and equipment failures which are practically impossible to simulate under airport training conditions.

Based on analysis of training sessions, we are conducting meticulous methodological work to determine the typical pilot errors, and we are studing the psychological aspects of interaction among crew members. We are being actively assisted here by the commanders of flight subunits, instructor pilots, and tutors. Unfortunately, some subunit commanders are little interested in how their crews are trained. It sometimes happens that individual comrades do not show interest in the results of training sessions and do not consider the remarks made in the corresponding documents by simulator instructors.

This takes place, of course, because the simulator is underestimated as a basic means of training crews for flights. Experience confirms that the bulk of flight training will be conducted in simulators later on, and that "flight time accrued" in them will increase continuously. We have already gone over to two-shift work and we are practicing the brigade form of simulator maintenance. I repeat that this is helping our administration to improve flight crew training and to substantially reduce the unproductive consumption of aviation fuel and aircraft and engine operating time.

N. SIL'NITSKIY:

It has been stated here that valuable simulator equipment at times lies idle for years waiting for installation. Why is this?

Because industry's plans for construction of facilities for simulators and the requisitions for them are not coordinated with each other.

The personnel requirement must be more efficiently planned. For example, now is the time for the International Air Services Central Administration to take care of the training of specialists to operate the simulators which will go into operation in the years ahead.

I also want to raise this question. Aeroflot is a self-supporting organization. But the operation of simulators is proceeding as if it were without cost accounting. Their economic efficiency and profit from their use are not taken into account. This cannot be considered normal.

V. SHISHKIN:

Innovators can make a large contribution to improvement of simulator technology. There are quite a few examples of this. Thus, MTU [Moscow Transport Administration] innovators have equipped a Tu-154 simulator with an optical collimation device which has broadened the scope of situations being simulated. On the simulator for the Il-62 alone, more than 70 improvements were made which received a favorable evaluation from specialists of the State Scientific Research Institute of Civil Aviation and industry. So we cannot underestimate the opportunities of innovators.

S. GLAZKOV:

The efficient use of digital simulators depends to a large extent on improvement in the mathematical program. By making up the appropriate programs, we can simulate flight over any route and a landing at any airport.

The specialist working on a digital simulator is required to know the fundamentals of programming and be able to use digital equipment. It is essential to take this into account in training engineers and technicians.

V. GORYACHEV:

Simulator technology has a great future. The time is not far off when simulators which practically duplicate a real flight condition will begin coming into operation everywhere. The new system of visualization will provide the opportunity to obtain a three-dimensional image in color of a locality. A dynamic unit with six option ranges will provide the total sensation of aircraft movement, and unitized construction of the electrohydraulic system for control loads will make it possible to feel the reaction of the yoke and rudder pedals, as in real flight. The work place of the instructor also will be equipped in

a new way. It will have the means of depicting visual data (displays). And the complex of simulator systems will be equipped with installations to objectively evaluate the quality of flying.

Mathematical control of the new-generation simulators will become more precise, which will expand their methodological capabilities and will make it possible to program the training process in advance, as well as to effectively monitor and correct the features of simulators in the process of operation (including "tracing" the change in characteristics of a real aircraft).

Finally, an automated system for controlling the accuracy of the units and assemblies incorporated in the simulator will reduce to a minimum the time spent in searching for and eliminating malfunctions.

In a word, simulators will be improved. In order to obtain the most gain from their use, coordinated efforts by scientists and operators and the most diverse specialists are required. Success in this work depends literally on each one who is directly or indirectly connected with the development, introduction and use of this unique technology. And it is our duty to ensure that it works with the greatest efficiency.

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CIVIL AVIATION

ALL-WEATHER KA-32 HELICOPTER-SCOUT TESTED ON ICEBREAKER

Moscow IZVESTIYA in Russian 16 Feb 85 p 6

[Report by IZVESTIYA correspondent V. Shmyganovskiy from on board the icebreaker "Sibir'": "Through the Ice and the Night"]

> [Text] Winter testing of the new all-weather Ka-32 helicopter, capable of conducting ice reconnaissance by flying from the decks of nuclear-powered vessels when the visibility is poor, in a snowstorm, during the polar night, are beginning in the Arctic... An IZVESTIYA correspondent reports from on board the icebreaker "Sibir'":

...Before entering the Kola Gulf, the "Sibir'," commanded by Captain V. Krasovskiy, had been rendering assistance to ships arriving in the White Sea from Western Europe and Cuba, then it led the Northern residents' fishing fleet out to clear water.

And in Murmansk, which we just left, the weather has been freezing at 30 degrees and more for nearly the past month and a half. In the winter ocean, the nuclear-powered vessels sometimes do not have tens of thousands of horsepower enough: deprived of efficient support from the air, they "slip" at times and select a route by feel. But specific recommendations may be given and operational data received from the new helicopter, as from an airplane: the Ka-32 is capable of lifting off from the mother ship and flying for 80 to 90 miles. Reconnaissance will be conducted both with the aid of electronic instruments and visually. Powerful searchlights have been provided for this at night.

"Seamen have been waiting for this equipment for a long time," V. Ignatyuk, chief of the Murmansk Shipping Company, said. "The point is that the basic shipboard helicopter, the Mi-2, operates only in the daytime."

The Ka-32 is equipped with floats, which enables it to land on the water in case of an emergency. It is also a rescue helicopter.

...The well-known scientist N. N. Zubov has said: "The ice cannot be taken by force, but it cannot hold out against intellect." And indeed, not even the most improved nuclear-powered vessels will undertake a frontal attack on the

white fields. The shortest route in the Arctic is the one that is easier. Even if it is an odd zigzag. But the aircraft being tested today--the first experimental model--also has been called upon to draw it in accordance with a "chart" of the Arctic. The crew headed by test pilot G. Provalov of the GosNII GA [State Scientific Research Institute of Civil Aviation] will take it into the night sky of the Arctic.

8936
CSO: 1829/179

CIVIL AVIATION

OFFICIAL ON SOVIET RESEARCH IN DEICING TECHNIQUES

Moscow VOZDUSHNYY TRANSPORT in Russian 19 Feb 85 p 3

[Interview with Oleg Konstantinovich Trunov, chief of a department of the GosNII GA [State Scientific Research Institute of Civil Aviation] and candidate of technical sciences, by the VOZDUSHNYY TRANSPORT editorial staff: "Not Depending on the Weather"; date and place not specified]

> [Text] Despite the rapid development and improvement in aviation equipment, air transport still continues to be considerably dependent on weather conditions. In order to reduce this dependence, specialists, researchers and designers are carrying out a great deal of work to develop and perfect ways and means of protecting airplanes and helicopters from the adverse effects of the atmosphere. At the request of the editorial staff, O. Trunov, chief of a department of the GosNII GA and candidate of technical sciences, discusses the problem of deicing protection for aircraft.

[Question] Oleg Konstantinovich, as a specialist, your name has been so closely linked with the aircraft icing problem for many years that we would like to begin with a general question: can we consider this problem basically resolved at this time? What has changed over the past 25 years, let us say, in this field of aviation technology?

[Answer] It is not so easy to respond briefly to such a broad question. Of course, if you think of a well-known aircraft such as the Li-2, which I had occasion to test under icing conditions more than three decades ago, and compare it with the aircraft being flown today, with their modern deicing protection, the contrast will be striking.

In a climb, the Li-2 often did not even get through the zone of moderate icing and was forced to return to the departure airport. Such a problem does not exist for modern aircraft.

Significant progress has been made over this length of time in protecting aircraft from icing. As the result of many flight tests at one time, general requirements were developed to ensure flight safety under icing conditions. They were taken into account when deicing systems were developed for the first- and second-generation aircraft with gas-turbine engines.

In the process, it was characteristic that institute specialists not only formulated and substantiated requirements for industry, but took part in implementing technical solutions as well.

Extensive research also has been conducted on the aerodynamics of an aircraft affected by icing. The necessary recommendations were made for flying under icing conditions, and the appropriate sections of requirements were established in the Soviet airworthiness standards. Thus, many important tasks of a scientific and practical nature have been resolved in the problem of protecting aircraft from icing.

[Question] And what is most urgent today and requires study?

[Answer] The problem of icing is part of the overall problem of protecting aircraft from the so-called dangerous external effects of the environment, which in accordance with the accepted general approach should be resolved in three interrelated directions: environment-influence-protection. As applied to icing, specific tasks requiring their own solution may be identified in accordance with all these directions. Correctly formulating immediate and future tasks--this is more than half of the success.

Today further study is needed of the forms, amounts and conditions of icing on modern and prospective airplanes and helicopters and more exact definition of the parameters being standardized. Development of reliable methods (including EVM [computer] calculations) to determine the most detrimental ice formations for a given type of aircraft is needed. The necessity for such methods is perceived as early as the initial stages of designing an airplane or helicopter, when the question arises for the designer concerning the deicing protection required.

Tasks such as devising deicing systems based on new, more economical principles, onboard warning devices to gage the severity of icing conditions, development of aerodynamic deicing protection, and so forth, also are important.

Improvement in the methods of training aircrews under icing conditions has to be singled out in particular. And finally, it is necessary to note that significantly less has been done with this problem for helicopters than for airplanes to date.

[Question] What methods of testing and research on the icing problem are now the most efficient and effective?

[Answer] Not to detract in the least from the importance of bench tests, calculated methods, tube research, and so forth, I hold the point of view that precisely in-flight experimentation under natural icing conditions is the most effective (and often the most economical) method. Of course, it requires a great deal of experience, even intuition, and flight time, and a definite risk is associated with it. But in science generally, it is impossible to obtain substantial results without risk in organizing and conducting an experiment and without one assuming all responsibility for the experiment.

In this regard, I cannot help but recall a unique in-flight experiment which I had to supervise, conducted by our institute at one time on an An-12 aircraft (the chief pilot was B. Vozyakov and the chief engineer was R. Teymurazov). This research, carried out for a very brief period--10 days in all, made it possible for the first time to determine the behavior of an aircraft affected by icing at high angles of attack and to work out the necessary recommendations for cockpit personnel.

[Question] Oleg Konstantinovich, you are one of the originators of the widely used deicing fluid "Arktika" and "Arktika-200" and you pioneered the introduction of the fluid method of aircraft deicing on the ground. But you have said nothing about this aspect of the problem...

[Answer] If you want to find out if this method requires further improvement, the answer is probably clear. If you want to know what direction improvement of this method will take, that is a separate and lengthy discussion. I will say only that the urgency of the problems of protecting aircraft from icing on the ground increases with the buildup of air traffic and increased requirements for flight safety and regularity.

Improvement in the fluid's protective capability must be achieved so that when specific weather is forecast, aircraft treated in the evening retain a "clean" surface until the morning, when they depart on scheduled flights.

Secondly, we cannot forget about protecting the environment and eliminating the toxicity of liquids. The pace of work in this direction cannot be reduced. This year VIAM [All-Union Aviation Materials Institute] specialists and we obtained patents for two inventions to improve the process.

[Question] And the final question: what, in your view, would help to stimulate work on the icing problem?

[Answer] Eliminating lack of coordination in efforts and disruption of an overall approach. Without good coordination of operations both within the organizations concerned as well as among them, without a unified scientific approach, it is difficult to step up the pace and achieve a high degree of good results in research. But the well-known decisions for scientific and technical progress demand precisely this from us. This is a basic organizational task. And when it is resolved, airplanes and helicopters in civil aviation will encounter icing there, beyond the clouds, equipped with all the achievements of engineering and scientific thought.

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CIVIL AVIATION

BRIEFS

AKSUAT AIRPORT IMPROVEMENTS--Semipalatinsk Oblast--The Yak-40 jet aircraft has begun scheduled flights from Semipalatinsk to the remote rayon center of Aksuat. This became possible after construction of the airport complex with a new runway was completed. Passengers now are airborne for a little over a half hour. By way of comparison we will say that previously, it took nearly 3 hours in an An-2 aircraft which made one landing en route. Construction workers of the "Ayaguzsel'stroy" Trust No 27 completed all operations with considerable effort. In the final stage, aviators and dozens of residents of the rayon center worked along with them. This not only hastened completion of the airport's new home, but also made it possible to creditably carry out the last of the instructions from the voters of Aksuat given to K. Demeubayev, deputy of the Kazakh SSR Supreme Soviet and senior herdsman of the Sovkhoz imeni Amangel'da. It is noteworthy that the leading worker and Hero of Socialist Labor was again named unanimously as a candidate for deputy to the republic's highest organ of state authority. [By KAZAKHSTANSKAYA PRAVDA correspondent L. Reznikov] [Text] [Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 29 Jan 85 p 2] 8936

NEW KHERSON PASSENGER TERMINAL--(TASS)--The new air terminal in Kherson today received the first passengers. Its capacity is 400 persons per hour. With the commissioning of the air terminal, the network of air routes linking this oblast center in the Ukraine with other cities in the country will be expanded. [Text] [Moscow VOZDUSHNYY TRANSPORT in Russian 9 Feb 85 p 2] 8936

IL-86 ALMA-ATA SERVICE IN APRIL--Yesterday the wide-bodied Il-86 made its first passenger flight from Alma-Ata to Moscow to Alma-Ata. This aircraft is the most spacious, with 350 seats in three cabins. Passengers are served en route by 12 stewards. The baggage problem has been completely resolved. The bulkiest baggage is checked for dispatch in four containers, and the rest is on the first deck of the airliner, where special compartments have been provided. Pilot First Class Ye. Abdramanov, the aircraft commander; R. Turlybekova, stewardess brigade leader; and A. Madostov, chief pilot of the USSR Ministry of Civil Aviation, greeted the passengers hospitably. This flight, carried out strictly according to schedule, was one of the principal ones in preparing scheduled airbus flights on one of the ultra-long-range air routes in the Motherland. Scheduled Il-86 flights on the route from Alma-Ata to Moscow and return are planned for April. [By Yu. Dobrov] [Text] [Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 12 Feb 85 p 4] 8936

CSO: 1829/177

MOTOR VEHICLES AND HIGHWAYS

BRIEFS

'PORTABLE' FILLING STATIONS PRODUCED--Sverdlovsk--A foundation is not required for this motor vehicle filling station. It can be put up literally in one day. A prototype of such a compact AZS [motor vehicle filling station] has been manufactured at the Pervouralsk Unit Metalwork Plant. It is designed to fuel the service and personal vehicles of the inhabitants of small settlements and railroad stations. The mini-AZS saves the owners of personal vehicles from having to go to cities and rayon centers to fill them up. This year the plant will produce 60 such stations. [By V. Korshik] [Text] [Moscow GUDOK in Russian 24 Jan 85 p 4] 12461

BelAZ TRUCK SERVICING IMPROVEMENTS--Sverdlovsk--The primary manufacturer of motors for BelAZ [Belorussian Motor Vehicle Works] vehicles and other supertrucks, the Ural Turbomotor Plant imeni K. Ye. Voroshilov, is expanding its range of supplies. In their socialist obligations for the current year the Sverdlovsk turbomotor engineers recorded: to produce a large series of engines for quarry dump trucks with a load-carrying capacity from 75 to 180 tons. Motor units with a capacity of 2400 horse power will also be included in the production of plant supplies. The novelty, born in the course of competition between suppliers and consumers, is the organization of maintenance service. At the initiative of the administration of the Ural "Turbine", subunits, headed by chief plant engineers, have been set up in large points of concentration of powerful truck convoys--Krivoy Rog, Asbest, and Zhodino. They are supplied with spare diesels, spare motor parts, and technical personnel. This greatly increases the reliability of quarry transport and sharply raises the coefficient of productive labor. [By V. Biryukov] [Text] [Moscow IZVESTIYA in Russian 28 Jan 85 p 1] 12461

VAZ-21-08 SPUTNIK 1985 PRODUCTION--We have already written about the elegant new model from the Volga motor vehicle works, the VAZ-21-08, which embodied the technical-economic characteristics of domestic and world automobile engineering: front-wheel drive, an economical engine, and an electronic ignition system. And now, not long ago, the first hundred vehicles have come off the conveyor. The "eight", by the way, has acquired its own name--Sputnik. A symbol of technological progress on the one hand, and a reliable companion on the road on the other hand. The schedule for this year is to produce 35,000 Sputniks. [By V. Demenev] [Text] [Moscow KOMSOMOL'SKAYA PRAVDA in Russian 29 Jan 85 p 4] 12461

ZIL'S SMOLENSK WORKS EXPANDED--Smolensk--The Smolensk Motor Vehicle Parts Plant, part of the ZIL [Motor Vehicle Works imeni Likhachev] Production Association, is

expanding its capabilities. Not long ago the latest priority complex at the plant was turned over; it has a production area of 8500 square meters for the production of motor vehicle spare parts in the amount of 3 million rubles per year. In the new machine assembly shop there is already a section for the manufacture of transmission synchronizers. It rhythmically produces 1600 parts per shift. An outstanding feature of the construction of the second phase of the plant consists in the fact that the operators are constantly helping the builders, giving them 50-60 workers daily and organizing mass Saturday work days. Such close cooperation will allow one more complex to be put into operation before the end of this year. [By Ye. Murav'yev] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 30 Jan 85 p 2] 12461

BSSR ALTERNATIVE FUEL CONVERSIONS--The Belorussian Ministry of Motor Vehicle Transport has developed and is carrying out a special program to convert trucks and taxis to compressed natural gas or liquefied gas. "The potential scheme for distributing 'gas' truck fleets," says V. Borodich, republic minister of transport, "is linked with the republic's program for the construction of gas-filling compressor stations." Two filling yards are in operation now, each of which is calculated for 120 fill-ups per 24-hour period. Gas-filling stations are also being built in Vitebsk, Gomel, Mogilev, and Brest. Preparation is going on for the reconstruction of the production-technical base of the enterprises that are to use motor vehicles that run on gas fuel. In Minsk continuous courses have been organized for engineers, technicians, repair workers, and drivers on the facilities and operating features of gas-cylinder equipment. [By IZVESTIYA correspondent M. Shimanskiy] [Text] [Moscow IZVESTIYA in Russian 1 Feb 85 p 3] 12461

VAZ PARTS SUPPLIER IMPROVED--Kuybyshev--The VAZ's [Volga Motor Vehicle Works] largest partner, the Syzran Plastik Production Association, puts parts, assemblies, and the materials for dozens of designations on the assembly conveyor of the motor vehicle giant. A block has gone into operation here for the production of one-piece upholstery for the doors of VAZ-2105 and VAZ-2107 vehicles. According to the old method, the upholstery was assembled on the conveyor as a layered stack of cardboard, insulation, and a decorative tape. Now it is a single piece and is cast out of polyurethane foam. With minimal use of manual labor, just two lines supply the program of vehicle production. Automation of the process and the new material increased the quality of the goods and, consequently, the comfort of the Zhiguli's interior. [By SOTSIALISTICHESKAYA INDUSTRIYA correspondent A. Vorob'yev] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 2 Feb 85 p 2] 12461

BelAZ TRUCK WORKS EXPANDED--Minsk Oblast--Dump trucks with carrying capacities of both 75 and 110 tons come off the conveyor of the Belorussian Motor Vehicle Works. But this year, twice as many 110-ton trucks will be produced as were made last year. BelAZ's capable of carrying 180 tons of freight are also supplied to industry. These are veritable giants on wheels. A more advanced electric transmission has been installed in them. The plant in Zhodino produces the most powerful motor vehicles in our country. The enterprise, in fact, is undergoing its second birth. Capabilities are being set up here for the production of dump trucks and vehicles of large and especially large carrying capacity. New shops, staggering in their size and area, have already gone into operation and are producing. Yes, much is unusual here. Even if it's the transmission in a vehicle. In Zhodino dump trucks, these seemingly vitally important assemblies

are absent; they are replaced by electric transmissions. Each wheel has its own motor, which is mounted in its hub. It is put in motion by current from a generator. In this way, the vehicle has opened new possibilities for itself. In fact, the vehicle, possessing powerful electrical muscles, copes perfectly with the most difficult work in the quarries. At the same time, such a giant is very simple and responsive to the controls. The BelAZ's are irreplaceable aids where it is necessary to move huge quantities of earth, ore and coal. [By IZVESTIYA correspondent M. Shimanskiy] [Text] [Moscow IZVESTIYA in Russian 5 Feb 85 p 1] 12461

CSO: 1829/171

RAIL SYSTEMS

UPDATE ON WINTER RAILROAD FEED SHIPMENT PROBLEMS

Moscow GUDOK in Russian 27 Feb 85 p 1

[Unattributed article: "A Crucial Period"]

[Text] In the total volume of rail-shipped freight, the share of feed for socialized livestock raising is not so great. However, the closest attention should be given to the prompt delivery of this feed. Particularly now, during the most complicated and crucial period of the inside stabling of the livestock. Although spring is not so far off, at least 2 months remain until the animals are released on the natural pastures. Hence everything essential must be done during the remaining wintering period to ensure the continuous supply of the market dairy farms and fattening facilities with feed, including coarse and concentrated. For the railroad workers this task is among the primary ones.

Unfortunately, the steady delivery of feed is frequently impeded by difficulties which to one degree or another are characteristic of all the railroads. The dispatch schedule is not met both due to the fault of the railroad workers and to the fault of the shippers. Particularly bad is the delivery of empty rolling stock for coarse feed on the Belorussian and Baltic Railroads. Each day 3-fold fewer cars leave here than should be according to the plan. The straw shipments have been slow due to the failure to provide freight on the Gorkiy, North Caucasus, West Siberian and a number of other railroads. Only the West Kazakhstan Railroad steadily has fulfilled the plan for these deliveries.

At the same time the referrals to the shortage of rolling stock have not always been valid. It is well known that prompt unloading is a dependable reserve for filling out the loading resources. However, at a number of stations, and primarily at the Volgograd Division of the Volga Railroad, this has been organized completely poorly. And certainly precisely Volgograd Oblast receives a significant portion of the total supplies of coarse feed. In the given situation they must work more actively with the limited suitable fleet of boxcars as well as the double-level vehicle flatcars and gondolas which travel through in exchange.

The situation with the transporting of feed cake was somewhat better in February. The plan for shipping cake was fulfilled and overfulfilled by 16 railroads. The Dnepr, Kuybyshev and Far Eastern mainlines operated better than the others. As a whole for the network, the average daily delivery of cars for this

type of freight was a little over 95 percent of the quota. While the railroad workers each day fail to deliver an average of 10 cars, the shippers are to blame for 44.

Over the 20 days of February, the plan for the shipping of combined feed was fulfilled by 89.9 percent. The feed was dispatched in accord with the schedule by the Moldavian, Transcaucasian, Alma-Ata, Central Asian and South Urals Railroads. On the other mainlines, along with the already listed shortcomings, the lag has been explained by a shortage of specialized rolling stock. Here the emphasis has been put on using grain cars while the preparation of boxcars has been carried out at an extremely slow pace.

At present the shipments of all types of feed are under around-the-clock control by the dispatcher-inspectors of the MPS [Ministry of Railways]. There is the ever-wider practice of dispatching the freight needed for the livestock raisers in whole trains. The lag can be eliminated if the railroad workers operate in the same pace as the feed shippers and recipients and the day-to-day questions of transporting the feed are solved in common.

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RAIL SYSTEMS

OFFICIAL ON REASONS FOR CONTINUING CAR DEMURRAGE PROBLEMS

Moscow TRUD in Russian 27 Feb 85 p 2

[Article by N. Grigorenko, first deputy chief of the Ministry of Railways' Railway Traffic Main Administration: "Waiting for Clear Weather...; Many Enterprises Have Turned the Loaded Railcars Which They Received Into Warehouses on Wheels"]

[Text] I would like to begin with a situation which occurs not so rarely. For example, a purchaser arrives in a furniture store in order to buy a bookcase or shelf. He is told that this model cannot be found in stock, the mill has long been promising them but up to now they have not been received.... The purchaser leaves disappointed while the furniture which he wants has been sitting awaiting unloading from railroad cars a mere 10 kilometers from the store for more than a week. The mill is preparing to dispatch other products, but there are no cars. They are lacking because not only this recipient but hundreds of others have turned the railroad cars into their own warehouses on wheels. The losses here are great and not only material ones.

In order not to be unsubstantiated, let me give specific data. For example, in February, each day (!) some 16,000-18,000 cars stood waiting to be unloaded due to the fault of the enterprises. Millions of tons of important national economic freight were literally frozen, not reaching the consumers on time. Most frequently on the list of the debtors are the enterprises from the same ministries. For example, the USSR Ministry of Procurement each day has slowed down in the pace of unloading and loading work. While last year in this sector each day 403 cars remained for unloading, at the beginning of the current year the figure was already 475. If all these "mothballed" cars were in service, it would have been possible to ship an additional 2.5 million tons of freight last year and around a half million in January and the past days of February.

I would like to explain that here it is a question of a special freight, grain. Over the 25 days of February, more than 10,000 cars filled with grain were not unloaded on time. Nine cars stood for many days to unload at Bekabad Station on the Central Asian Railroad. The grain products base did not unload them. For a long time the wheat was not unloaded by the grain bases at Syuzyum and Chaadayevka Stations on the Kuybyshev Railroad, the grain receiving point at Zuyevka Station on the Gorkiy Railroad.... Completely definite time standards have been set for unloading: from 1 to 3 hours. But the cars stand for days and even weeks. The facts are completely intolerable.

Of course, these are also known at the ministry, including Deputy Minister of Procurement V. Anikin, who is responsible for transport operations. They are known, but the demurrage continues...

Due to the fault of the USSR Ministry of Construction Materials, in February 10,000 railway cars were delayed. Need it be explained to the leaders of the sector, primarily to the deputy minister, L. Vinogradov, and the chief of the Transport Administration, V. Nevzgoda, that such delays influence not only the steady pace of the mainlines but also as a side effect harm their own sectors? Stone, sand and slag are kept for a long time in railroad cars which stand idle due to the fault of the glass plant at Ulan-Ude Station, the silicate plant at Pochinki Station of the Gorkiy Railroad....

The USSR Minlesbumprom [Ministry of Timber, Pulp and Paper and Wood Processing Industry] has put itself, the railroads and its numerous consumers in a most difficult situation. Last year, the sector held up around 1.5 million cars in loading operations and this was tantamount to not dispatching 3 million tons of freight. The same situation exists now.

What is the problem? What prevents the loading and unloading of the cars at a strictly determined time? Analysis shows that the main factor is a lack of organization. For example, this work is halted during the nighttime hours and on days off. On such days unloading declines as a whole for the nation by 8,000-9,000 cars, and during the nighttime it is at best less than one-third of the daily amount.

Another reason is the serious shortcomings in the development of industrial transport. The plants, factories and combines have, as is known, their own track system, locomotives, cars as well as equipment for loading and unloading.... But at many enterprises all of this is kept in such lamentable condition! Precisely this area of work is presently one of the bottlenecks in the transport conveyor. Here the freight which has been delivered by rail to the plants becomes stuck. The backward, archaic system of industrial transport is characteristic not only for small production associations but also for a whole series of large modern ones. Of course, here the "plugs" and blockages occur and the obsolete systems are unable to handle the ever-increasing freight flow. Shortsighted managers consider these subdivisions to be secondary and save on funds for their development. But not only they but the entire economy must pay dearly for them.

There are many such example. For instance, at the Bratsk Timber Industry Complex (LPK) of the USSR Minlesbumprom, in recent years a total of...200 rubles have been spent on the development of the transport facilities. At the same time, last year alone the LPK held almost 100,000 cars above the norm! If one figures all the losses due to the shortage of these cars on a nation-wide scale, the results are millions of rubles. Here is what the miscalculations cost.

The situation must be rectified in the nearest future. There are proposals for this. But why have the USSR Gosplan and the other involved departments not given any thought to making the state of the transport facilities one of the basic indicators in enterprise operations? We feel that this would make it

possible to accelerate a solution to the problem. However, of course, without waiting for a fundamental reconstruction of industrial transport, at present everything must be done in order not to allow car demurrage and not create improvised warehouses on wheels. Here the losses are very great.

There are also delays of a completely different sort which must be particularly mentioned. It is a question of food products and highly perishable freight. Of course, it is bad enough when a car carrying cement or lumber stands idle, but we must not tolerate a situation where meat, fruits and canned goods are stuck at the gates of the enterprise or they do not promptly reach the store shelves or the public.

There have been instances when the unloading of food from cars did not start for 20 and more days. Standing idle for more than a week were section No 51429 at Khabarovsk-2 Station and section No 53493 at Smychka Station; this freight was addressed, respectively, to the Khabarovsk and Nizhniy Tagil refrigeration plants. On 11 February, section No 4971 with canned fish was to be unloaded at the Novyy Port Station at the Lenryba [Leningrad Fish] Association and on 12 February, section No 54680 with fish at Bugach Station for the Krasnoyarskryba [Krasnoyarsk Fish] Association. But 10 days later the situation had still not gotten off dead center. We do not want to speak here about the "record", but we must. It was set at the Vladimirryba [Vladimir Fish] Association. For almost a month they were unable to unload section No 51608 with canned fish at Vladimir Station....

There is no system in issuing the schedule orders for the delivery of food freight. The USSR Ministry of Trade issues the schedule orders for the delivery of meat, the USSR Ministry of Fishing Industry issues those for fish for industrial centers without considering the possibility of receiving the product by the recipients.

In the first 25 days of February, 7,900 cars were not unloaded on time by the USSR Ministry of Food Industry, 7,010 at the enterprises of Soyuzsel'khozkhimiya [All-Union Association for Agricultural Chemistry] and 5,249 cars at the Tsentrosoyuz [Central Consumer Union] enterprises.... This will not do!

At present, due to the energetic measures undertaken by the party and economic bodies, the situation with the unloading of food products and other important national economic freight has been significantly rectified, also thousands of cars are still employed as mobile warehouses. However, the question now is not about individual, local instances but rather the developing alarming tendency which must be decisively combated, in strengthening the administrative and economic levers. The existing system of penalties, as is known, does not have any major impact upon the economic life of an enterprise. For many of them the penalties are simply planned ahead of time in the expenditures. Is this normal? Hence it is essential to strengthen and improve the system of economic sanctions.

All the collectives involved with the work of the railroad workers should critically assess the situation, weigh the opportunities and unload the cars without delays and even ahead of time.

10272
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RAIL SYSTEMS

CHIEF ON RAILWAYS ELECTRIFICATION PROGRESS, PLANS

Moscow ELEKTRICHESKAYA I TEPLOVOZNAYA TYAGA in Russian No 1, Jan 85 pp 4-6

[Interview with Petr Mikhaylovich Shilkin, chief of the Electrification and Power Resources Main Administration, USSR Ministry of Railways, by ELEKTRICHESKAYA I TEPLOVOZNAYA TYAGA correspondent Yu. D. Zakhar'yev: "Important Tasks of the Electrifiers"; date and place of interview not given]

> [Text] Our nation has begun the new year of 1985, the last year of the 11th Five-Year Plan. During it the enormous detachment of railroad workers, including the electrifiers and power workers, must carry out difficult tasks. Our correspondent Yu. D. Zakhar'yev met with P. M. Shilkin, chief of the Electrification and Power Resources Main Administration of the Ministry of Railways [MPS], and asked him to answer several questions.

[Question] Petr Mikhaylovich [Shilkin], rail transport has successfully completed the plans of the 4th year of the five-year plan. Please tell us what contribution has been made by the electrification workers in carrying out these quotas?

[Answer] First of all, it must be pointed out that the quota for the electrification of new lines has been overfulfilled: instead of the planned 3,500 km, more than 4,000 km have been electrified by the year's end. The total length of them now equals 47,900 km. These handle around 60 percent of all the transport work. With the introduction of electric traction on these routes, transport electric power has been developing rapidly. Along the railroads, 49,500 km of longitudinal power supply lines have already been built with a voltage of 10 and 35 kilovolts, modernization is being carried out on the equipment and the power supply devices of the railroad junctions are being converted to remote control.

The development of electric power in turn has contributed to the extensive introduction on the mainlines of automatic blocking, dispatcher centralization, electric centralization of switches and automating of crossings. In addition to increasing the transport and throughput capacity, this work has increased traffic safety, the electric-to-labor ratio and labor productivity in rail transport.

On the basis of technical and operational analyses and operating experience, each year the railroad electrification workers are given specific quotas for increasing the reliability and strengthening the power supply systems for train traction. The work done on the railroads during this period has made it possible to introduce new high-powered electric locomotives, increase train weight and increase traffic speed.

[Question] What work has been carried out for this and where has it been done?

[Answer] In 1984, 7 new traction substations have been built on the operating sections, 60 sectioning posts and parallel connection points were set up and the wire gage in the contact grid was increased on more than 1,800 kilometers of network. The increase in weight and the introduction of connected trains on the railroads has necessitated also a strengthening of several AC sections on the Southeastern, Gorkiy, Krasnoyarsk and Tselin Railroads. A large amount of work has also been done on the major overhaul and modernizing of equipment. This entire range of work has made it possible to somewhat improve the indicators of the system and has a positive impact on the transport process.

It is also possible to point to the successful work of the electrification workers and power workers on the Baltic, Dnepr, Southern, Moldavian, Far Eastern, Krasnoyarsk, West Kazakhstan, Alma-Ata and certain other railroads. Thanks to this, in 1984, the number of delays was reduced for freight trains. Only 0.42 percent of the total number of freight trains was held up due to the fault of the electrification system.

[Question] Behind the overall successes stand specific collectives and people. Tell us who has set the tone in the socialist competition of 1984? Please mention the names of the best workers.

[Answer] Of course, such work results were possible due to the use of the socialist competition for carrying out the decisions of the 26th CPSU Congress. The best power supply sections were awarded the challenge Red Banners of the MPS and the Central Committee of the Trade Union for Workers in Railroad Transport and Transport Construction. For example, the Ussuriysk of the Far Eastern Railroad, the Georgiu-Dezh of the Southeastern, the Chelyabinsk of the South Urals, the Moscow-Kursk of the Moscow Railroad, the Nizhneudinsk of the East Siberian and the Omsk of the West Siberian Railroad.

According to the work results, 32 brigades were designated as the best, and 44 workers were given the title of best in profession on the railroad network. One might mention the electricians of the contact grid V. S. Ryabchenko from the Tayga Power Supply Section of the Kemerovo Railroad, Ye. M. Fomenkov from the Goroblagodatskiy Section of the Sverdlovsk Railroad, A. I. Yatskovskiy from the Krivoy Rog Section of the Dnepr Railroad, the electricians of the power grid areas S. A. Dugbrovin from the Vikhrevka Power Supply Section of the East Siberian Railroad and S. M. Fedorov from the Arkhangelsk Section of the Northern Railroad.

Among the electricians the best were G. N. Zaytsev from the Abakan Power Supply Section of the Krasnoyarsk Railroad, A. A. Slyunin from the Vladimir Section of the Gorkiy Railroad. The best power dispatcher was N. P. Kisel'nikov from the

Moscow Power Supply Section of the October Railroad. Our sector possesses highly skilled personnel dedicated to their job and working with creative initiative, ensuring dependable operation of the power supply equipment.

[Question] Petr Mikhaylovich, we have spoken about the successes and accomplishments of the electrification workers. But there are also shortcomings in the work. What are the reasons for these? Where are the ways for overcoming them?

[Answer] Undoubtedly, the achievements of the collectives in the power supply sections could have been higher. On certain railroads and primarily the Sverdlovsk, Gorkiy, Central Asian, Kemerovo, Odessa and South Urals, unfortunately, during these years there has been an increased number of violations for the normal operation of equipment. This has led to increased failures and damage in the system as a whole.

Due to the non-observance of the dates and scope for planned preventive repair as well as poor quality repair on the contact grid on these railroads there have been burnouts of the wires, the breaking of current collectors and destruction of insulators. These have entailed increased disturbances in power supply of the STsB [signal, centralization and block system] equipment, poorer maintenance on the supports for the high-voltage automatic blocking lines, the delayed clearing of brush and trees from the line clearings as well as poor upkeep of the alternate lines.

[Question] Undoubtedly, the carrying out of the tasks is influenced also by the observance of safety rules at the work areas.

[Answer] Yes, there is a direct link between them. Unfortunately, last year in our system the situation with production injuries remained unsatisfactory. Thus, on the Moscow, South Urals, Central Asian and Belorussian Railroads, there was the greatest number of instances of severe injury (from three to six).

On two power supply sections--the Ruzayevka of the Kuybyshev Line and the Orsk of the South Urals Railroad, there were two instances each but the worst record was set by the Zharyk contact grid station of the Tselin Railroad. Here in a single month there were two cases of injury.

As analysis has shown, in these subunits preventive work to prevent injury has been carried out formally. Technical training and indoctrinational work were conducted poorly in the brigades with electricians. The basic reasons for the injuries were violating the technological processes and unsatisfactory organization of the work as well as disregarding of safety procedures.

We view injury not as an accident but rather as a consequence of poor work with the personnel and the inability to manage properly. Where there is injury there also is, as a rule, poor maintenance of the equipment and a low level of production. None of the mentioned collectives can be praised for high production results.

[Question] At present, in many national economic sectors they are employing the bridage form for organizing and encouraging labor. How is this being introduced on the power supply sections?

[Answer] At present, the system has over 700 brigades employing over 6,000 persons. Of course, the brigade form is not being successfully employed everywhere. As experience has shown, the greatest success is achieved by those collectives working under the method of brigade cost accounting.

The brigade form is being successfully employed on the West Siberian, Moscow, Southeastern, Dnepr, Donetsk and other railroads. Here they have correctly understood the role and possibilities of the new form with the result of its introduction being dependable operation of the equipment, a reduced number of infractions of discipline and increased wages for the personnel.

But it must be pointed out that the progressive form of organizing and encouraging labor is being introduced with difficulty on certain railroads and particularly on the Moldavian, Transcaucasian, Alma-Ata, Central Asian, Krasnoyarsk and East Siberian. Possibly the leaders of the services and power sections still do not realize its advantages.

The electrification workers are also involved in the experiment which has been carried out on the Lvov Division. This is based on employing the labor of integrated brigades which employ workers of all the transport services. Here the wages of the integrated brigades are made dependent upon the end result, that is, the number of dispatched cars.

Of course, the main administration has a great deal to do in order to generalize the experience gained in the leading collectives and work out recommendations on employing the principles of cost accounting in the brigades considering the specific features of the sector. In time we will revise the questions of planning as well as the production standards and rules in terms of the new working conditions. These will be aimed at developing greater independence in the brigades both on the job and in wages and will support enterprising and productive maintenance.

[Question] The scientific and technical reequipping of transport is assuming ever greater scope. What innovations will appear in the electrification system in the near future?

[Answer] At present, electrification is being carried out basically using alternating current with a voltage of 25 kilovolts. We are continuing to introduce the AC system of 2x25 kilovolts. By the end of the five-year plan more than 1,200 km of railroad lines will be electrified using this system.

Another important means is converting the equipment to remote control. The present rate of telemechanizing the equipment is more than 1,000 km annually. By the end of 1984 this made it possible to bring the length of the telemechanized lines up to 36,000 km. Simultaneously with this work, the power supply equipment of the major railroad junctions was also converted to remote control.

At the DC substations, the UVKE-1 rectifiers which have served their life are being modernized. They are being replaced by rectifiers with high-class pill rectifiers. This year, industry will begin producing new converters employing more dependable cycle-stable diodes with natural air-cooling designed to replace the presently-produced PVE-5. On the West Siberian, October and certain other

railroads they are introducing 12-phase rectifiers which make it possible to increase the power factor up to 0.97-0.98 and thereby raise the voltage level in the traction grid.

With each passing year, the power supply sections are receiving more and more high-speed VAB-43 switches designed to shut off currents of 4 and 6 kiloamps. The October, Sverdlovsk and North Caucasus Railroads have begun introducing equipment for teleautomatic control of voltage in the DC contact grid.

In order to increase the reliability of the contact grid, extensive use is being made of boltless wire connections made by detonation and thermite welding. The Moscow and Kuybyshev Railroads are also employing argon welding. The argon-welded elements are employed in connecting copper and aluminum wires to disconnectors and dischargers and in installing electric connections. The machine shops of these railroads and power supply sections manufacture simple and dependable assemblies using argon welding and these are then connected on the line to the contact grid by thermite welding.

The industrial plants at present have organized the production of polymer insulators with a developed surface for the AC sections. In order to save scarce copper, the industrial enterprises have developed the production of bimetallic steel-aluminum multistrand wires. The Donetsk and North Caucasus Railroads are conducting experimental work to use an electronic computer at the power dispatcher points.

Transport power engineering will undergo further development in the 12th Five-Year Plan. The basic area for its development will be the construction along the main lines of longitudinal power supply with a voltage of 10 and 35 kilovolts; increasing the reliability of supply for the railroad consumers and primarily the equipment ensuring train safety; improving the equipping of the station territories by employing new, more economical lighting units. Up to the year 2000 we plan to complete the construction of the longitudinal power transmission lines on all lines with the exception of the low-traffic ones.

[Question] What are the scientists working on now?

[Answer] The A-U Scientific Research Institute of Railroad Transport, certain transport VUZes, the Design Bureau for Centralization and Electrification of the MPS and the railroad specialists are developing equipment for automatically metering the wear on the contact wire. They have also proposed recommendations and measures now being carried out to improve the quality of current pick-off by high-powered electric locomotives in pulling high-speed passenger and large freight trains.

Science is confronted with the tasks of developing production of remote control equipment using integrated circuits and employing microprocessor equipment and computers, improving the electronic protection for the feeders of the AC contact grid, and working out new principles for protecting the feeders of the DC contact grid for high loads, as well as diagnostic equipment.

In addition to this, we are developing and industry is producing vacuum switches for 10 and 35 kilovolts as well as complete adjustable units for compensation of

reactive power. All this work is aimed at increasing efficiency in control, reliability of the equipment and greater labor safety.

[Question] Petr Mikhaylovich, in concluding our talk please share with us the plans for the last year of the five-year plan. What results should the electrification workers achieve in order to ensure the increasing amount of shipments?

[Answer] The plans for the last year of the five-year plan are rather taut. First of all, some 1,500 km of line must be converted to electric traction. This is more than the annual quotas of the previous years of the five-year plan. It will not be easy to carry out this task. But the task must be mastered because it should become a good start for ensuring the increasing pace of electrification in the next, 12th Five-Year Plan. There are no longer any disputes over the advantages of electric traction. It is one of the main areas of technical progress and a further strengthening of the material and technical base of transport.

In 1985, the basic amounts of electrification work will be carried out on the Gorkiy, Transbaykal and Baykal-Amur main lines and the pace of electrification will be increased on the Alma-Ata and Central Asian Railroads. On these main lines special attention should be paid to training and providing personnel for the new subunits which will operate the power supply equipment.

Along with the electrification of new lines, great work will be carried out to strengthen and modernize the power supply equipment on the operating lines considering the possibility of operating increased weight trains on them and employing high traffic speeds.

Much remains to be done for improving the quality of maintenance on existing equipment. First of all, it is essential to increase the reliability of equipment on those railroads where last year there was an increased number of failures and damage causing delays in train traffic. Moreover, many railroads intend to improve the power supply equipment with the employment of new high-powered electric locomotives on them and further increase in train weight. The MPS Collegium has set the task of increasing the average weight of a train by 100 tons this year over what was achieved in the previous year.

Difficult tasks also confront the electrification workers because of the increased traffic speed of passenger trains up to 160 km per hour on the Moscow--Kiev and Moscow--Brest lines and then on the sections Moscow--Crimea, Moscow--Caucasus and Moscow--Vladivostok. The workers of our system will not only carry out the improvement and increase the reliability of the equipment but also make their system an exemplary one.

In the concluding year of the five-year plan, all the railroad workers have much to do as we will fulfill not only the quantitative but also the qualitative quotas of the five-year plan. Here particular attention should be focused on increasing labor productivity, reducing costs and the greatest possible savings of electric power and other material resources.

Under these conditions, at each power supply section it is essential to carefully analyze the state of affairs and determine the basic areas for the

forthcoming work. The technical and organizational measures must be strengthened by an improvement in the working and everyday conditions of the workers and by better methods of moral and material incentives for labor.

Generally speaking, a concern for man should be at the center of attention of the enterprise leaders. Here much can be done by the forces of the railroads, the divisions and the power supply sections themselves in showing more initiative and entrepreneurship. An increased aware attitude toward labor and a strengthening of labor and production discipline should become the guarantee for successfully carrying out the quotas of the last year of the five-year plan and the five-year plan as a whole.

10272
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RAIL SYSTEMS

EXPANSION, RECONSTRUCTION OF SAMTREDIA, BATUMI RAIL HUBS

Tbilisi KOMUNISTI in Georgian 7 Dec 84 p 3

[Article by GSSR Distinguished Engineer G. Chikvaidze, chief engineer of the integrated project: "The Batumi Station in Scaffolding"]

[Text] Distinguished by Large Scale

Our country's agriculture and industry have experienced an unprecedented upsurge thanks to the development of heavy industry. The number of producing and consuming organizations has risen, freight turnover has increased dramatically, and it is necessary to supply consumers with large amounts of raw materials and finished products, which is mainly the job of rail transport. The number of freight cars has increased appreciably, and efforts to reduce railcar demurrage have been stepped up.

To speed up traffic is one of railroaders' main concerns, a measure of their work. And reducing railcar demurrage depends directly on speeding up the process of sorting and loading and unloading operations in the yards. Breaking down the trains into groups according to destination and then reforming the returned cars into new trains is a complicated process. Special shunting equipment is necessary because of the large number of destinations.

The rise in freight turnover, and stronger traction, has made present methods of train sorting completely inadequate.

This shunting equipment used to lack a device to regulate the speed of cars on a slope. After one was developed it became possible to set up Krasnyy Liman, the first mechanized gravity yard. Construction of such stations proceeded at a fast pace, but the movement of heavyweight trains running on electricity or diesel traction advanced further. This situation required the classical pattern of track layout, which was indeed developed, a pattern of three yards (receiving, sorting, and dispatching) with tracks laid out sequentially. This is the layout of the Samtredia sorting station now under construction; it will be about 7 kilometers long and "swallow up" the station at Ianeti.

This type of sorting station can break up and reform 80 to 100 trains per day; it requires integrated development. Main tracks to provide independent movement of passenger and through trains have to be built, also overpasses so that routes do not run into each other, a locomotive shed, a traction substation,

a five-story electrical interlocking tower, and a large boiler facility. Switch and signal control has to be centralized, switch yards and main tracks have to be electrified, work has to be completed on the installation of water, sewer, electrical, and other utility lines. Construction of electrical and other utilities as well as residential buildings and auxiliary structures has to be completed. And so on.

All of this is stipulated in the project plan drafted by the Caucasian State Institute for the Planning of Rail Transport and approved in 1979 by the USSR Ministry of Railways, implementation of which was started in 1981 by the Transcaucasian Railroad's Transstroy Trust. The construction work is being done by construction-installation trains No 815 and No 676 (Sh. Malaguradze and Zh. Tskhomaria, chiefs), head repair train No 24 (V. Bokochadze, chief), Mostostroy Construction Detachment (A. Abramidze, chief), the GSSR Construction Ministry, and other contracting organizations. They are doing their best to complete this vital 35-million-ruble project in the current five-year plan.

The builders really have to get busy to build up the sorting yard, complete all the work on the hump web (lay the track clusters, place the car retarders in the correct positions, mechanize the hump operations), build two 60-unit apartment houses, install electrical switch and signal interlocking, lay the utilities, and build the overpass. It is essential to step up client's and author's supervision to monitor improved quality of the work and eliminate any instances of deviation from the plans.

The sorting station being built in Samtredia is of great importance in improving the operation of our country's railroad network, in particular the smooth functioning of our republic's economic and industrial facilities. Construction of the project is of daily concern to higher organs.

Now that so many construction organizations are tackling the project on all fronts, it is essential that client, project-planning, and construction organizations direct their joint efforts toward overfulfilling the 1984 plan in order to ensure that it will be completed for operation by next year.

It Will Be a Batumi Attraction

The first train entered Batumi in 1883. This marked the beginning of exporting Baku oil abroad. A century has passed since then, and the mistakes that were made in building the railroad have become apparent.

Population growth and the increased number of trains have made clear the necessity of building integrated passenger service facilities in a different place and removing railroad traffic from Mayakovskiy, Vazha-Pshavela, Kirov, Baratashvili, Dzhordzhiashvili, and other streets and squares downtown. In addition, the smallness of the freight train receiving and dispatching tracks, the lack of passenger train servicing and waiting facilities as well as automatic switching and signaling, and the discrepancy between track and train lengths have made railroaders' work difficult.

In 1982 a 16-million-ruble construction project was approved which calls for building the terminal and other passenger facilities in a different place, expanding the existing track network, automating switches and signals, building an electrical interlocking tower, a passenger train park and servicing (ranging) track yard, a vehicle overpass, an apartment building, and a separate line to deliver cars to the freight yard and other industrial facilities of the city, electrification of the track network, complete remodeling of the existing traction substation, and so on.

The lack of available land in Batumi posed considerable difficulties to the planners and other organizations concerned. Six project variants were drafted, and finally the most optimal one, which makes it unnecessary to raze between 200 and 400 residential buildings and eliminates passenger train traffic in the city streets, was approved. The land selected for the new terminal is located between the freight station and Mayakovskiy Street. The selected site, on the central oil transfer terminal, is in the center of town and provides good connections to city streets. A modern bus terminal is being built nearby.

The railroad terminal is designed to accommodate 700 passengers. It will be two stories and 15 meters high. In the middle will be an arched space that is clear from top to bottom, housing the passengers' waiting room and the distribution area, with fountains and decorative evergreens. This building will accommodate the ticket windows, also storage lockers, a restaurant, a post office, and a Red Corner.

Artfully blended with the complex will be a five-story building in which two stories will be occupied by an electrical interlocking control tower and one story will be taken up by accommodations for mothers, children, and through passengers. The first and second stories will accommodate administrative and traffic workers' offices, also facilities for baggage handling, connected to the line end by high loading and unloading platforms.

Commencement of the construction of the terminal has been difficult. The soil on the site proved to be water-saturated. A number of scientists and specialists took part in drafting the design for a reliable foundation. Their recommendations were examined by USSR Gosstroy, and work was actually begun on reinforcing the ground by an unusual method, but finally it was decided to make the terminal five stories high, and the foundation was commenced using conventional structures.

Now that the terminal design has been approved and is being implemented, how it turns out will depend largely on the builders' efforts and the quality of their work.

As we have said, the number of cars in passenger trains has been increased along with the rise in passenger flows--it is now 24 instead of 16. Track lengths called for in the plans--650 to 680 meters--correspond to these train lengths.

To accommodate the full expansion of the Batumi rail hub's tracks, it has been decided to relocate the car yard to a chosen site elsewhere, making it possible

to lengthen the station's tracks. This measure ought to be implemented as a separate item, and as quickly as possible.

There are two passenger platforms, but the client, planning, and construction organizations should, through economical expenditure of general allocations, use fund savings to provide for the erection of high platforms, to be covered with an airy roof like the one in Tbilisi's Borzhomi Station, with a passageway built in the middle of the platform.

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RAIL SYSTEMS

PROGRESS IN CONSTRUCTION OF BAKU METRO'S 2ND LINE

Moscow PRAVDA in Russian 18 Feb 85 p 7

[Article by PRAVDA correspondent L. Tairov from Baku: "The Elements Intervened: When Will the Second Stage of the Baku Metro Be Opened?"]

> [Text] "Several years ago the residents of Baku were promised that the second stage of the metro would soon be opened in our city. The designated time has gone by but the line which we are impatiently awaiting is still not open. At the same time, from the local newspapers and radio and TV broadcasts I have learned that the work on building the underground railroad is not over. I would like to know when will the blue expresses be operating on the new route?"
>
> From a letter of L. Samedova, Baku

I showed the letter from the reader to the chief of the Baktonnel'stroy [Baku Tunnel Construction] Administration, A. Abdulragimov.

"Everyone knows that a metro is an involved complex of engineer structures," he said. "But in our city there are particularly difficult hydrogeological conditions. Additional measures must be taken to ensure drilling safety and for building the stations. Wide-scale lowering of water levels, freezing, cementing the ground--all these technically complicated jobs require a great deal of time. Unfortunately, not everything could be envisaged in the design stage and weak points became apparent in the course of construction. Alas, the elements have also had their say. On one of the completed sections, all the built tunnels were flooded as a consequence of the sudden breakthrough of ground water carrying running rock. It took more than 2 years to eliminate the consequences of the flooding. Now we are catching up. I do not fear strong words and would say that the construction workers are working at full speed. According to the results of last year, our collective won first place in the sectorial socialist competition. At present, a complete workfront has been provided for carrying out the basic task of completing the second stage of the Baku Metro during the current year."

I was convinced that this date is completely feasible having visited the construction site and seen how the metro workers are working unstintingly. At

present, they are drilling the finish sections of the two last track tunnels which will lead to the Elmlyar akademiyasy Station and link it with others such as Inshatchylar, XI Krasnaya Armiya and Mikrorayon.

At present, the hottest spot is Shaft No 43 which is located opposite the university. Here are concentrated the forces of the strongest SMU-3 [construction-installation administration]. Its chief, the experienced metro builder, R. Agayev, described how the work is being carried out according to a rotating schedule without a break and that all 17 brigades have concluded a contract for the end result, that is, the fully complete drilling. Every 3 days they sum up the results of the competition and name the winners.

The day that I visited Shaft No 43, the first to complete the increased quota was the collective headed by B. Namazov. This brigade is an integrated one, it carries out the drilling, installs the next ring and the iron finishing. It was pleasant to watch the drillers B. Bagirov, I. Dovudov and T. Babakhanov energetically break up the hard rock with their pneumatic drills. The rock was immediately loaded in cars. The brigade leader of the haulers Sh. Akhmedov was hurrying the men along as the face should be promptly provided with empty cars, tubing and a dry mix. Here also was the chief of the shift V. Timokhin. He supervised the quality of the work carried out. As a result, the brigade in January, instead of the planned 18.5 m, built 22 m of tunnel. An even higher obligation was assumed for Eebruary. In skillfully mastering the new, super-powerful cutting units, the workers and specialists have significantly exceeded the calculated productivity of the equipment.

The stations of the second stage of the metro are now being completed. They are being finished in marble and decorated with mosaic panels. At the XI Krasnaya Armiya Station, for example, these recall episodes from the heroic struggle of the Baku proletariat, the legendary army for establishing Soviet power in Azerbaijan. The escalators, electrical, sanitary-technical, ventilating and communications systems are in the process of being installed. Incidentally, this work is being carried out more slowly than one would like. Here the metro builders need help from the republic ministry of special and installation work, Soyuzmetrospetsstroy [?All-Union Administration for Metro Special Construction] and other subcontracting organizations.

The Baku residents are waiting and hoping that the "blue expresses" in the next few months will begin traveling the new route which will link large residential areas with the city center and its industrial installations.

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RAIL SYSTEMS

DIFFICULTIES IN DNEPROPETROVSK METRO SYSTEM CONSTRUCTION

Moscow GUDOK in Russian 27 Feb 85 p 2

[Article by Ye. Kozlov, correspondent from the newspaper DNEPR VECHERNIY and V. Chernoyvan, correspondent from GUDOK, Dnepropetrovsk: "The Dnepropetrovsk Subway: Difficulties and Problems"]

[Text] Metros are now being built in 14 cities of the nation. But none of the metros under construction runs through such complex engineering and geological conditions as the Dnepropetrovsk. Above are loess-like loams, in the middle is quicksand and down below hard rock. And in time the trains will run through this rock.

In the Caucasus they have also encountered rock but it is soft and surrenders easily to the piledriver. But in Dnepropetrovsk, the only way to remove it is by blasting. Moreover, the rock is of varying composition and cut by fissures. This creates the threat of cave-ins. The roof must be reinforced with anchors. Holes are drilled then cement is forced in and the framing rods are set in place. But even after this it is not safe to tunnel. It is essential to install reinforced concrete tubing which creates an arched ceiling. Again cement must be forced into the space between the tubing and the rock. The digging of the other stations is also being carried out by a new method in metro construction.

The work is technologically complex and it must be carried out by a new organization, the Construction-Installation Train [SMP] No 720 from the Khar'khovmetrostroy [Kharkov Metro Construction] Administration. The collective which has still not been completely formed in the work process must handle ever-increasing amounts of work. And each year the amount of capital investments is growing. Hence there must be more men and more equipment.

In the opinion of the SMP leaders, the manning of the brigades can be carried out without interruption. But it is more difficult with the equipment. In the first place, it is harder to "get" it. For example, the metro builders acquired on the BAM [Baykal-Amur Mainline], the most recent technical innovation, a drilling frame with three manipulators. They built a station section with it and...were then forced to disassemble it as the frame was not within the dimensions of the track tunnel. Secondly, there is not enough equipment. In other cities, as a rule, the metro builders have reserve loading equipment. In Dnepropetrovsk this does not exist. In the event that one of these breaks

down, drilling is halted for 5 and more hours. Thirdly, the equipment, as is known, must be repaired. For the SMP collective the simplest rewinding of an electric motor armature is a very complicated task. This must be carried out in Kharkov. And this means that at best a month must be spent on such seemingly trivial repairs.

Such a situation has arisen because the actually autonomous organization does not have its own repair, preassembly and raw material facilities. At one time, in organizing the SMP, it was planned that these functions would be carried out in part by the Khar'khovmetrostroy Administration and partially by the city's industry. But for the Kharkov workers the SMP-270 was to be a temporary phenomenon. On the basis of this train they subsequently planned to organize a completely new and completely autonomous construction organization Dneprometrostroy [Dnepropetrovsk Metro Construction]. Such a situation could not help but influence the relationships between the main and subordinate organizations.

"At Khar'khovmetrostroy," related the chief of the SMP-270, N. Lobanov, "we are blamed for having started construction on all six stations simultaneously. In actuality this is economically disadvantageous, the expenditures are not being paid off and hence we are suffering losses. It would have been easier to build one or two stations and gradually complete their projects. But such a method would have extended the construction time. We now have created a work front which will give us an opportunity to sharply increase the work pace virtually in all areas."

In this conflict both organizations are pursuing their own ends. The Dnepropetrovsk workers are working for the long run while the Kharkov workers are concerned for the here and now, which produces an immediate effect. There is no concern that such a position could lead subsequently to the complicating of construction on the main site. Certainly it is completely possible that by this time the Dnepropetrovsk organization will already become an independent one.

The Kharkov workers have shown a similar attitude to supply of the construction project. The SMP has received virtually no spare parts for the equipment. There is a lack of conveyor belts, drilling bits and pressure hoses. Because of the hardness of the rock not one of the listed articles holds up for one-half of the prescribed time.

Seemingly, under such conditions, it would be better to rely on local industry, the enterprises of Dnepropetrovsk. But here, unfortunately, the metro builders are sometimes seen as insatiable supplicants. For example, they have twice asked the plant for reinforced concrete bridge elements of the Mintransstroy [Ministry of Transport Construction] and both times without result.

The first time the plant agreed to the proposal of the SMP, it took two molds and began manufacturing the tubing. But now the metro builders regret that they did not leave these molds in Kharkov where they could have been used more productively.

The SMP turned a second time to the same enterprise with a request to produce concrete for it. How important this is for construction can be judged from the

following figures. At present, with work just beginning, about 2,000 m^3 of concrete a year are needed for work on the stations. The ceiling there will be built from site-cast reinforced concrete. Subsequently, the volume of concrete construction will increase by 10-fold but the construction sites are standing idle even now due to its shortage. Of course, the plant knows how vitally important it is for the SMP to resolve this question, but...they satisfy just 30 percent of its need for ready-made concrete.

If the enterprises of their own ministry disregard the needs of the subway builders, what can be said about others? As we see, without its own industrial base the SMP has a difficult time organizing things and developing the work front. When the rear is not moved up, an offensive is threatened with collapse. But this simple truth has been significantly delayed in "arriving."

Now, 3 years after the official start of construction, the only thing that has been done is that a site has been assigned and the administration for production and technical supply has been designed. But it, according to the preliminary estimates, will make its appearance only in 1987. But a plant for reinforced concrete elements will just begin to be built at this time. This is too late!

Unfortunately, this deadline is doubtful too, as no preparatory work is being done and up to the end of the next five-year plan the Dnepropetrovsk organization as before will remain a suppliant.

In order to ease such an unenviable plight, in Dnepropetrovsk, following the experience of other cities, they plan to assign sponsors in the form of large industrial enterprises to each station under construction, that is, to the sections. In 1979, such a decision was already adopted. And in the preparatory stage the sponsors provided effective and actual aid. But with the passage of time, when the underground work commenced, they obviously decided that they could do without them. What a pity! Such a measure would partially improve the organization of construction.

"Understandably, this of course would not be sufficient," said the deputy chief of the SMP-720, V. Yanson. "We realize that Glavtonnel'métrostroy [Main Administration for the Construction of Metro Tunnels] is limited in its material resources and is endeavoring to supply the metro building organizations on the spot in the cities where construction is being carried out. But we are a newly organized organization without either facilities or established professional ties...."

Seemingly it is true that the unripened fruit requires particular care, while the main administration disregards this. They are supplying only 50 percent of the material resources of the present annual plan. In the first half year, for example, the SMP has been given only 404 tons of metal while it needs no more or no less than 1,200 tons. The need for cement for the first quarter is 2,500 tons, but only 1,500 have been provided. Where is the other 1,000 tons to come from?

The metro builders must work with such artifically created difficulties. Will they change in the future? It's dubious. When at one time the deadline was missed

for establishing an industrial facility, now the same thing is threatening the planned dates for completing the first project.

In order to complete it, as is planned, by the end of the 12th Five-Year Plan, next year it is essential to begin building the inclined passages for the future stations. It is a very labor intensive matter. The drilling must be carried out in quicksand which must be frozen. And the building of the inclined passages will take not a year, not 2 but rather an entire 4. During this time it is essential to move individual utilities in the city and most importantly the streetcar and trolley bus routes. They must be closed down. Can one-half of the city remain without transport? It is more probable that the dates for completing the metro will not be met.

In order that this does not happen, the client, the directorate of the metro, must now have a plan for how to organize the preparatory work. But this plan has not yet been started.

Time is passing and along with this the number of unsolved questions is growing. At the same time, last year the SMP-720 instead of 5.6 million rubles carried out construction-installation work by using its own forces of 4.9 million rubles. This year it must use 7.1 million rubles. By the end of the next five-year plan, this figure will approach 30 million rubles. Only a strong, viable organization is capable of handling such amounts of work. Unfortunately, this cannot be said about the current one.

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RAIL SYSTEMS

SVERDLOVSK METRO SYSTEM CONSTRUCTION UPDATE

Moscow GUDOK in Russian 19 Feb 85 p 4

[Article by S. Parfenov from Sverdlovsk: "At the 'Astral Flag Station'"]

[Text] Almost 5 years ago, in August 1980, the first shovel of dirt was removed in Sverdlovsk on the route of the future metro. And now the fenced sites of the stations under construction, piledrivers and the ground-level shaft installations have now become an inseparable and noticeable feature of our industrial city. Already over 1.5 km of tunnels has been built, 17 work faces have been opened and work is underway on all the stations of the nearly completed section of the Ural's first "underground." It is interesting that the residents of Sverdlovsk and the oblast already know what the stations of the Urals metro will be like and can imagine their architecture and artistic appearance.

This has been largely aided by the special competition held in the city for the best design for the six stations of the first section. Participating in it were the collectives of the leading institutes and design organizations of the oblast. First of all they considered the originality of the design decisions, the creative fantasy, a faithfulness to a "Urals theme," the ability to balance the location of the stations in the system of the developing urban development with high quality work and so forth.

As a result of the creative competition, the jury which was headed by the chairman of the Executive Committee of the Sverdlovsk City Soviet P. Shamanov received 47 (!) design proposals. As they say, there was more than enough to choose from. And choose without any hurry, dispassionately, assessing all the work done.

...The interior of the Prospekt Kosmonavtov Station is particularly attractive. It now is frequently called the "astral flag station." Naturally, the architectural and artistic decisions here were largely influenced by the very name of the station as it is growing up on Prospekt Kosmonavtov, one of the liveliest and major transport arteries in the city. This theme was known previously, that is, the conquering of the universe and the relationship of space and man. This provided full scope for fantasy and creativity!

As was pointed out in a conversation by the leader of the design group, the head architect at the Uralgiprotrans [Urals Transport Design] Institute, S. Ziganshin,

in their work they considered that this station would be built by the open method and the passengers would descend by stairway from the street to the platform. In addition, this would be the end station on the first section of the route to be completed. Beyond this would be only the electric car depot. For the numerous guests of the Central Urals, our "astral flag station" in the future will be an unique business card of the subway.

Let us imagine ourselves on the platform of the Prospekt Kosmonavtov Station in several years from now. Two rows of light neutral supports (it is a column-type station) divide the platform room into three light zones. The design excels in high-quality construction and good interior colors and includes an information system with pictograms, diagrams, indicators and so forth. The track walls are from black marble.

The lights which are recessed in the ceiling are reminiscent of an unique "parade of planets." Lightness and a feeling of flight are given the station by the use of anodized metal and by thematic bas reliefs. The theme of the Stone Belt is depicted. Incidentally, its ideological and artistic content can be traced in all the station designs right up to "Ploshchad' 1905 goda," the center of Sverdlovsk.

The Prospekt Kosmonavtov Station is taking shape. The construction workers from the Tunnel Detachment No 34 are hard at work. Recently, two pleasant events occurred here. In the first place, they completed the installation of the prefabricated reinforced concrete elements in the station lobbies and in the platform room. Secondly, the drilling workers from the integrated brigade of B. Khayrutdinov dug the first meters in the left track tunnel which will lead to the Uralmash [Urals Machine Building Association] Ordzhonikidzevskaya Station, and installed the first tubing. Nor are the designers sitting idle with artists and designers and the chiefs of the future station being involved in the work.

The plans for the station have just been approved. But they are not complete. The appearance of the station will continue to be improved since it is well known that there is no limit to perfection.

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RAIL SYSTEMS

BRIEFS

TRANSSIB ELECTRIFICATION PROGRESS--Sverdlovsk--The first freight train with electric traction traversed the newly electrified Vagay-Ishim section. Engineer A. Skorobogatov and his assistant V. Tikhovskiy drove the train. Electric train traffic has begun on the main route of the Transsib, from Sverdlovsk to Nazyvayevskaya. The efforts of the construction organizations are now directed toward the completion of work on the external power supply of traction substations on the Ishim-Nazyvayevskaya section. [By M. Kravchenko] [Text] [Moscow GUDOK in Russian 2 Feb 85 p 1] 12821

TURKESTAN AUTOMATED CAR INSPECTION--Alma-Ata--Construction has been completed at the Turkestan Station of a commercial inspection station for trains. It is one of the most advanced on the railroad network. Supermodern equipment is being installed in it. The commercial inspection station is located at the junction of the Alma-Ata and West Kazakhstan main lines. It is equipped with electronic clearance gates. Industrial television installations are mounted on the observation towers, thereby easing the inspection of passing trains. When necessary, a car with a discovered defect can be "imprinted" on videotape. There is reliable communication with all related services. A minicomputer, installed in the administrative building, is designated for the compilation of schedules and, in the future, for solving technological questions of the station's operation. A railroad school of progressive methods is planned to be held in Turkestan. This was not stimulated only by the interest in the fundamentally new organization of labor. The construction of analogous technical inspection stations is projected near two other main-line junctions--at the Arys and Semipalatinsk Stations. The training of their future personnel will help to better service the electronics. [By G. Isakov] [Text] [Moscow GUDOK in Russian 2 Feb 85 p 1] 12821

YEVLAKH-BELOKANY LINE CONSTRUCTION--Tbilisi--The staff members of the Tbilisi Kavgiprotrans Planning and Surveying Institute have been issued working blueprints for the building of the last phase of the Yevlakh-Belokany railroad line in the Azerbaijan SSR. Its construction is projected to be completed this year. The designers work in close contact with the Azerbaydzhantransstroy [Azerbaijan Transport Construction] workers and the railroad workers of Azerbaijan. The construction of the new line is taking place in a region with mountainous terrain. This demands creative inquiry and optimal solutions from the designers and builders. Their teamwork is producing outstanding results. The freight transport route will be greatly shortened by the entry into service of the new railroad line. This is especially important for this particular region of the republic. After all, many farms producing fruits, vegetables and grain are located here. [By ZARYA VOSTOKA correspondent D. Ivanishvili] [Text] [Moscow GUDOK in Russian 6 Feb 85 p 2] 12821

NOVOSIBIRSK METRO BRIDGE COMPLETED--Novosibirsk (TASS)--The builders of the Novosibirsk Metro have carried out a unique operation. The assembly of a tunnel-bridge over the Ob has been completed. This structure is almost a thousand meters in length. Siberian cold and storms won't be so terrible for the trains in such an enclosed bridge. The installation of heating and ventilation equipment is envisaged for maintaining an optimal temperature. The tunnel was assembled in sections on a special trestle and transferred to riverbed piers by powerful jacks. The start-up group of five stations of the Novosibirsk Metro will accept its first passengers at the end of the year. [Text] [Moscow GUDOK in Russian 12 Feb 85 p 1] 12821

BAM-TRANSSIB LINES CONNECTED--Davan--Passenger trains ran according to a new schedule on the Western section of the BAM. With the opening to traffic of the seven-kilometer Baykal Tunnel, and thanks to the increased quality of preparation and route maintenance on the Lena-Kunerma line, the entire Irkutsk section of the BAM and part of the Buryat section received direct access to the Transsib. Today, passengers wanting to go out to the "wide world" can get to any place in the country without extra bother by the Krasnoyarsk-Kunerma train, which runs year-round. Up until the present time, a train from Krasnoyarsk came out to the Transsib only through the Lena Station, and even then only in the warm period of the year. Since the beginning of this year, the passenger transport line of the Western BAM has been lengthened to 600 kilometers. The Severobaykalsk Division has also begun the operation of suburban commuter trains, the future "elektrichki," which have begun running on the Severobaykalsk-Davan route, thereby solving the problem of delivering the builders and operators of this young main line who live in Severobaykalsk to the worksites. [By I. Krasikov] [Text] [Moscow GUDOK in Russian 12 Feb 85 p 1] 12821

THREE NEW BAM STATIONS--The following stations are now open on the 136-km-long Bestuzhevo-Dipkun line of the Baykal-Amur Railroad, entered into permanent service: Marevaya (code 99580), Unakha (99600) and Dipkun (99610). [Text] [Moscow GUDOK in Russian 7 Feb 85 p 2] 12821

SIBERIAN RAILROADS' BORDER SHIFTED--The Tayshet-Yurty section of the Krasnoyarsk Railroad has been transferred to the East Siberian Railroad in order to improve the transport service of the Biryusinsk Timber Complex and the Yurty Sawmill and Woodworking Combine. The border between these railroads is established at the Yurty Station, which is included in the East Siberian Railroad. The Tayshet Station, which is included in the East Siberian Railroad, is retained as the border between the Abakan Division of the Krasnoyarsk Railroad and the East Siberian Railroad. [Text] [Moscow GUDOK in Russian 7 Feb 85 p 2] 12821

NOYABRSK-PURPE LINE OPERATIONAL--The 184-km-long Noyabrsk-Purpe line of the Sverdlovsk Railroad has been entered into permanent service. The following blockposts are open on it: Peley (code 83730), Topumey siding (83731), Yanik siding (83732), Khanymey (83740), Apaka siding (83741), Parka siding (83750), Khokhorey siding (83751) and Purpe (83760). Freight for the Purpe-Novyy Urengoy line, which is now under construction and being operated temporarily by the Ministry of Transport Construction, will be relayed by the Purpe Station, being the station contiguous to the above line and the general railroad network. [Text] [Moscow GUDOK in Russian 14 Feb 85 p 2] 12821

NEW BAM STATIONS OPENED--The following stations have been opened on the BAM's 132-km-long Tynda-Larba (exclusive) line, which has been entered into permanent service: Kuvykta (code 99560) and Khorogochi (99550). Distance to transit points: from Kuvykta to Kuenga--967 kilometers, to Skovorodino--250; from Khorogochi Station to Kuenga--1,008, to Skovorodino--291 kilometers. [Text] [Moscow GUDOK in Russian 14 Feb 85 p 2] 12821

ALTAY WORKS DESIGNS BOXCAR--(TASS)--A design for a new boxcar has been developed by scientists of the All-Union Scientific Research Institute of Railcar Building, along with engineers of the Altay Railcar Building Works. It has increased body volume (140 cubic meters), doorways adjustable by height and width, polyurethane foam covering on the inner surfaces of the walls and roof, and other features. The first production lot of the new-model cars will be turned out this year. [Text] [Moscow GUDOK in Russian 17 Feb 85 p 1] 12821

SHEMORDAN-KIZNER LINE ELECTRIFIED--Kazan--The electrified Shemordan-Kizner section of the Gorkiy Railroad's Kazan Division has been placed into permanent service. The introduction of electric traction will allow a 1.5- to 2-fold increase in the traffic capacity of the section. The speed of traffic and the weight of freight trains will increase significantly. The driving of the first electric-traction freight train was entrusted to the best crew of the Yudino Locomotive Depot, consisting of engineer I. Gil'fanov and his assistant V. Kazakov. [By V. Yakovlev] [Text] [Moscow GUDOK in Russian 20 Feb 85 p 2] 12821

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MARITIME AND RIVER FLEETS

NEW SERVICE FORMED TO COMBAT MARITIME OIL SPILLS

Moscow IZVESTIYA in Russian 17 Jan 85 p 3

[Interview with Oleg Nikolayevich Khalimonov, chief of the State Maritime Specialized Service for Eliminating Marine Oil Spills, by G. Alimov: "Chief of the Maritime Specialized Service"]

[Text] A State Maritime Specialized Service for Eliminating Marine Oil Spills is being formed in our country. O. N. Khalimonov has been confirmed as its chief.

Oleg Nikolayevich Khalimonov is 48 years old. He graduated from the Odessa Marine Engineering Secondary School and the Foreign Trade Academy. For 10 years he worked on long-range ships. He was the senior associate for marine environmental protection in the International Maritime Organization (IMO) in London. For the past six years he has headed the Environmental Protection Department of the USSR Ministry of the Maritime Fleet.

[Question] Tanker disasters, Oleg Nikolayevich, are becoming almost the "norm." Must we now just reconcile ourselves to this sad fact?

[Answer] No, of course not. The results of accidental oil spills into the ocean are too tragic. Beaches are ruined, and marine flora and fauna are killed. It is no coincidence that several scientists link ocean pollution with significant climatic changes in some countries. For instance, only 100 liters of fuel poured into the ocean forms a film one square km in area. Every year, over 6 million tons of petroleum are poured into the seas and oceans. Tankers contribute to this, as do drilling rigs and underwater pipelines. The operating discharges from ships are also a factor... Of course, this situation can't be tolerated.

[Question] What will your service be like?

[Answer] We are now organizing special subdivisions in Ventspils, Klaipeda, Odessa, Novorossiysk, Batumi, Baku, Murmansk and Nakhodka. As you

can see, we will cover all the basins. We are already preparing our own rescue crews that can respond to extreme situations. We will equip the subdivisions with modern technology and equipment--in short, everything necessary. This will take two to three years.

[Question] Isn't that a long time?

[Answer] No. We need that much time to, as they say, get into full battle preparedness--able to quickly and efficiently respond to an alarm within a few hours.

[Question] What's the main task facing the State Specialized Service?

[Answer] To take all possible measures to prevent petroleum discharges from reaching our shores.

[Question] Will your subdivisions take action no matter who owns the vessel?

[Answer] Of course. However, polluters must take immediate measures to limit the danger, to the extent of their abilities.

[Question] What has been the practical experience with eliminating spills?

[Answer] Worldwide experience has shown that large spills cannot yet, unfortunately, be completely cleaned up. I repeat, yet.

[Question] The problem of cleaning up after disasters is an international one. Will working contacts be established with foreign colleagues?

[Answer] They already exist. Our specialists are constantly participating in international organizations for preventing marine pollution and fighting oil spills.

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MARITIME AND RIVER FLEETS

SHIP REPAIR PROBLEMS FOR FAR EASTERN SHIPPING COMPANY

Moscow VODNYY TRANSPORT in Russian 5 Feb 85 p 2

[Article by V. Sidorochkin, deputy service chief of Far Eastern Shipping Company plants, in the column "Problems and Opinions": "Progress... with Stipulations"]

[Text] In recent years, the capabilities of the Far Eastern Shipping Company's [DVMP] ship-repair enterprises have been sharply re-evaluated. The terms "capacity deficit," "problem" and "disproportion" have become popular.

What happened? What happened to the reserve capacities that only yesterday couldn't find enough work? We must start with a little history in order to answer these questions.

DVMP's plants reached their greatest development in the 8th and 9th five-year plans: the production volume doubled and labor productivity increased by 70 percent. This was a period of great construction in Slavyanka, Nakhodka and Sovgavan'. It was a period of industrialization and reorganization. New equipment and automated control systems were introduced, and brigade forms of labor organization were improved. At the beginning of the 10th Five-Year Plan, the ship-building base consisted of four plants, nine docks, six ship-building slips, mechanized berths and new shops.

At the same time, the Far Eastern fleet was relatively new, and did not need large amounts of resources or time for repair. The repair capacity was implemented ahead of the need. Thus, a load "vacuum" formed, and by the 1970's it reached 10 million rubles. The "underload" was particularly felt in the painting, finishing, fitting and electrical repair shops. And, although the vessels had already lost their former appearance, the shipping company "automatically" cancelled orders for cleaning and painting. They even saw this as a way to save on their repair-time budget.

What did the ship-repair enterprises do under these circumstances? They took the simplest approach with the painters: after three to four years without orders, the painting shops were disbanded, leaving only small

sections. At the Vladivostok Ship-Repair Yard [SRZ] even the section was eliminated. They began to offer their services to other organizations, since there were too few shipowners in the Far East.

What did the sector's scientific organizations do at that time? They "kept up with the times," making plans from previous achievements and basing their work on statistics. An increase in the work-load shortfall was even predicted. Changes occurring in the technical state of the fleet were not taken into account in the calculations, since these were not reflected in the statistics. Therefore, they continued designing new mechanical capacity, underestimating the shortfall in hull- and piping-shop capacity growth.

The mistaken forecasts led to bad decisions, and then the logical denouement occurred. In the late 1970's, we were faced with the fact: ships hulls and piping were badly corroded; hatch and hold covers were covered with difficult-to-remove rust. In 1981 and 1982, the plants received a rush of orders for cleaning and painting, but there weren't any painters left!

The problems were recognized only when the average ship age approached 14 years. In the Far East, the "deficit" was intensified by the climate and the region's serious labor shortage. At the beginning of the 11th Five-Year Plan, for instance, there was a shortfall of 500 specialists in the limiting professions. And, the shops cannot be now be completely staffed without a basic improvement in worker labor. The labor of hull workers, painters, and pipe fitters is physically difficult, and naturally, not popular with young people.

The problem can be solved along two parallel paths: integrated mechanization of difficult manual labor and improvement of production organization. DVMP management is taking specific measures.

In the last three years, the hull-shops' material base has been strengthened. Large hatch-cover repair sections were put into operation at the Slavyansk and Nakhodka SRZ's. A branch of the hull shop of the Nakhodka SRZ has been organized in the settlement of Volchanets. Installation of a shop purchased in the GDR will soon begin at the Sovgavan' SRZ. Twenty presses, guillotine shears capable of handling material up to 6 meters wide and other large equipment have been received. There are also unused reserves. Large hydraulic presses are operating only one shift--utilizing only 25-30 percent of their capacity--because tooling is not ready. This, of course, is unacceptable.

The large equipment in the shops contrasts with the shipside workplaces. Here, sledge hammers, crowbars and wedges are being used. The sector did not finish their task: having invested large sums in the shops, they did not mechanize the labor on the ships. The welding and flame-cutting equipment at all the plants is worn out and outmoded; there's no standard cable and hoses are in very short supply. One of the reasons is

organizational confusion in procuring replacements. We can only order new equipment by writing off old equipment. It is forbidden to work with written-off equipment. But what can you do when the lead time for orders is two years?!

Certain reserves are hidden in improving the structure of shop operations. The workers' general education level is high, versatility is widespread and many workers have related skills. Therefore, some hull work can be transferred to other shops. For example, the repair and manufacture of water-tight doors, hatches, deadlights, cable drums, boat-handling gear, handrails and small foundations can be readily made by fitter sections. Guardrails and other work involved with electrical installations can be done in the electrical shops. The first attempt at such work in DVMP plants showed that redistributing the work not only freed up the hull workers to do basic hull repairs, but also reduced the time lost in other shops due to organizational problems.

The hull workers have suffered great losses due to the serious acetylene shortage. Besides down time, losses are also due to the low labor productivity of using kerosene torches to remove skin plates and cut parts out of plate. There is a three-fold difference in productivity. The reason? A lack of the raw material, calcium carbide. Acetylene tank distribution is determined on the plant-director and chief-plant-engineer level.

But the most serious problem is hull cleaning and painting. Measures are being taken: bottom- and deck-mounted automated devices were developed and implemented; hull cleaning is done at the docks over the entire lifting height of the on-board automatic equipment and automated bilge equipment was modernized.

But there is little mechanized equipment, and it is not efficient. The direction approved by the shipping company to use shot-blast cleaning and cleaning with metallurgical slags (there simply aren't any such slags available!) has not been realized. The problem of replacing wooden timbers with easy-to-assemble framework is being solved slowly.

The prospects for solving the piping problem are much better, mainly because of the ship-repair workers' initiative. The Sovgavan' and Nakhodka workers have built good production capacity. For instance, sections for hot-galvanizing pipe have been started up. Also, problems of protective coatings are being resolved at the Vladivostok and Nakhodka SRZ's. To solve the overall problem, these plants must receive several model TGSV pipe-bending machines for various pipe diameters. The plants must be better equipped with oil-and-gas pipe and boiler tubes, the reserves for which are 40 percent below the needs.

The Far Eastern workers will be able to eliminate these shortcomings and find reserves. However, we need the help of the Ministry of the Maritime Fleet [MMF] to solve the main problems.

For many years, the Far Eastern workers have requested a regional scientific organization for ship repair, and no decision has been made. Today, the SRZ's have available only 25 percent of the scientific-research and project-design work that they require, while there is even less technological support work. And that's not all. Data from the Dal'morniiproyekt Institute [Far Eastern Scientific-Research and Project-Design Institute] show that the volumes of this work have decreased by another 30 percent over the last 3 years. The future of ship repair would be unthinkable without scientific support work.

We must go from words and protocols to direct action in preparing workers in the basic trades. Rather than generalized decisions, a specific targeted program of action is needed.

A basic change is needed in the approach to solving the tasks of scientific-technical progress for the Far East. In this most important matter, we are behind the enterprises of other sectors in Primorye and Khabarovsk Krays. The present developments do not take into account the special conditions in the region; therefore, they cannot be implemented. Primary attention must be given to the integrated mechanization of cleaning and painting hold and hatch covers (over 1.5 million ton-days of repair time are lost in this area every year).

Ship-repair workers also hope that help will be forthcoming in providing modern welding equipment, acetylene and mechanization for hull and pipe operations.

Only the joint efforts of the MMF, the shipping company, and the plants can solve the main task facing shipbuilders: to provide fast, high-quality ship repair.

12595
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MARITIME AND RIVER FLEETS

ADDITIONAL LOCKS TO SPEED VOLGA-BALTIC WATERWAY TRAFFIC

Moscow IZVESTIYA in Russian 30 Jan 85 p 3

[Article by S. Krayukhin: "Volga-Baltic: Today and Tomorrow"]

[Text] Leningrad--The basic materials and a construction design have been developed for additional locks on the Volga-Baltic Waterway. The two locks were designed according to a proposal of the RSFSR Ministry of the River Fleet by three Leningrad institutes--Lengiprorechtrans, Lengidroproyekt and Lengiprotrans.

The chief engineer of the project, N. A. Ovdiyenko, commented, "Over the 20 years which have passed since the basic reconstruction of the Volga-Baltic Waterway, the volume of cargo transported along this most important of transport routes has steadily increased."

"Today it is common to see ships carrying cargo along the Volga-Baltic system to be formed up in a long line in front of one or another lock. Only one boat can be in a lock at a time. Therefore, movement here is carried out in a strictly defined direction. That's why the need has arisen to build a second string of locks on this waterway."

"We have shown the economic expediency of such a project. There is less waste when bread, salt, stone and other bulk cargoes are transported by water than when transported by rail. Construction expenses are returned more quickly in comparison with the development of new rail lines. We should also consider the growing role of the Volga-Baltic Waterway in international, as well as in internal transport. It can be used, for example, for the export of ore from Cherepovets to East and West Germany, and for the export of petroleum products from the Volga regions to Finland, etc. Construction has been started on the second lock of the Sheksna Hydrosystem."

12877
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MARITIME AND RIVER FLEETS

DESIGN OF SHALLOW-DRAFT RIVER TUG

Moscow RECHNOY TRANSPORT in Russian No 11, Nov 84 pp 31-33

[Article by Yu. Babushkin, V. Volostnykh and V. Zhukov of the Novosibirsk Branch of the Central Technical Design Bureau, RSFSR Ministry of the River Fleet: "Vessels for Shallow Rivers"]

[Text] In view of the fact that new deposits and future geological prospecting regions are situated ever farther not only from roads and railroads, but from major rivers as well, the complete and timely shipment of cargo for the West Siberian oil and gas complex cannot be assured without assimilating shallow rivers into transport.

Due to the shortage of shallow-draft vessels, however, even now the river shipping companies are far from satisfying the demand for cargo delivery along shallow rivers. Their fulfillment of the plan requirements for cargo shipment along these rivers does not indicate the full satisfaction of transport demands, since their volumes are established on the basis of the carrying capacity of the shallow-draft vessels at the disposal of the shipping company.

Cargos not transported by waterways are delivered by motor vehicles on "winter roads" and by air. With these the expenditure of state funds is several times greater.

For the timely delivery of equipment, materials and fuel, enterprises and organizations must widely use the support fleet. It is not surprising that the light-tonnage fleet belonging to the various ministries and departments of the Ob-Irtysh basin is considerably larger than that of the shipping companies of the Ministry of the River Fleet. Departmental vessels operate on rivers where guaranteed depths are not maintained and navigational signals are lacking; that is, in conditions that do not assure their safe passage and efficient use. Therefore, the transfer of cargo transport along shallow rivers to the shipping companies' transport fleet is a major problem which is, however, being solved extremely slowly.

For the time being, the majority of cargo is being delivered to regions lying near shallow rivers in large-tonnage vessels during the spring high water; that is, by means of expeditionary shipment, which is the only form of navigation on many rivers.

Not detracting from the significance of expeditionary shipment, it must be noted that often the large-tonnage vessels dispatched to shallow rivers are not fully loaded and consequently are used inefficiently, and the one-time shipment leads to the overloading of ports and the necessity of storing and preserving cargos. All of this negatively affects the economic indicators.

Not more than 30 percent of cargos on shallow rivers is transported by small vessels in the Ob-Irtysh basin. One third of these waterways are not used at all. This is due to a shortage of shallow-draft vessels and the low efficiency of existing vessels (RECHNOY TRANSPORT No 12, 1983).

Cargo ships with a draft of 1-1.2 meters and tugs with a draft of up to 0.7 meters, operating with corresponding shallow-draft barges, were created earlier and are now still widely used. These vessels are now physically and conceptually obsolete. In addition, the great demand for cargo transport in exceedingly shallow waterways constantly demands the creation of qualitatively new specialized vessels, capable of transporting bulk cargos in extremely shallow water conditions. In spite of this, the task of creating such vessels has not been presented to planning and design organizations. What is more, judging by the characteristics of cargo ships, tugs and barges for shallow rivers, stipulated by the standard-model scheme of the Ministry of the River Fleet affirmed in 1983, the development of navigation on waterways with a depth of less than 0.8-1 meters is not proposed, and nothing will be created in place of the existing minimum-draft vessels of the shipping companies. The new scheme does not take into account the possibility and the necessity of designing small vessels on the basis of new technical solutions with parameters that correspond to the traveling conditions of every basin.

The Novosibirsk Branch of the Central Technical Design Bureau, on its own initiative, began to carry out work in this direction. As a result of this work, technical solutions allowing the creation of water-displacing vessels with exceedingly shallow drafts (to 0.4 meters) were found. The conditions which must be fulfilled to assure their efficient operation were also determined. The maximum vessel cargo capacity at shallow draft can be obtained thanks to the fullest use of the channel's dimensions at limiting sections; that is, by increasing the main measurements in the plan to extreme values. Such an increase in the main measurements can be achieved by using bending devices in combination with bow rudders if needed. To confirm the efficiency of such a solution, in accordance with the Instruction on Standardization of Vessel and Push-Tow Dimensions, the maximum possible length L and width B of various types of single-file tows were calculated for which passage is possible through a limiting section with a width of 40 meters and a radius of curvature of 100 meters (Table 1). The area of the bow rudders in the calculation was taken as equal to 2.5 percent of the area of a cross-section of the vessel's hull along the diametrical buttock lines.

Table 1:

Type of Tow	L meters	B meters	L x B sq. meters	%
Bending with bow rudders	72	18.4	1325	156
Without rudders	63	17.6	1109	131
Rigid with bow rudders	59	16.7	985	116
Without rudders	53	16	848	100

For a given draft the product L x B determines the displacement and, consequently, the cargo capacity of the vessel as well. The mass of the bending devices, bow rudders, drives and hull reinforcement somewhat lowers the coefficient of displacement utilization. Taking these factors into account, however, the transition to bending vessels is an efficient way to increase their cargo capacity.

Thus, the creation of bending cargo ships and tows should be regarded as a principal direction in the development of shallow-river transport vessels. Unfortunately, the new scheme of standard river vessels does not take this into account: all shallow-draft tugs will be built without bending devices, and barges, without bow rudders. It is significant that series construction of the only cargo ship provided for by the scheme, the R143 project, has been indefinitely postponed, although the lead vessel gave a favorable account of itself in operation.

Another factor which should be taken into account without fail when designing vessels is the necessity of protecting the banks and riverbed from erosion.

Scientifically valid data on the influence on a river channel of a moving vessel that occupies a considerable portion of the cross-sectional area of the river is lacking. For the study a top speed of vessels and tows was adopted which was not to exceed a Froude number value of 0.1; that is, a speed at which there would not yet be significant wave formation. For a tow of 50 meters, that speed is equal to 8 km per hour, and for one 100 meters long, 11 km per hour.

As shown by analysis, the most efficient propulsion for shallow-draft vessels is a stern paddle wheel, which has a considerable hydraulic profile and creates low throw-back flow speeds.

Comparative thrust calculations confirmed the expediency of a stern paddle wheel with non-feathering blades for low-speed vessels having a considerable hull width with shallow draft.

At drafts to 0.6 meters, the paddle wheel, in comparison with water-jet propulsion, has a considerably higher efficiency factor. Besides that, vessels with stern paddle wheels, in contrast to those with water-jets, are not subject to indraft of dirt, and loss of propulsive capabilities, in extremely shallow water.

It is essential that ships operating in shallow rivers be equipped with devices which allow them to free themselves from shallows, as well as cargo-handling capabilities for unloading at an unequipped bank.

Guided by the enumerated features, the Novosibirsk Branch of the Central Technical Design Bureau developed a technical proposal "A Group of Shallow-Draft Vessels for the Transport of Bulk Cargos on Rivers With Depths of no Less Than 0.5 Meters." A channel of 20 meters across with a radius of curvature not greater than 50 meters was taken as a reference.

In working out the technical proposal, two versions of the organization of transport on shallow rivers during low water were considered: the operation of vessels only within the confines of small rivers with the transfer of cargo at their rivermouths, and the through-shipment of cargos in shallow-draft vessels along main waterways and shallow rivers.

A comparison of the versions presented showed that the transfer of cargos considerably increases their delivery expense. The technical proposal was therefore oriented toward the through-shipment of bulk cargos on specialized shallow-draft flat barges with low cargo capacity (70-120 tons), which along main waterways must be in push-tows, and at the mouths of shallow rivers are transferred to shallow-draft tugs.

The main measurements of the flat barge were selected taking into account the maximum use of the channel dimensions, and the main measurements and power of the tug, on the basis of allowable traffic conditions and the assurance of a draft of 0.4 meters while observing all requirements regarding the safety of sailing, industrial safety measures, and standard health and living conditions for the crews. As a result of the comparison of various types of propulsion for a tug with a draft of 0.4 meters, a radial stern paddle wheel was adopted. This solution was dictated by the need to improve reliability and to provide for the greatest propulsion efficiency factor value owing to its hydraulic profile.

To increase reliability and serviceability, a simple radial paddle wheel is recommended, with blades secured at an angle to a generating cylinder along two directions converging to the center-line plane.

Such a blade arrangement improves the water flow to the wheel. The results of scale-model tests carried out at the Novosibirsk Institute of Water Transport Engineers confirmed the efficiency of the solution that was adopted. To increase reliability, the blades were made with composites: the exterior edge (to 1/3 of the width) is from rubber-cord fabric, and the remaining portion of the blade is steel. The elastic portion provides for high reliability of the wheel when it strikes floating objects. The wheel, and the rudder assembly installed behind it, are protected by special bracket-stabilizers from side blows when bumping against banks or shallows.

The transfer of power from the main engine to the paddle shaft is accomplished by a cylindrical two-step step-down reduction gear TsDND-400 with a gear ratio of 1:12.7 and an efficiency factor equal to 97 percent, connected to the paddle shaft by rods fastened by hinge to the cranks of the paddle and intermediate shafts. The reduction gear is joined with the flange of a reverse-reduction gear of a ZD6 diesel engine (110 kilowatts power) by a flexible coupling.

The main measurements of the vessel were established as a result of the development of the technical proposal (Table 2).

Table 2:

Dimensions	Tug	Barge
Design length,meters	18	29
Overall length, "	23.6	30.3
Design width, "	8	9
Height of side, "	1.1	1.2
Overall height, "	6.1	-
Draft empty, "	-	0.12
Draft with cargo, "	0.4	0.4
Displacement, tons		
where T = 0.4 meters	47.2	100
where T = 0.6 "		150
Cargo deck area, square meters		60

The paddle wheel, two meters in diameter with a blade length of seven meters, revolves at a frequency of 46.4^{-1} minutes. The calculated thrust at a push speed of 8 km per hour will be 12.3 kilonewtons.

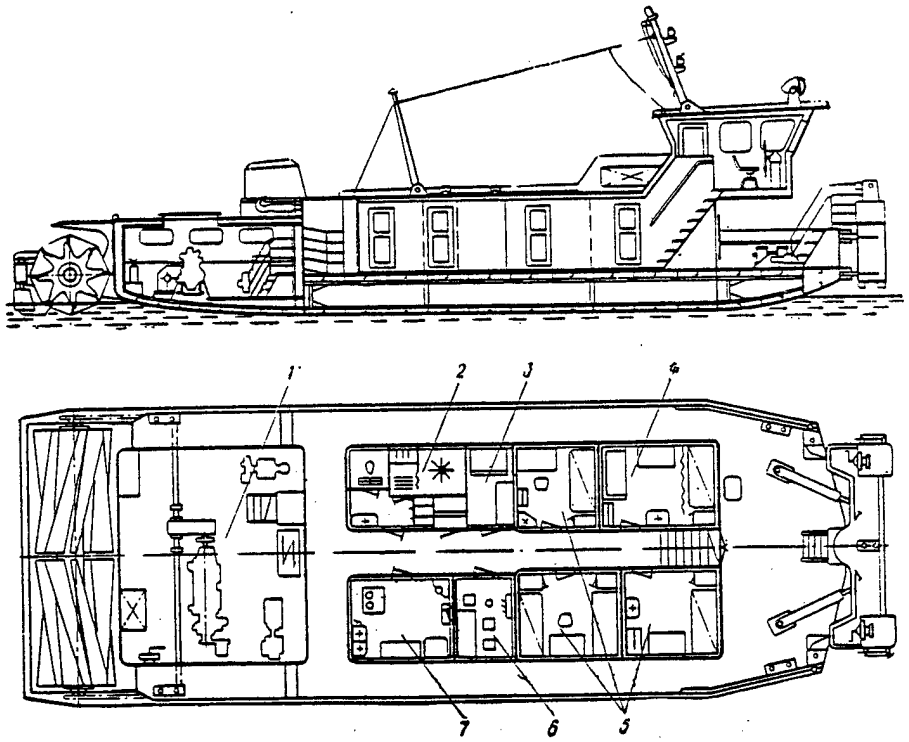
A bending device with a turning frame and hydraulic drive with 4.5 kilowatts power is envisaged on the tug, which will provide for the bending of the tow to 25° to the side for 40 seconds.

The tug will be equipped with a device for pulling the tow from shallows, developing a thrust of 73.5 kilonewtons and providing for a speed of 0.08 meters per second.

Installed behind the paddle wheel is envisaged a rudder mechanism of four balanced rudders with a total area of 0.6 square meters, which are powered by a manual steering engine and a tiller rope. When underway with barges, control is accomplished by way of bending the tow.

The vessel is equipped with living and working quarters for a crew of five. It has a five-day fuel supply endurance. For a tow-coupling device, a tension reel is envisaged on the barge, and for an anchor, anchoring piles. The allowable deck load is equal to 2.4 tons per square meter. Both vessels will be RSFSR River Registry class "R".

The hull line extremities of the tug are of sled form with transom bow and stern.



Shallow-Draft Tug General Layout: 1--engine compartment; 2--shower 3--storeroom; 4--engineer-captain's cabin; 5--crew's quarters; 6--mess; 7--galley.

The design speed of a tow with a tug and two barges of 0.4 meters draft in deep water is 9.6 kilometers per hour, and with one barge is 10.8 kilometers per hour.

The device for the independent extraction from shallows is combined with the bending device and is mounted on its frame. Collapsible rods are used to move the vessel when being extracted from shallows, which interact with the ground when the frame of the bending device is turning.

The shallow draft of the tug was achieved by widening the hull (which was also essential to ensure the largest possible hydraulic profile of the propulsion unit) and the use of corrugated sheet steel for the superstructure and deckhouses.

The increase in the hull width allowed three single-berth and one double-berth cabins and health and living compartments to be accomodated on the vessel.

The tug is equipped with a closed sanitary discharge system with tanks and a collection system for water under the flooring.

The anti-noise measures include the shock-mounting and cowling of the main engine and diesel generator, and also the soundproofing of the living quarters. However, due to the small overall dimensions of the vessel, it is impossible to provide fully normalized noise levels in the living quarters installed in the first group of vessels. They will nevertheless be lower than on other shallow-draft river vessels.

The restricted dimension of shallow-river channels, as a rule, eliminates tow movements at night, which creates a valuable resting environment for the crew.

A distinguishing feature of the shallow-draft barge design is the use of only one fourth of the total deck area for the placement of cargo. Such a solution allowed considerable lightening of the hull, and assured that the requirements of the RSFSR River Registry are observed.

The development of a technical proposal has also been completed for a bending tow ship with paddle-wheel propulsion and a cargo crane with a lifting capacity of 3.2 tons for transporting cargos requiring cover. The cargo capacity is 300 tons at a draft of 0.6 meters, and 450 tons at a draft of 0.8 meters. The necessary design width of the channel in deep water is equal to 45 meters with a radius of curvature of 80 meters.

The work that was carried out confirmed the technical possibility of creating an efficient shallow-draft fleet, the construction of which would allow cargo transport along rivers with depths of only 0.5 to 0.6 meters, and its delivery to distant regions for geologists, oil, gas and construction workers, thereby considerably reducing transportation expenditures.

Based on reports received from enterprises in the North Tyumen region, economic calculations were carried out which demonstrated that the transport of bulk cargos by the proposed shallow-draft vessels would provide an annual savings of 17.4 million rubles. This is achieved by transferring all cargo which is currently delivered by motorized transport on "winter roads" to shallow riverways.

The Yenisey, Ob-Irtysh and Lena United River Shipping Companies endorsed the work that was carried out and expressed the readiness to build the lead vessels. The absence of the latter in the scheme of standard vessels, however, prevents the realization of the work performed and its verification on lead models. In view of the great economic significance of the problem of transport on shallow rivers in the Siberian river basins, the proposals of the Novosibirsk Branch of the Central Technical Design Bureau deserve careful consideration at the ministry.

12821
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MARITIME AND RIVER FLEETS

FEATURES OF NEW 'AL'BATROS' SEA-GOING HYDROFOIL

Moscow SOVETSKAYA ROSSIYA in Russian 13 Feb 85 p 6

[Unsigned article reporting comments by Nikolay Ivanovich Shinkarev, chief of the Transport Department of the USSR State Committee for Science and Technology: "Riding the 'Al'batros' in Comfort"]

> [Text] Yesterday, the Collegium of the USSR State Committee for Science and Technology [GKNT] discussed the question "Progress on Developing New Hydrofoil Passenger Vessels." We asked Nikolay Ivanovich Shinkarev, chief of the Transport Department of GKNT to talk about the changes that passengers on the country's maritime and river routes can expect.

The residents of coastal cities and villages have long valued the advantages of the "Raketa" and "Meteor" river vessels and the "Kometa" sea-going vessels.

This year, tests will begin of a new river hydrofoil, the "Lastochka." It will accomodate 70 passengers comfortably. Because of special design features, the engine noise will be practically inaudible in the passenger cabin. The vessel can attain a speed of 90 km per hour. This will allow it to used on longer routes.

In 1985, "Al'batros" hydrofoils will be introduced on maritime routes. It will be much more seaworthy than the "Kometa": now hydrofoils will be able to safely navigate in seas up to level five on the roughness scale. Shipbuilders and designers were concerned with passenger comfort, and provided the "Al'batros" with air conditioning. As with the "Lastochka," the noise and vibration level in the cabin have been minimized. The vessel's design and operating characteristics are in full conformance with environmental-protection requirements. The new vessel will accomodate 120 passengers and travel at a speed maritime passengers will find astounding: 35 knots (over 60 km per hour).

Passengers and sailors are waiting to meet this new generation of hydrofoils. The designers have already passed this stage. They are now designing "winged vessels"--more comfortable, faster and more spacious--that will ply the waters in the next five-year plan.

12595
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MARITIME AND RIVER FLEETS

AIR CUSHION DEVICE BREAKS UP ICE ON SHALLOW RIVERS

Moscow SOVETSKAYA ROSSIYA in Russian 6 Feb 85 p 6

[Article by A. Iudin: "Icebreaker on an Air Cushion"]

[Text] Gorkiy--There was a sudden rumbling noise. Having destroyed the silence, it steadily increased, as if the turbines of a jet had been started up...

A cable has been stretched, like at a ferry crossing, from one side of the Gorkiy Reservoir to the other. A strange-looking structure is attached to it; a metallic platform topped by tanks, some kind of machinery and a large deck house. Suddenly, black rubber bags begin to inflate around the platform. Like the powerful bodies of some secret creatures, they tighten and lift the platform up. Slowly rocking back and forth, the platform rises up before your eyes.

The unusual structure, which is called an ice-breaking attachment on an air cushion, begins to move out onto the edge of the ice. Behind it appears a choppy waterway, black among the ice. The attachment, supported by the cushion, forces out water from under the ice, which, hanging in the air, breaks up under its own weight.

The battle with ice has its own history. Two hundred years ago peculiar ice-breaking sleighs were adapted on the canals of Holland and in Russia's northern rivers. These sleighs were filled with stones and hauled from the shore by horses. They would stave in the ice due to their weight and the special design of the sleigh's body. Time passed and beautiful icebreakers appeared. They crash through the ice to form a path and lead a caravan of vessels. The mighty icebreaker, however, cannot work in shallow waters.

"But it is within the limits of this attachment," noted V. A. Zuyev, the head of the shipbuilding department of the Gorkiy Polytechnical Institute and one of the creators of the icebreaking attachment. "For several years our department has studied the theoretical problems of breaking ice by means of air-cushioned vessels. We carried out model tests. We were then the first in the country to be asked to work out and test an icebreaking attachment."

"The tests showed that an icebreaking tug with the attachment traveled about 3 km an hour in 70-cm ice. Without the attachment it was able to travel about 300 meters an hour."

...The hum still sounded over the white fields of the Gorkiy Reservoir. Fishermen unwillingly leave their ice-holes to see what's going on. They have never seen anything like it before.

A strange structure, not having a visible bow, stem or bulky body plows across the ice fields right before their eyes. After traveling in a straight course, the tug "Ozernyy" with the attachment makes a turn of 185° in 35 minutes. This is a good result. Its radius is 170 meters, almost as good as in clean water. This too is a big plus.

The captain of the "Ozernyy", V. S. Govorkov, is an experienced practical worker. He is happy with the results. The voyage is over, but the work continues. A scientific analysis of the information received during the trials must be made. Yu. A. Sandakov was also invited to the trials. Sandakov is a docent at the Gorkiy Institute of Water Transport Engineers. He is also the academic secretary in the coordinating council on problems of lengthening navigation in internal waterways of the RSFSR Ministry of the River Fleet. Here is his opinion: "We have seen the effect of the principle of breaking ice by means of an air cushion vessel. The attachment, however, still has a lot of design deficiencies. But they can be eliminated. We must obtain a great deal of data from this experimental model. Only after we work through these data will we be able to speak of designing a new model and applying it."

12877
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MARITIME AND RIVER FLEETS

ARCTIC AIR CUSHION DEVICES LACK NEEDED SUPPORT FACILITIES

Moscow VODNYY TRANSPORT in Russian 14 Feb 85 p 3

[Article by V. Konyukhov, technical expert attached to the Northern (Maritime) Shipping Company, and V. Khmurin, junior scientific associate at the Northern Division of the Central Scientific Research Institute of the Maritime Fleet: "Amphibian Run Aground"]

[Text] The development of areas in the search for oil and natural gas in the 70's and 80's and the subsequent mining of the Bol'shezemel'naya [sic] Tundra required that construction cargoes and technical materials be delivered here in quantities never seen before. It became more and more difficult to transfer such a flow of cargo to the shore by means of traditional types of transport. In the summer of 1979, the first air cushion platform appeared in the Northern (Maritime) Shipping Company. It was built at the Layskiy Ship Repair Yard. Hovering over the water as over the ground, the platform in concert with an amphibious ATV surmounted the surf of the sea.

In this past navigation season, about 8,000 tons of cargo have been transported by amphibious floating devices. Moreover, this cargo was the most difficult to transport--the hovering platform worked where unloading onto the shore by normal means was particularly difficult. Geologists in Dresvyanka have decided to try using the platform for loading onto landfast ice, so that later in the season, the cargo can be transported to the storehouse. In addition, experimental operation has shown that the expense of operating an amphibious floating device is 1.8 times less than operating with traditional pontoons and self-propelled barges. It is possible to see more and more often the proudly hovering platform in the mouth of the Dvina. It is as if it unhurriedly flies through the foaming breakers and rainbows of water droplets.

But where is it flying? Naturally, home to base. What is its home like? A piece of sandy ground on Moseyev Island, disorderly rows of little houses and nearby the base office. There isn't a meter of an equipped mooring, a slip, or a warm shed (nor a cold one either!). It's not surprising that such a base is able to complete only one-fourth of all its repair work. The rest is done by other shipping company enterprises. A base is needed. Without it, it will very soon simply be impossible to support the operational readiness of the floating craft; even now, it is not a simple matter. Out of seven platforms, only three were then working. The Layskiy Ship Repair Yard was able with difficulty to restore to service two platforms. One went to sea in the beginning of July, another

in the beginning of August, a third at the end of August. Now about two percent of the base's resources are dedicated to the maintenance facilities for the floating craft. The situation, alas, is familiar: the fleet is growing--the technical maintenance bases are not kept up. Falling behind, it's as if the shore borrows from the fleet. It's the same with the amphibious floating craft.

And it looks as if that is how it will be in the future. In the 12th Five-Year Plan, the Ministry of the Maritime Fleet does not foresee the development of the fleet's technical maintenance bases.

The one-sided development of means of transport without proper support facilities is more dangerous, because the current means, as we have mentioned, are far from perfected. Not one of the platforms is fit to be started into series production, say the specialists. The same can be said for the imported air cushion platforms. In fact, such a project would result in stopping at the second vessel to eliminate the design deficiencies which had been discovered.

Today's series of weak technical judgements places a heavy load on tomorrow's maintenance bases. How much time and equipment will be needed to eliminate deficiencies, and how will this affect the work of the fleet? Who is to calculate this? For this reason, it is necessary without delay to charge the Leningrad Central Planning and Design Bureau and specialists of the Northern and Murmansk Shipping Companies with the improvement of the existing platform models.

In short, there will be many difficulties in refining "flying over the waves," and they will not be overcome working in the old way. By the way, good experience for this can be found, for example, with the Arkhangelsk machinebuilders, who established as needed scientific production associations. They are convinced that a cost-accounting subdivision working on the principle of the scientific production association can successfully manage the creation of modified amphibious vessels. In fact, the situation in which the design bureau is in Leningrad, the factory is in Arkhangelsk, the trial area is in the Barents Sea, and all are functionally independent, bodes no good.

The ministry should be able to devise a system of measures to assist the shipping companies, which are mastering and bringing about new technology. Such a measure could be in the form of a special funding for the development of amphibious floating craft or in correcting the plan of revenue for the use of new technology. It stands to reason that such a measure could be provisional, until the new technology is perfected.

At the floating craft technical maintenance base, which has been won back from various subdivisions of the shipping company but still not won back from the sands, an unknowing observer is struck by the abundance of timber-felling equipment. Part of it has already been converted into loaders, although they are rather low-powered. But even for this equipment the sailors are thankful. How long will they have to create, for example, poor loaders from good skidding tractors? Wouldn't it be better to build loaders with sufficient power?

As a matter of fact, the problem of complex loading mechanization at roadstead points exists wherever there are roadstead points. Decisions to abolish the heavy manual labor in roadstead unloading have been made several times at the level of interested shipping companies and the Ministry of the Maritime Fleet.

It has done little to improve the situation, although the question is not a simple one. A great variety of cargo goes to the North. This includes containers, packets and pipes. Therefore, a wide variety of cargo transfer devices are required on the vessels as well as on shore.

What is needed is the coordinated effort of sailors, clients and machinebuilders. It goes without saying that when amphibious technology takes cargo from the ship to the doors of the warehouse, this greatly helps the seamen's clients. The whole trouble is that there is practically no cargo transfer equipment and no one is hurrying to devise any. Why hold onto a loader if it is able to work only two months out of the year?

What will happen if the machinebuilders do not create a number of consistent programs for developing the specialized machinery needed to load cargo in roadstead areas? Then there would be no prospects for getting such equipment. We think that the Berdyansk Experimental Hoisting and Transport Equipment Plant could be expediently used for this. Also within the system of the ministry are specialized design bureaus which could, finally, come up with the serial models of mechanized devices needed in the Arctic.

FROM THE EDITORIAL STAFF: Of course, the authors of this article have not nearly exhausted the problems of developing amphibious floating craft. It is very possible that the air cushion vessel will become the optimal means of transporting cargo from a ship to a client's warehouse. The new air cushion vessel invented by A. Azovtsev, docent at the Far East Higher Maritime Engineering School, achieved good results in testing: it requires seven times less energy than existing hovering platforms, it has greater speed and better seakeeping characteristics. It cannot be ruled out that with the appearance of this air cushion vessel, many problems, discussed by the authors of this article, will be solved. Experimental trials of this air cushion vessel are scheduled for April. Unfortunately, it took 20 years for the talented inventor to get to these trials. This much time was needed by the Far East Shipping Company and the ministry to help the inventor and to schedule (it is thought that this will be the final trial) a testing period. VODNYY TRANSPORT intends to relate to the reader the results of these tests and possible prospective applications of the air cushion vessel. The editorial staff also hopes that the Ministry of the Maritime Fleet's Scientific and Technical Council's recent meeting in Arkhangelsk, which was devoted to the problems of operating amphibious floating craft, will hasten the solution of problems touched upon in this article.

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MARITIME AND RIVER FLEETS

BRIEFS

'BIRYUZA' SHIP TRAFFIC CONTROL SYSTEM--Leningrad--There is a flickering point on the radar screen. It signifies a rapidly approaching vessel. Piercing signals are sounding. The training ship Professor Ukhov of the Baltic Shipping Company, conducting a voyage around Europe, is in the English Channel, where many ships of various countries pass. But the captain and crew are calm: the ship is equipped with an automated ship collision warning system. The "Biryuza" combined system was developed recently in the Central Scientific Research Institute of the Maritime Fleet. The training ship, conducting official tests, switched over to automatic control mode and even executed turns under the control of the automatic instruments. The "Biryuza," equipped with a satellite navigation system receiver, a radiolog and other instruments, continuously gave the navigators reports on the vessel's precise location, speed of movement and other parameters. These data (digital) were displayed on an electronic display screen and recorded on a teleprinter. The system even kept the vessel on the assigned heading with great precision in a seven-degree wave. The ship Professor Ukhov docked at the Leningrad maritime port. "The tests were successful," reports Candidate of Technical Sciences A. Yaroshenkov, a department head at the Central Scientific Research Institute of the Maritime Fleet. "The 'Biryuza' system will go into series production." [By S. Krayukhin] [Text] [Moscow NEDELYA in Russian No 6, 4-10 Feb 85 p 4] 12821

NEW SUCTION DREDGING DEVICE--Zaporozhye--The workers of the Zaporozhye Shipbuilding and Repair Yard have produced a new type of hydraulic loader. It can extract sand from a depth of 20 meters and simultaneously load two barges. It has a capacity of 2,800 cubic meters of sand per hour. The innovation was passed on to the Dnepropetrovsk river workers. [By K. Babich] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 15 Feb 85 p 2] 12821

NEW TANKER 'MAURICE BISHOP'--(TASS)--The ocean-going tanker Maurice Bishop left yesterday on its first voyage. It can simultaneously transport both petroleum products and chemical cargos. The ship joined the complement of the Latvian Shipping Company. [Text] [Moscow VODNYY TRANSPORT in Russian 2 Mar 85 p 1] 12821

CONTAINER SHIP FOR SAKHALIN--The ship Professor Bubnov, one of a new series of container/packet ships with strengthened ice reinforcement, will soon supplement the fleet of the Sakhalin Shipping Company. Two analogous vessels, the Vitaliy D'yakonov and the Akademik Pozdyunin, have given good account of themselves in the difficult sailing conditions of the Far East. They are operating successfully in the Arctic, transferring cargo up the Kolyma from the river's mouth, and to the Kurils, the north of Sakhalin and the ports of the Sea of Okhotsk. The distance from Vanino to Magadan is being significantly shortened with their help, since these shallow-draft vessels with an uncomplicated, but efficient, longitudinal trimming system go to the northern port directly, through the Amur Estuary, rather than by the roundabout way around Sakhalin. [Information prepared by SAKHALINSKIY MORYAK editor N. Afanas'yev] [Text] [Moscow VODNYY TRANSPORT in Russian 21 Feb 85 p 3] 12821

TANKER 'KAPITAN MAKATSARIYA' DETAILED--(GRUZINFORM)--The Kapitan Makatsariya is a new tanker of the Georgian Shipping Company. The vessel was met ceremoniously in Batumi, its port of registry. The new vessel is the fourth in a series of tankers built in Yugoslavia per order of the Soviet Union. Its length is 151.3 meters, its beam is 22.4 meters and its cargo capacity is approximately 15,000 tons. It is intended for the transport of various liquid cargos. However, wheat, rye, barley and other bulk cargos can also be transported in the tanks. The power of the main engine in 7,200 horsepower, which allows the tanker to reach a speed of 15.6 knots in ballast and 14.6 knots with cargo. The ship is equipped in accordance with the latest international conventions and has the highest level of automation. Modern domestic and foreign electronic navigational instruments assist the sailors in guiding the vessel. All 16 tanks, with a total capacity of 20,000 cubic meters, have autonomous cargo pumps with remote-controlled loading. [Excerpt] [Tbilisi ZARYA VOSTOKA in Russian 25 Feb 85 p 4] 12821

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PORTS AND TRANSSHIPMENT CENTERS

LENINGRAD PORT IMPROVES GRAIN TRANSSHIPMENT RATE

Moscow VODNYY TRANSPORT in Russian 14 Feb 85 p 1

[Article by O. Rogozin: "Collective Responsibility"]

[Text] As a result of establishing unified production process shifts and switching the transshipment complex to cost accounting, high output in the transshipment of loose cargo has been achieved at the Leningrad Maritime Commercial Port.

As of January 1985, four integral production process shifts have been established at the grain transshipment complex. Each of them includes a brigade of dockers, shift stevedores and warehouse chiefs, port and railway tackle handlers, switching controllers, diesel locomotive engineers, yardmasters, acceptance and transfer personnel and fitters.

The order on the shift to new technology was signed by the chief of the Leningrad Maritime Port and the chief of the Novyy Port Railway Station.

In order to eliminate the lack of coordination in actions of port and railway workers and to arouse the interest of all workers and employees in the maximum final result, it was necessary to make everyone feel the dependence of his success in labor on the work result of colleagues in indicators and in material compensation.

But it was not so simple to make such a shift. It was necessary to overcome the departmental framework and to eliminate the difference in the work of docker, tackle handler and stevedore shifts.

The decision was adopted. Unified 12-hour work shifts were organized. For all participants there are unified items of bonus payments which depend on the final result. The transshipment complex was switched to cost accounting.

What was the result?

"The work pace was adjusted," Vladimir Zobkoz, section leader of the 198th brigade, said. "Formerly, the normal rate of unloading was feverish owing to breaks between shifts: first among dockers and then among controllers and warehouse workers. After all, we worked 8 hours, and they worked 12 hours. The shift now consists of the same number of port and railway workers, including its own stevedore, tackle handler and controller."

A 12-hour shift comes to an end. The last railcars with grain are driven from the berth by truck tractor driver Anatoliy Kuz'menko. Vladimir Sysoyev and Vasiliy Bogdanov are completing grain selection in holds. Crane operators Aleksey Karpushenkov and Aleksandr Abakumov come down a few minutes later.

Of course, the shift system is most difficult for machine operators.

"In switching to the extended work shift," Mikhail Zubritskiy, brigadier of the 198th brigade said, "a provision has been made for mandatory replacement of crane operators. During the past 2 months alone, 10 of our dockers have received additional training at the port's educational and instructional course combine and have received the right to work on cranes. To be sure, the main load still falls on the most experienced ones: we may have up to 10 dockers working simultaenously on cranes. For the time being we assign young workers to work for brief periods during daylight hours. But they are gradually mastering the profession. We are also getting more truck tractor drivers. Every docker strives to master all skills on the berth..."

Prior to introduction of unified production process shifts at the grain complex, a similar experiment was conducted at the fourth cargo region of the Leningrad port. In 1984, the volume of cargo processing there increased by 27 percent, the gross intensity in the fleet increased by more than half and the railcar processing time was reduced by 4.1 percent. The technique gained approval of the administration and among employees. And, first of all, among workers. After all, now, by coming to work after 1 day, they can devote more time to rest and personal affairs.

The work results of the self-supporting grain transshipment complex in January 1985 are appraised by its chief V. Bul'ba:

"It is already clear today that organization of unified production process shifts and switching the complex to cost accounting have made it possible for us to raise the production results--after all, in the past we have been loading grain in nearly 4,500 railcars a month. The maximum achievement was 4,900 railcars. In January, the complex processed 5,843 railcars. A record!
It was attained as a result of unification of all interested sides in achieving the final result. Everyone now feels a collective responsibility for work on the berth.

"We have many reserves and we will put them in action. So that production results will be even higher."

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PORTS AND TRANSSHIPMENT CENTERS

COORDINATING ORGANIZATION FOR LENINGRAD AREA TRANSSHIPPING

Moscow TRUD in Russian 26 Feb 85 p 1

[Article by TRUD correspondent D. Struzhentsov: "A Go-Ahead Signal to Cargoes. According to Cooperation Agreement"]

[Text] Operations according to the continuous production process schedule began at the Leningrad transshipping center in 1977. At that time, participants in the transshipping conveyer--seamen, railwaymen, port workers, motor vehicle drivers, rivermen and some industrial enterprises--reached an agreement on cooperation and coordination.

This year's severe winter was a serious test of the agreement's effectiveness under extreme conditions. In order to arouse even more the interest of fellow transport workers in achieving high final results, unified production process brigades of port and railway workers were organized. Some brigades are responsible for shipping, for example, flour to consumers, others for sugar. Complete specialization. The responsibility of brigades has also increased. Equipment is assigned to every brigade, and the collective is responsible for it. The stimulation system is operating efficiently. Brigades receive bonuses from a single bonus fund for achieving overall high final results.

Special attention is devoted to advance information on the movement of cargoes and transport. Daily meetings of the coordinating council traditionally begin with reports of dispatcher services. Daily schedules, which are compiled on the basis of this information, are being made more precise. They define accurately where the transport must be dispatched first of all.

A decision has now been made to take another important step in the organization of the Leningrad transshipping conveyer operations. The question today is not only of making the work schedules of fellow transport workers more precise, but also of developing unified correlated plans, not only current but long-term ones as well. In this case it will not be necessary to linkup on the run the plans of fellow transport workers, which still happens. It has been decided that a general agreement will form the basis of interrelations of partners. It will define the rights and responsibilities of all cooperating collectives. An interdepartmental organization--Transkontrol'--will establish control over the progress in fulfilling this agreement.

Much now depends on the collectives of industrial enterprises. Work stoppages have been noticeably reduced at enterprises located in Nevskiy, Vasileostrovskiy and Kalininskiy Rayons. In which connection, it has turned out that the precise schedule for processing rolling stock was not so difficult to adhere to. It is most important to organize round-the-clock loading and unloading and to strictly adhere to labor discipline. This was done at many enterprises. For example, at TETs-5 responsibility was distributed among workers for adhering to the unloading schedule, controls were made stricter and relations with railway workers of the Neva Station were strengthened. After adjusting their work in this manner, the power workers have pledged to release every tank car 20 minutes faster than the standard time.

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PORTS AND TRANSSHIPMENT CENTERS

ARKHANGELSK PORT PROBLEMS; THROUGHPUT OF GRAIN, OTHER CARGOES

Moscow VODNYY TRANSPORT in Russian 12 Feb 85 p 2

[Article by V. Belitsyn, chief of the Industry and Transport Department of the Arkhangelsk Gorkom, in the column "In Coordinating Transport Links": "On the Soviet's Agenda"]

[Text] At the last meeting of the coordinating council of the Arkhangelsk transshipment center its chairman and chief of the maritime port L. Kamenev reported on the preliminary work results of fellow transport workers for 1984. Plan indicators were exceeded practically in all parameters: compared to 1983, the volume of cargo processing was increased by 6.5 percent, 1,404 railcars were freed by switching import goods freight from railway to other means of transport and by increasing the static load by 4.9 percent, and the turnover of rolling stock was reduced by 1.6 percent. All of this indicates that labor cooperation of transport workers and work of related enterprises according to a correlated continuous plan-schedule has become a reliable means for accelerating transport of cargoes in Arkhangelsk.

Let us take grain processing as an example. The first transports with this cargo arrived at Ekonomiya berths in 1981. The volumes increased rapidly. Arguments began to crop up quite often in the coordinating council about tardiness in providing empty railcars. Despite the lengthy nature of the debates, it was difficult to establish who was the real guilty party because the "classical" ties between the traditional partners--railwaymen and port workers--no longer functioned as before. The point is that an involuntary middleman was wedged between the Ekonimiya's cargo region and the Arkhangelsk-Gorod Station--the temporary railways operation division (OVE) of the Sevtransstroy Trust [not further identified], which is modernizing the 27-km section of approach lines and is responsible for their temporary operation. This contributed to the disorder in actions of port workers and railwaymen, who, being unable to turn over the rolling stock directly, lost control over timeliness in providing, loading and dispatching railcars.

In order to correct the situation, a representative of the temporary railways operation division of the Sevtransstroy Trust began to be invited to meetings of the council. Changes for the better appeared shortly. If in 1981 fellow transport workers processed up to 60,000 t of grain per month, then now they are processing twice as much. Here it is appropriate to note the efficiency of

railwaymen, who were able to improve their work within the briefest possible periods--they have organized a bypass route at the Arkhangelsk-Gorod Station and redistributed cargo flows more efficiently. These and other measures, particularly the route shipments which were jointly organized with port workers, have made it possible not only to fulfill the 1984 plan for providing and mastering railcars but also to exceed it by 400 units, which in turn made it possible to additionally transport 71,400 t of cargo.

Mutual understanding, which is being increasingly strengthened in the work style of fellow transport workers, is probably the most important acquisition of the coordinating council. For example, the port had a serious delay last year in the haulage of import metal. Motor vehicle drivers and rivermen immediately came to its assistance. Successful work is also promoted by including representatives of the basic clientele on the council staff. Thus, quite recently supervisors of the Arkhangelsk office of the Norilsk Combine and the office of Soyuzvneshtrans [not further identified] became members of this organ. The transshipment center closely cooperates with some organizations whose activity affects the movement of cargo in one way or another--with the sanitation, grain, quarantine and other inspectorates. Party and trade union workers regularly participate in the activity of the coordinating council.

The effectiveness of creative cooperation of fellow transport workers is especially noticeable when one compares the work results of enterprises of the transshipment center from the outset of the five-year plan and during its concluding stage. During this period, the volume of processing of import and export cargo has increased twofold, the gross intensity of cargo handling operations has increased by 10 percent, the transfer of cargo according to the direct variant has increased 3.6-fold, labor productivity has risen by 31.7 percent and production cost has declined by 2.4 percent.

Socialist competition, whose results are summed up quarterly, has become a good stimulus. Dockers and railwaymen have been constantly improving organization of labor in striving to achieve greatest effectiveness in labor competition. Consolidated complex brigades have given a good account of themselves on the berths. In 1984, self-supporting collectives have processed 113 vessels and saved 1,248 vessel-hours of operation time.

All the same, despite the achieved successes, the possibilities of NPGRTU [continuous plan-schedule of transshipping center operations] have not been used to full meausre so far and instances of above-norm layovers of vessels and railcars have not been eliminated. Violation of periods for shipping import cargo from the port to the railway and overstocking of warehouses is tolerated.

During the past navigation season, fellow transport workers have encountered an acute problem, which was difficult to solve in a radical manner without the assistance and support of the MPS [Ministry of Railways] and the MMF [Ministry of the Maritime Fleet]. Its crux was the following: in 1984, the Arkhangelsk Maritime Port considerably increased the processing of containers, especially large-capacity ones. In and of itself it is a gratifying fact, considering the insufficiently used capacities of the Ekonomiya's cargo region. But the snag was

that a great number of containers were left on the berths for a long time. The whole point is that they arrive at the port with disrepairs of technical and commercial nature, most of them require repairs and cargoes need repacking. These operations are fulfilled very slowly because of the existence of the temporary railways operation division and the considerable distance of the cargo region from the station. Last year, nearly 20 percent of large-capacity containers which arrived by railway had to be repacked. The October, Moscow and North Caucasus Railroads and the Tikhoretskaya, Krymskaya, Prokhladnaya and other stations are especially guilty in delivering cargoes in containers which cannot be transported. The state bears great expenses due to the half-hearted attitude and negligence of individual shippers. Transport organizations should in a most resolute manner put things in order during acceptance of cargo and strictly adhere to instruction documents.

Besides putting things in order at departmental junctions, there is a need to organize a specialized base for the repair of containers in the port territory. Realizing the importance of solving this problem, Arkhangelsk port workers have established a sector. But it is of small capacity and has a modest staff, and owing to this it cannot cope now with the increasing volume of repair work.

Taking into account the considerable turnover of containers at the Norilsk Combine it is expedient to organize their repair after removing cargo from them in Norilsk or Dudinka.

The questions of proportional development of production capacities of related enterprises are still being solved poorly in the Arkhangelsk transshipment center. An alarming situation is developing at the Arkhangelsk-Gorod Station. The station's reequipment plan was worked out back in 1977, but not a single project was built in the years since then and the planning documentation has become obsolete during that time. The Ministry of Railways must help its subdivision to reach the level of technical equipping its partners in the transshipment center have attained.

The solution of these and other problems will serve as a reliable basis for the general raising of work efficiency of Arkhangelsk transport workers.

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