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# USSR Report

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22 March 1983

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AIR

## CONFERENCE ON ALL-WEATHER FLIGHT CAPABILITIES

Moscow VOZDUSHNYY TRANSPORT in Russian 4 Dec 82 p3

[Article by Ye. Kostenko and S. Omel'chenko: "Weather Conditions Will Not Stop the Flight"]

[Text] The first and most difficult steps have been taken so that civil aviation aircraft can fly in any weather. Fewer and fewer planes are held up at airports because of fog and clouds, and instances of returns to the takeoff field or landing at stand-by airports are less common. Flights with a lower level of minimum conditions will mean, above all regular flights and high-quality service to passengers.

But at the present time there are still numerous problems with organizing such flights. An all-Union science-practice conference held in Rostov-na-Donu was devoted to summarizing experience with work in lower minimum conditions.

The conference was attended by managers from the ministry, administrations and production associations, and enterprises of civil aviation, as well as representatives of the State Committee for Hydrometeorology and Environmental Control, the State Scientific Research Institute of Civil Aviation, and the Civil Aviation Center of CEMA.

Deputy minister of civil aviation I. Vasin opened the conference. He observed that the number of flights made this year with an index of M-1 has increased significantly and flights have begun under the second category of the ICAO [International Civil Aviation Organization] minimum; the central schedule shows more than 50 flights with an index of M-2A. Only those crews who have been authorized for flights under the first minimum category make trips to Moscow from the airports of 20 administrations and republic production associations.

A. Mayorov, chief of the Administration of Flight Service of the Ministry of Civil Aviation, noted that the training of flight personnel must unquestionably be done at airports that have good training facilities. Ulyanovsk has such a training center. But at the present time it does not have an airport; construction workers are behind schedule in rebuilding the runway and installing light engineering equipment.

The visibility simulation system has worked very well. The habits acquired during training flights under a hood help pilots carry out approaches and landings reliably under natural conditions.

It is true that there are difficulties with re-equipping the airplanes on which the visibility simulation system was planned for installation. In the Ukrainian Civil Aviation Administration, for example, this work was not planned until next year during scheduled aircraft overhaul at the plant. Scheduled drills for crews were being missed. What could be done? The flight service sent representatives to plants in Saratov and Kiev. The people at the Saratov plant understood the concerns of the pilots and quickly, a year ahead of the planned time, reequipped a Yak-40 plane belonging to the Odessa Aviation Enterprise. But the Kiev workers refused to do unplanned work without instructions "from above," although they frankly admitted that they did have the capabilities to do it.

"The airports are being re-equipped with landing systems at a stepped-up pace," I. Mal'tsev, deputy chief of the Central Administration of ERTOS [expansion unknown], said. "The reliability of the new radio beacon systems has tripled and quadrupled. A great deal of work has been done to install radar and meteorological equipment and put it to use and to redesign the electricity supply of the runways."

Laboratory planes equipped with flight testing complexes have been rigged up for breaking in the automatic approach ground equipment. Engineering-technical personnel have accumulated experience with the use of the ground equipment and introduced progressive forms and methods of technical servicing and organizing and conducting flight checks. This has made it possible to reduce equipment downtime for technical servicing by more than two-thirds. This permits an annual savings of more than 2 million rubles and more than 3,000 tons of fuel and lubricants.

The efficiency of using categorized airfields is increasing year after year. At the same time there are also still numerous problems and unsolved questions here. Many airfields occasionally lose their category ratings temporarily. Experience shows that there are also shortcomings in certain points of the norms of suitability of categorized airfields. For example, landing radars at airports work parallel with radio beacon landing systems. Including them in the mandatory list of radar equipment, which affects the category of the airfield, led to a situation where switching the radar off even for technical servicing or scheduled maintenance of the antenna systems caused the category rating to be taken away. So then while the landing system is working if the radar malfunctions the minimum rating of the airport is automatically raised and an airplane already approaching for landing according to the radio beacon system must be sent to a stand-by field by the controller.

Participants at the conference did not simply list the problems; they also suggested ways to solve them. Specialists from the ministry exchanged views on further refinements of work organization and representatives of the flight subdivisions shared work know-how.

The conference discussed such questions as prospects for improving meteorological flight support under lower minimum conditions, the effectiveness of using equipment for automating the landing approach, characteristics of the distribution of duties in the crew during the landing approach in difficult weather conditions, crew training on simulators, and much more. The recommendations worked out by the conference will be sent to all civil aviation administrations and enterprises, and we can expect that they will promote a further improvement in flight regularity and safety.

AIR

## PARTY INVOLVEMENT IN WORK AT GOMEL AVIATION ENTERPRISE

Moscow VOZDUSHNYY TRANSPORT in Russian 11 Dec 82 p 1

[Article by Yu. Derevyanko, Party Committee secretary of the Gomel Aviation Enterprise, Gomel: "The Party's Decision Lives On In Actual Matters: Responsibility Determines Success of All"]

[Text] In the Charter of the CPSU it says, "The original organizations are the foundation of the Party." Every time one thinks about these words, one remembers the high responsibility for all of the decisions made by our party committee. A lot depends on their effectiveness, their high principle, their significance. They ensure the vanguard role of communists, and direct their energy toward the most important sectors of production.

Engineer-brigade leader at the AiREO [Automation and Radio Electronics Organization] laboratory V. Mednikov has worked for many years at the Gomel Aviation Enterprise. He is a member of the party committee, and has been elected to the auditing commission of the party's rayon committee. Such trust is not extended to him by accident. During the last 2 years the laboratory leads in socialist competition, and it has been awarded the title "Communist Labor Collective". This year, Mednikov's brigade has been presented the pennant as winner of the republic socialist competition.

Mednikov himself, and his relationship to common concern serves as an example to others. For example, within the brigade the mastery of related professions as an important production reserve has become very important. And the idea itself was presented by the brigade leader, who already had permits for servicing radio, electrical, and instrument equipment.

Now they are working intensively here to master the servicing and repair of assemblies for the Tu-134A airplane, which is new to the enterprise. Testing benches have been produced through their own efforts, and theoretical knowledge is being evaluated.

The good reputation of yet another member of the party committee, Ye. Sudarenko is known within the collective. He heads the leading service within the enterprise, the ERTOS [expansion unknown] base. Discipline and the social activity of many specialists, and their initiativeness are characteristic of this collective. For example, without drawing on outside

efforts and resources, they are solving questions for preparing the service unit for operation of the Tu-134A based on low weather minimums, and they are approaching engineering operations in an innovative manner.

The creative relationship of communists to their work is closely bound to concern for improving production, improving labor productivity and ensuring flight safety. Initiative and search on site prompts the party committee in the need to make one decision or another, and at the same time, it serves as a pledge of its execution.

In turn, the party committee heard a report from the commander of a flight sub-division. Discussing the problem of managing a collective of such great size, he expressed the opinion that it was necessary to reduce its size. The party committee, having analyzed the situation which had developed, decided to intercede before the Belorussian administration to create a second flight sub-division. The need to build a dock for two An-2 aircraft was also determined.

Management of the aviation enterprise and the party committee studied the solution of these problems. As a result, a second flight sub-division was organized at the aviation enterprise, and construction of the dock is being completed. The command-management staff of the newly formed sub-division was selected from the personnel resources at the enterprise, and was confirmed at a session of the party committee. The deputy secretary of the party committee for ideological work V. Filipchenko was recommended as deputy commander for PVR [Anti-aircraft Reconnaissance (Civil Defense)].

The main goal of the future work plan of the Gomel' aviation enterprise's party committee has been determined: mobilization of the collective to implement the decisions of the 26th CPSU Party Congress, fulfillment of socialist obligations ahead of schedule and providing for complete flight safety. The successful resolution of all of these tasks will be determined by the cadres; the need to select them carefully was pointed out at the November (1982) Plenum of the CPSU Central Committee, "...it is necessary to place personnel correctly so that persons who are politically mature, competent and with initiative, those who possess organizational skills and a sense of the new, without which it is impossible to manage modern production successfully in our time, are at the key sections." This directive of General Secretary of the CPSU Central Committee Com. Yu. V. Andropov is at the foundation of our work today. The party committee constantly keeps in view the selection and placement of administrators and specialists in leading and auxiliary services.

Not long ago at a session of the party committee, V. Medvedev, a graduate of the Civil Aviation Academy, was confirmed to the post of head of the PDSP [expansion unknown]. At the same time, he was given a party mission, to conduct a theoretical seminar within the political education system. The young communist took on the work with enthusiasm. The chief-of-staff of the aviation enterprise N. Kizeyev, a party member with many years of seniority, is helping him to overcome the natural difficulties that are first encountered.

The daily life of every party organization is filled with many worries. There are no second-rate problems, nor problems of little consequence among them that one can brush aside--decisions are made about everything. However, it is extremely important that each decision be concretely demonstrated, since not only the executive capabilities of communists, but the fidelity to party principles are manifested in them.

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CSO: 1829/119

AIR

OPERATIONS AT NAR'YAN-MAR AIR TECHNICAL BASE

Moscow VOZDUSHNYY TRANSPORT in Russian 11 Dec 82 p 2

[Article by L. Tikhomirov, deputy secretary of the aviation enterprise's Party Committee, Nar'yan-Mar: "Know the Sources of Successes and the Causes of Shortcomings--The Creative Force of Competition"]

[Text] This year winter arrived at our arctic Nar'yan-Mar unusually early, in October. Frosts and gusty winds, ice glaze and snow storms--the residents of this harsh region have already experienced these. Naturally, the unfavorable weather conditions make the operations at the aviation enterprise more complicated. It caused an awful lot of trouble for the technical staff who service the airplanes and helicopters in the open. But the aviators were able to counter the cold and snow storms with their professional skill, discipline and level of organization.

They are successfully working to satisfy their plan quotas and socialist commitments they made in honor of the 60th anniversary of the formation of the USSR. The collective of the air technical base is in the vanguard. At the end of last year, it assumed work duties under the motto "60th Anniversary of the USSR--60 Intensive Weeks", which received support and broad dissemination among the other enterprises of the town and the okrug.

During the course of the socialist competition, the workers of the ATB [air technical base] achieved good results. Their ten-month maintenance plan was realized by 115 percent, and labor productivity was 112 percent; the level at which planes and helicopters were kept in working order was also above established norms. For two quarters in a row, the ATB was in first place in the competition among the services and subdivisions of the Nar'yan-Mar aviation enterprise. In the third quarter it took second place, which is also high.

The ATB collective is stable and reliable. It is up to the task of solving large, responsible problems. Competition among the sectors and brigades promotes successful work. Here the acknowledged leader is the AiREO [Automation and Radio Electronics Organization], led by senior engineer S. Dresvyankin. This same collective achieved the best results in innovative work. In only the first 9 months of the year, seven efficiency innovations were incorporated with an economic effect of R7,000. The competition among

divisions is confidently headed by the flight information deciphering group, led by senior engineer V. Babenkov.

Wherein do the secrets to the labor successes of the air technical base collective and the stability of its work lie? It is likely the main "secret" lies in the exceptional attention devoted to the organization of socialist competition by leaders of the Party, trade union and Young Communist League service organizations.

One form of competition is the agreement for collective responsibility for the state of discipline on shifts and in brigades. The competition based on these agreements proceeds under the motto "All for one and one for all." At first, when the first such agreement appeared, there were many who doubted the success of the new beginning. Now this psychological barrier has been overcome. Agreements for collective responsibility for the state of discipline are already in effect at 6 of the ATB's collectives, a fact which has noticeably influenced the strengthening of discipline and the level of organization.

The competition for conferral of the titles of Model Collective and Collective of Communist Labor are being successfully developed at the ATB. Now half of the service's staff proudly bear the title Outstanding Worker of Communist Labor.

Profession skill competitions, in which young specialists participate, have also gained great popularity. During this anniversary year, air rigger for the Mi-8 helicopter section Yu. Besedin and air rigger for the AiREO section V. Grebennikov have won them. Inspection competitions for the best preparation of equipment for the fall-winter and spring-summer navigation periods are also regularly conducted. Competition for the right to work with a personal quality seal is also expanding here. Two of our specialists have earned it, air rigger and brigade leader V. Kotov, an enterprise veteran, and a young, but already experienced air rigger specialist A. Zhuravlev.

Brigades from the Mi-8 helicopter maintenance sector, headed by air riggers-brigade leaders G. Kechko, M. Tikhonravov and Yu. Besedin are in the forefront, competing to meet in a worthy fashion the 60th anniversary of the formation of the USSR. Air rigger Yu. Kabakov, aviation mechanic V. Markov, aviation motor mechanic B. Osichev, engineers V. Subornov and V. Orlov, dispatcher Z. Belyayeva and many other workers at the ATB are working in excellent fashion.

As is known, the effectiveness of competition, its efficiency, depends to a great extent on the openness, the operativeness of summing up. This is also well understood at the air technical base. Totals for the competition are regularly compiled and are obviously posted on a special board. On the Board of Honor, there are photographs of the frontrunners and the service's veterans.

When speaking of items for the successful operation of the air technical base, it is impossible not to speak of yet another "secret". It's simple:

concern for people, for improving work conditions for members of the collective. This is very difficult to do under the harsh conditions of the Arctic. Nevertheless, the ATB management and party and trade union organizations take effective measures to improve work conditions for the service's specialists. This year is no exception. Back in the summer, a brick addition to the An-2 aircraft hangar was built, and now installation of a warm, well-organized shower facility is being completed.

Many difficulties and problems arose at first. Because of the lack of a water line, it was necessary to drill a special well. Pipes, pumps and batteries were required. Foreman V. Ivashchenko, engineer V. Durkin, chief engineer V. Tret'yakov and others contributed much effort, inventiveness and energy. But then, the ATB workers will have their own shower facility!

It would seem necessary to ask, what kind of connection is there here with the growth of labor productivity and successes in socialist competition? Nevertheless, there is a connection, and a very direct one. Concern for people, caring for them always produces good results. I am deeply convinced that the efficiency and quality of work and production, as well as the solidarity and stability of the collective depend on a sensitive relationship with the working man.

In telling about the work of our air technical base, I do not wish to claim that all is well with us, that all the problems have been solved and shortcomings liquidated, and that all that is left for us to do is "rest on our laurels". There are also shortcomings and unresolved problems at the ATB. For example, they include the individual instances of breakdown of know-how at work, delays in aircraft takeoff which are sometimes the fault of the service's workers, and airplane and helicopter downtime for maintenance.

Eliminating these shortcomings is our first obligation. We can only create the situation where there is a high level organization and a business-like atmosphere, to which the November (1982) Plenum of the CPSU Central Committee exhorts us, through common efforts. Then our successes in labor and in socialist competition will become stable, and the immense creative potential contained in our labor for development both of the individual personality and for the collective as a whole will be revealed to the full extent.

9194

CSO: 1829/119

AIR

## NEW MINSK AIRPORT CONSTRUCTION PROGRESS, PLANS

Moscow TRUD in Russian 20 Oct '82 p 4

[Article by A. Abdullin: "Minsk's Air Harbor"]

[Text] The large international Minsk-II airport is under construction not far from the capital of Soviet Belorussia. The construction and installation workers of the Minsk Promstroy [Minsk Industrial Construction] Association recently began work on the main terminal building.

"This year was marked by introduction of one of the main elements of the airport complex, the runway," said G. Temnikov, deputy chief for capital construction and operation of airports of the Belorussian Civil Aviation Administration. "Belorussian aviators have already 'broken in' the runway by making flights in Tu-134 aircraft, beginning on 1 July of this year to Novosibirsk, Nizhnevartovsk, Krasnoyarsk, Tashkent, and the resort cities of Sochi, Simferopol, and Mineral'nyye Vody. In the near future the Minsk-II airport will connect Belorussia with hundreds of other cities in the country and throughout the world."

We were looking at a model of the new air terminal complex, which will be three kilometers in length. It will be one of the largest in the country and is designed to serve 1,800 passengers an hour. The six-story terminal building occupies the central place in the architectural ensemble. It consists of two distinct sectors, for domestic and foreign air routes. Passengers who come to the airport in cars and express buses will go along a ramp directly to the entrance to the well-lighted operating halls which are on the third floor. They are designed so that a person has a good view of all the departure sectors from any point in the hall. After taking care of documents passengers will go along a special telescopic boarding ramp right to the cabin of the airplane, which will be parked flush against the enclosed galleries of the terminal.

Arriving passengers will be taken by a similar telescopic ramp to the second floor of the terminal and, after receiving their baggage, will come out right on the terminal square where they find transportation. In short, counter flows of passengers obstructing one another will be entirely precluded.

A large, comfortable waiting hall is envisioned on the fourth floor of the terminal with colored television sets and game machines. Service for the passengers

will be provided by a restaurant, a cafe, a bar, lunch counters, a pharmacy, a post office, a medical office, a room for mothers and children, ticket sales offices, an information bureau, and Soyuzpechat' and souvenir kiosks.

It remains to add that the plan for the new Minsk airport was developed by specialists at the Leningrad Lenaeroprojekt [Leningrad Air Planning] State Planning Institute of the USSR Ministry of Civil Aviation in cooperation with architects and engineers from the Minskproyekt [Minsk Planning] State Planning Institute.

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CSO: 1829/105

AIR

AEROFLOT INITIATES TU-154 SERVICE TO DJIBOUTI

Moscow VOZDUSHNYY TRANSPORT in Russian 11 Dec 82 p 3

[Article by I. Grigor'yev: "The New Route to Djibouti Is Open"]

[Text] As the year comes to an end one more "air premiere" has been conducted. Following the opening of regular air traffic to Abu Dabi (United Arab Emirates), Kigali (Ruanda Republic), and Buzhumburu (Republic of Burundi), on 6 December Aeroflot began regular flights to another African country, the Republic of Djibouti.

Thus, the city of Djibouti became the 116th point of the 93rd country in the world with regular air communications with the Soviet Union.

The new international air route was opened on the basis of an Intergovernmental Agreement on Air Travel between the Soviet Union and the Republic of Djibouti. The agreement was signed in the city of Djibouti by first deputy minister of civil aviation A. Nazarov and minister of trade, transportation, and tourism A. Avale. This was the first intergovernmental agreement between our two countries.

A delegation from the USSR Ministry of Civil Aviation headed by A. Mayorov, member of the collegium of the Ministry of Civil Aviation and chief of the Flight Service Administration, arrived in Djibouti on the first flight.

The flight followed a route from Moscow through Simferopol, Cairo, and Sana to Djibouti. The Aeroflot Tu-154 covered the 5,930 kilometers between the capitals of our countries in 8 hours and 5 minutes.

It is common knowledge what importance the Soviet Union attaches to the development of relations, including civil aviation, with countries that have liberated themselves from colonialism. The Djibouti Republic is a small state located in northeastern Africa on the coast of the Bab el Mandeb and the Gulf of Aden. It gained its independence just five years ago. Incidentally, the signing of the intergovernmental agreement between our two countries coincided with celebration of Djibouti Independence Day, which the local press considered very symbolic. The consequences of its colonial past cannot help being reflected in the economy of this country.

The government of the country is now taking steps to build the national economy. The Djibouti seaport and airport, which serves more than 200,000 passengers a year, play an important role in the economy of the young developing country. Therefore, the interest with which Djibouti business circles met the news of the beginning of regular Aeroflot flights is understandable.

The Djibouti mass information media gave this event a prominent place in the newspapers and on radio and television broadcasts. It was emphasized that without well-organized air connections it is difficult today to develop trade-economic and cultural contacts among different countries.

In this connection it is worth recalling that in the late 1950's the Tu-104, the pioneer of Soviet jet passenger aircraft, made its first regular flight to Africa. The 20 plus years that have passed since then have been marked by intensive expansion of the system of air communication with countries on the African continent. The Republic of Djibouti is the 35th African country to which Aeroflot planes fly regularly.

Flights on the Moscow — Djibouti route began with a frequency of one flight per week.

11,176

CSO: 1829/105

AIR

INVENTIONS, INNOVATIONS TO SUPPORT AIRCRAFT REPAIR

Moscow VOZDUSHNYY TRANSPORT in Russian 14 Oct 82 p 1

[Article by A. Akhmatov, Bykovo: "The Contribution of Innovators"]

[Text] The movement of inventors and efficiency workers for technical progress is broadening at the Bykovo Aviation Repair Plant. In 1981 and the first seven months of the second year of the five-year plan 1,305 efficiency proposals were received; 902 proposals and 24 inventions with an economic impact of about 1 million rubles have already been introduced.

The most significant was the proposal of a group of plant efficiency workers to re-equip the Il-18 as a cargo plane, which made it possible to continue using this class of aircraft on air routes. The efficiency proposals are very important for solving the problem of delivering small cargo to remote parts of the country.

One of the proposals by V. Gordeyev, N. Kochetkov, and other plant efficiency workers to modify the technology for the controlled breaking in of aircraft after capital repair made it possible to save up to 270 tons of aviation fuel a year. The annual economic impact for the introduction of this proposal is about 70,000 rubles.

The list of parts which are restored by progressive methods is also steadily growing. The savings from introducing gas thermal methods already exceeds 530,000 rubles a year today.

Annual contests for the best formulation of an efficiency project and the most efficient proposal are effective ways to increase the creativity of the innovators. The successes of plant innovators in technical creativity were recognized by a Certificate of Honor from the Central Council of the All-Union society of Inventors and Efficiency Workers. The plant collective has received more than 10 diplomas, including a Diploma of Honor from the Exhibition of the Achievements of the USSR National Economy. More than 150 efficiency workers have received gold, silver, and bronze medals from the principal exhibition in the country.

Going forward to meet the 60th anniversary of the formation of the USSR, innovators obligated themselves to contribute an additional 395,000 rubles to the savings fund of the 11th Five-Year Plan by introducing 14 inventions and 510 efficiency proposals. They will save 200,000 kilowatt-hours of electricity and 510 tons of standard fuel.

11,176

CSO: 1829/103

AIR

COMPUTER ANALYSIS OF MSRP-256 RECORDER DATA USED IN IL-86 MAINTENANCE

Moscow VOZDUSHNYY TRANSPORT in Russian 11 Dec 82 p 2

[Article by V. Sapuniv, Vnukovo: "It Is Always Good to Consult with Electronic Equipment"]

[Text] Absorbed in his work, Valentin Pavlovich did not notice me. His attention was entirely concentrated on the instruments. Finally Fedorov rose from his chair, wiped his tired eyes with the back of his hand, and said, not turning toward anyone in particular:

"As you want, but I do not like this description. It will have to be deciphered."

It occurred to me how many familiar concepts our hurried age has literally brought into conflict by significantly changing their initial meanings. Here was a person talking with a computer, and both of them understood everything.

Like it or not, but I could not find any other words to describe the picture I recently observed in the diagnosis section at the air technical base of the Vnukovo Production Association. Senior engineer V. Fedorov was "conversing" with a YeS-1033 computer. The human communicated with it by means of a display.

Every aviator knows what scheduled maintenance and scheduled preventive repair are. Relying again on the current rate of progress, we can say that these concepts are as old as the world. And perhaps just for this reason someone had to think up something new. They did.

But of course, it was not just one person. The individual inventor has long since been replaced by collectives of scientists, engineers, and workers. It took hundreds of people many years of work studying the "nervous system" of the airplane and its center, the MSRP-256 flight recorder, before civil aviation could fully adopt the method of servicing and operating aircraft according to their condition. And only after this were the Vnukovo engineers and technicians able to "improve the conventional scheduled preventive repair system with the method of defect prognosis based on a knowledge of the actual condition of the aircraft assemblies and systems,"

My acquaintance with the new method began with the above-quoted phrase, copied from the words of R. Feyzrakhmanov, chief of the air technical base of the

Vnukovo Production Association. Briefly, the essential features are as follows. There are 256 different sensors mounted on the aircraft. Every second they record the values of quantities that describe the plane's "state of health." These data are recorded by the flight recorder. Then the tape is "decoded" by computer. A so-called "printout" is made, from which one can obtain essential information on any monitored parameter, for example the upper and lower limits of gas temperature fluctuation after the turbine and temperature deviation. The machine can be instructed to draw graphic charts of any process. If the deviations of the parameters go beyond permissible limits the computer gives recommendations as to "the direction in which the adjusting screw must be turned." If the engineers have some reason, based on information from earlier flights, to doubt the relative condition of particular assemblies, they can set the machine in the interactive (dialogue) mode and monitor these precise assemblies specially. It was this kind of dialogue that V. Fedorov was conducting at the beginning of this article.

The high point of the process is to write a "algorithm of work capability," that is ultimately, a system of recommendations for aviation technicians to eliminate malfunctions.

Named "Analiz-86" and now being tested at Vnukovo, the method confirmed the need to take three aircraft engines out of service. This unity of theory and practice is, you will agree, a considerable achievement in the early stages.

A person first looking into an airplane cockpit is usually surprised by its appearance. There are dozens of illuminated dials and scales and various intriguing levers, buttons, and switches. But it seems to me that a contemporary pilot would be equally surprised upon entering the diagnosis section of the air technical base at Vnukovo. It is absolutely spotless, the operators are dressed in white, and you hear the humming of the computer, which suggests some kind of reasoned process. In short, it is the 20th Century in all its glory.

We should tell here how the Vnukovo workers made the computer "pay for itself." It seems like a very small thing to make out a claim for defective goods, send it to the plant, and keep track of the time for payment of compensation. But a substantial number of people must be employed doing this rather uninteresting work manually, especially if the enterprise is quite large. But what if the matter is approached creatively? Let us say that we "harness" the computer to it. This is what engineers V. Fedorov, S. Borzov, and V. Studenikin did. The productivity of the group handling claims increased five times. Having the computer do this and other jobs practically repaid the costs of its maintenance.

At the November 1982 Plenum of the CPSU Central Committee, General Secretary of the CPSU Central Committee Comrade Yu. V. Andropov observed that reserves must be sought in accelerating scientific-technical progress and in broad, rapid introduction of the achievements of science, technology, and progressive know-how into production. We can see from the example of the Vnukovo aviation workers how this challenge should be met.

We had a talk with Valentin Paylovich Fedoroy. I was not completely clear about the immediate prospect for development of the method and the possibilities of its operational introduction at other enterprises of the sector.

Fedorov answered, "Using all the parameters recorded by the MSRP-256 recorder, we can today determine the actual work capability of 70 percent of the primary systems of the Il-86 aircraft. In the near future all the assemblies of the aircraft will be monitorable. But if the method is to receive broad dissemination, we must take a very serious attitude toward diagnosis right now. The physical facilities of laboratories must be developed by every means. This will make it possible for developers to plant the seeds, so to speak, in already prepared soil."

The bus was rushing us past one of the new regions of the capital. Lights in the windows of the high-rise buildings flickered like the lights of the computer. "You can't hide from it," I thought. "The scientific-technical revolution is even entering the figurative part of the language. And words which I would not have used yesterday are becoming second nature today."

11,176  
CSO: 1829/102

AIR

## L-410 EXPANDS SERVICE IN KHABAROVSK KRAY

Moscow VOZDUSHNYY TRANSPORT in Russian 16 Dec 82 p 2

[Article by V. Vasil'yev, engineer, Nikolayevsk-na-Amure--Ayan: "A New Residence Permit for the Microliner"]

[Text] Regular passenger flights began in December between Nikolayevsk-na-Amure and Ayan in the L-410 aircraft. The center of northern Ayano-Mayskiy Rayon became the seventh airport to which aviators from the Komsomol'sk-na-Amure flight subdivision have established routes. But the technical flight to Ayan was made earlier...

On that day the noise in the sky was clearly not the usual sound of the motor of an "Annie" [An-2 aircraft]. When the small, double-engine plane taxied up and stopped it became clear that it was the L-410, a newcomer to Far Eastern skies which, because of its size and onboard conveniences, is called a "microliner."

A great deal was done to receive the new airplane. The runway had to be lengthened. Before this a dike had to be poured to direct the current of the Uyka along one of its old channels. The little river did not give ground willingly. But thanks to the technical assistance of Yu. Kretov and K. Lunev, engineers from the Far Eastern Civil Aviation Administration, and the advice of Ye. Popov, chief of airport services at the Nikolayev enterprise, the problems were solved. The practical concerns of construction already lay on the shoulders of V. Ryabukha, chairman of the rayon executive committee.

And now the long-awaited day had come. The L-410 covered the route in just 95 minutes whereas the An-2 spent about four hours. Moreover, although it was very cold outside the members of the commission in the passenger compartment were not bundled into their coats; they were sitting wearing jackets, having put their heavy coats in a closet. Yes, the new airplane has almost the same set of conveniences as do the large airliners. Compared to its predecessor the An-2 the L-410 is twice as fast and has 50 percent more capacity. The spacious and well-lighted passenger compartment has heating and ventilation. The plane has a baggage compartment, a coat closet, and a toilet.

But high flight speed and comfort are not the only strongpoints of the new aircraft for local air routes. When the An-2 would fly to Ayan and the neighboring community of Nel'kan flights often had to be cancelled because of bad weather over the Dzhugdzhur and Tugur passes along the route. And turbulence in flight

was not uncommon at all. The L-410 does not fear these things. The plane flies at elevations up to three kilometers, so instead of the knife-sharp mountain ranges what you see in the windows is just a white pillow of clouds. And the radio navigation equipment makes it possible to fly night and day.

It is relevant to recall here that the L-410 was first tested in our country under harsh winter conditions in Yakutia. So it is used to the climate of our northern region.

The representatives of the various services of the Far Eastern Administration completed their inspection of the airport. Their unanimous decision was formulated in the official report: "The Ayan airport is suitable for operation of the L-410." After a short takeoff run the little airbus is in the air. The next trips here will be passenger flights.

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AIR

NEW L-410 ROUTES BEGIN IN FAR EAST

Moscow VOZDUSHNYY TRANSPORT in Russian 20 Nov 82 p 4

[Article by V. Sopolev, engineer, Khabarovsk-Vladivostok: "The L-410 Conquers the Far East"]

[Text] On the eve of the 65th anniversary of Great October an L-410 short take-off and landing aircraft landed for the first time in the settlement of Nel'kan. Pilot-inspector V. Salamakha made the technical flight. This marked the beginning of carrying out the mandate given by the voters to V. Nacharov, chief of the Far Eastern Civil Aviation Administration and a deputy to the kray Soviet of Peoples Deputies: established reliable air communications from Komsomol'sk-na-Amure and other cities of the kray with this remote northern rayon center. This route, which will become a regular one in November, has now become another line established in Khabarovsk Kray by crews of the Komsomol'sk-na-Amure flight subdivision.

It was not long ago that the inhabitants of Amur Oblast saw the L-410 for the first time. Several of these comfortable aircraft were delivered to the Blagoveshchensk Aviation Enterprise and made test flights to the cities of Raychikhinsk and Shimanovsk. Enterprise commander N. Mel'nikov directed the technical flights.

Before the end of this year the L-410 will begin regular flights along the BAM line from Blagoveshchensk to Shimanovsk and Tynda. It will also replace An-2 aircraft on routes that connect the oblast center with the cities of Raychikhinsk, Svobodnyy and the mining communities of Oktyabr'skiy, Mayskiy, and Ekimchan.

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AIR

'ASTRA' ASU USED IN HELICOPTER ENGINE TESTING

Moscow VOZDUSHNYY TRANSPORT in Russian 11 Dec 82 p 1

[Article by M. Markarov, Sverdlovsk: "Dialog between Researchers and the Computer"]

[Text] "Make maximum use of available opportunities to improve management activity, step up scientific-technical progress, raise labor productivity in all sectors of the national economy, increase production, and improve the quality of output" — from the decree of the November 1982 Plenum of the CPSU Central Committee.

"Ready to start the engine! We are practicing the takeoff mode," the operator's command rang out.

Numbers ran by on the electronic panel and the display screen lighted up. This was an important day for the research mechanical engineers of Sverdlovsk Aviation Repair Plant No 404. Together with specialists from the enterprise information and computing center they were beginning use of an automated system to control the technological process of testing and adjusting Mi-8 helicopter engines. The Astra, which is the name of the ASU [Automated Control System], had moved from the detail design phase to the testing center.

L. Daragan, leader of the research mechanical engineer brigade, watched the readings of the electronic instruments carefully.

"Now we have to learn to talk to the computer in its language," the brigade leader said, sharing his plans. "It will become easier to work, and much more interesting."

He is right. The introduction of ASU's has already required the automation of many painstaking operations of measuring and recording the parameters of the engine's operating regime. For example, the calibration devices, the turbine sensor of fuel consumption, and the system to measure engine output work automatically. But the main thing is that it is no longer necessary to painstakingly fill out test reports and process them. Simply calculating the parameters of the temperature field, which was formerly done with a slide rule, took more than an hour. Now the computer does it in a matter of seconds.

The Sverdlovsk workers were the first in the sector to decide to use an ASU. This step toward refinement of the technological process is entirely natural; in the last five-year plan they were pioneers in the transition to one-time assembly and combined testing of gas turbine engines and reduction gears.

We spoke with Yu. Kisel'gof, chief of the information and computing center at the plant and one of the initiators of introduction of the Astra system.

"We tie the future of our enterprise to the ASU," he said. "Automating the process of engine testing will enable us to insure further development of production volume without expanding the engine testing station. After all, the Astra will allow us to save up to 5.2 hours for testing each engine. And the economic impact of the innovation will be 1.7 million rubles a year."

Application of the automated system will also lead to a marked improvement in the quality of repair work on aviation equipment.

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AIR

NEW SUBSTANCE EFFECTIVELY REPLACES BENZINE AS HELICOPTER PART CLEANER

Moscow VOZDUSHNYY TRANSPORT In Russian 23 Dec 82 p 3

[Article by Ya. Misonzhnikov, chief process engineer, Civil Aviation Plant No 21, Leningrad: "The Successful Debut of 'Polinka'"]

[Text] Dear Editor! I am a long-standing subscriber and reader of your newspaper. I want to ask immediately that you give more attention in your publications to the large group of process engineers at aviation repair plants and air technical bases of aviation enterprises. This group of specialists, because of its particular service duties, is the one that puts progressive methods of labor into use and introduces progressive production technology.

And the more vividly you present this facet of our activity, I believe, the quicker any collective will be able to master the new methods of work, thereby achieving steady growth in labor productivity, a rise in production sophistication, and good results in the campaign for economy and thrift. In other words, it can solve the entire set of problems which were precisely outlined in the materials of the November 1982 Plenum of the CPSU Central Committee and the seventh session of the USSR Supreme Soviet, 10th convocation. That is exactly why I want to tell the readers today about one of the projects of process engineers at our enterprise, my comrades at work. They were able to overcome numerous barriers to introduction of an economical new process of preparing design elements of the Mi-8 helicopter for repair.

Washing. At first glance this seems a simple operation to prepare parts and assemblies for diagnosis and repair. But it contains numerous difficulties and problems which are often even contradictory at bottom. What requirements does contemporary technology make for this work? The answer is very simple: it must be highly productive, high in quality, have no harmful effect on people and the design element of the aircraft, be fire-safe, and not cost too much. Yes, of course, the economic aspect of the question plays a substantial part in the matter.

The process engineers at our Civil Aviation Plant No 21 and other related civil aviation enterprises have worked for many years on the problem of improving the washing process. Dozens of formulas and compounds developed by our country's chemical industry were tested. But still the principal component for washing remained benzene, with its fire danger and toxicity.

The decree of the CPSU Central Committee and USSR Council of Ministers entitled "Strengthening Work on Conservation and Rational Use of Raw Material, Fuel-Energy, and Other Material Resources" provided new impetus in the search for a substitute for benzene. This party and government document was directly relevant to us, aviation repair workers. After all, we were using hundreds of kilograms of scarce aviation fuel to wash each helicopter. Everyone understood the complexity and timeliness of the challenge. A decision was adopted to organize a separate washing section to find an answer. In a short time a new arc-roofed hangar was built at the plant; a semiautomatic washing line was installed in it and divisions were set up to clean design elements with bone meal and to wash long parts. But the main question remained unsolved: what to substitute for benzene?

The plant technological service got in touch with the State Scientific Research Institute of Civil Aviation and enterprises of the Ministry of Chemical Industry. And then finally a ray of hope appeared. The process engineers received a prospectus for a new synthetic detergent with the poetic name "Polinka." But it was still a long way to a final solution. It was clear from the prospectus that Polinka was fire-safe and harmless to human skin. But what would its effect be on the metals and other materials included in the helicopter design? And generally speaking, how would it wash away the dirt (with its complex composition) that settles on various assemblies of the design within the helicopter during long hours of flight?

Once again we went to specialists at the State Scientific Research Institute of Civil Aviation and the All-Union Institute of Aviation Materials for help. A. Kokurina, senior scientific associate at the State Scientific Research Institute of Civil Aviation and a woman very interested in this subject, gave us a great deal of support. Finally we received the results of the study: Polinka was compatible with the materials in the helicopter design. Now we could test it in the section for washing the airframe of the helicopter. But where could we get Polinka? It was early in the year, and of course no allocated resources were available. But the time for ordering materials had long passed. We were also too late for the following year already. What could we do, make our order and wait idly for two years when success was already almost obvious?

The next meeting of the technical council in the office of chief engineer E. Vorob'yev adopted a decree to try to introduce the new washing agent as quickly as possible. We sent senior process engineer P. Krinitzin to the plant that produces Polinka to persuade the chemical workers to release a small quantity of this material to us for our final experiment. The plant management addressed a request to the Aviation Technical Supply Association that it help the enterprise with non-allocated supply of Polinka. This approach worked out and the plant received a small quantity of Polinka. Our process engineers tested it in practice and defined the process of working through the production operations.

The test results were positive. By this time, thanks to the operational help of the Aviation Technical Supply Association, the plant had received several tons of the new washing agent.

That seemed to be all: it was ready to be introduced. But then we encountered one more barrier to overcome. This was the psychological barrier. How had it been earlier? Process engineers would bring in a detergent, but as soon as it reached the work positions there would be a misfire. One agent caused itching, and another was not as fast as benzene. This meant that productivity dropped and earnings went down. Naturally, the shop managers objected.

But finally the day arrived when it was firmly decided to incorporate the new technology of preparing helicopters for repair. Understanding the importance of the task, deputy chief process engineer S. Ryabova and senior scientific associate of the State Scientific Research Institute of Civil Aviation A. Kokurina put on coveralls, took their places alongside section worker V. Zheltonozhko, and started washing the fuselage of the next aircraft. Section foreman Yu. Lebednov was right there closely watching their actions and the clock. The job was finished. Plant specialists and the shop managers inspected the fuselage very carefully. The workers and section foremen were satisfied: everything had been done quickly and well.

Now we complete the story. A change in the washing procedure is being made. The use of Polinka is becoming mandatory for all plants in the sector that repair Mi-4 and Mi-8 helicopters. They are receiving new technical documents, and our enterprise is the leading one in the sector for restoring this kind of aviation equipment. Changes are also being made in expenditure norms for materials; the amount of benzene is being reduced dozens of times.

Upon completion of all the work, B. Dmitriyev, the director of the plant, gave bonuses to all those who particularly distinguish themselves in development and introduction of the synthetic detergent Polinka.

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## RAILROAD

### AZERBAIJAN CP CC ON SHORTCOMINGS IN RAILROAD INDUSTRY

Baku BAKINSKIY RABOCHIY in Russian 28 Jan 83 p 2

[Article: "At the Central Committee of the Communist Party of Azerbaijan: The Central Committee of the Communist Party of Azerbaijan has adopted a decree dealing with the serious shortcomings in the operation of the Azerbaijan Railroad"]

[Text] The decree notes that for a long period of time the Azerbaijan Railroad has been operating extremely unsatisfactorily. It regularly fails to guarantee the fulfillment of the planned assignments for shipments of freight for the national economy, and this creates large difficulties in the work of the urban and rural workers to fulfill their plans and socialist pledges and has a detrimental effect upon the further rise in the republic's economy. The railroad has not been fulfilling the technical-economic indicators; the freight-car turnover rate has been increased by more than 24 hours; and there has been a reduction in the sectional speed. The schedules for freight and passenger trains are grossly violated, and no provision is made for the normal use of the locomotive and freight-car pool, the maintenance of track structures, energy supply, signaling, and communication. The work of the dispatcher apparatus has been insufficiently organized, and organizational-technical measures for the further improvement of the technological processes of the hauling process are being carried out poorly.

During the past year alone, at the juncture with the North Caucasus Railroad, 30,000 fewer freight cars were accepted than in 1981. Despite the existence of a surplus working pool of freight cars, the number of freight cars that are used daily to haul freight is approximately 1000 less than the needs for local freight.

Many of the enterprises in the railroad are operating considerably below their capabilities, and are not making full use of the available technical means. The work is unsatisfactorily organized at the existing classification stations and at the newly activated one at Shirvan, at the refrigerator-car roundhouse at Alyaty, and others.

The large complications in the operation of the railroad are caused by numerous instances of defective operations, train crashes, collisions, and other crude violations of the rules for traffic safety. The labor and technological discipline is low.

During the first two years of the 11th Five-Year Plan no provision was made for the fulfillment of the plan for profit, labor productivity, or the net costs of shipments.

The lack of any constant strict supervision led to a situation in which many enterprises are not waging a struggle to ensure the intactness of the freight shipments for the national economy, and there have been numerous instances of thefts involving freight shipments.

Passenger shipments are being carried out at a low level, and there is a lack of even the elementary services for passengers at the terminals and en route.

The railroad managers engage to an extremely insufficient extent in the resolution of social problems and the improvement of the working, everyday, and recreational conditions for the railroad workers. There has been an increase in the overtime payments to workers who are involved in train traffic and there have been numerous violations of the conditions governing the labor of the locomotive brigades.

This unsatisfactory situation on the Azerbaijan Railroad is, to a considerable degree, the consequence of the violation of the party principles pertaining to the selection, placement, and education of cadres. There has been a lack of a proper reserve of workers; there has been a frequent replacement of managers of enterprises, departments, and services. The personnel turnover rate continues to be considerable. A number of enterprises have not been completely manned with specialists in the leading occupations, and there have been instances when workers who have botched an assigned job have been transferred to other responsible positions. A number of persons who were recommended by Comrade Kengerli for responsible positions were subsequently removed from their job as a result of serious shortcomings and abuses, and some of them were brought to criminal responsibility.

An unhealthy morale and psychological atmosphere has developed among the staff of the Railroad Administration. There is no coordination in the actions of the managers, there is a complete lack of any system of supervising or organizing the execution of the decisions of the party and Soviet agencies or the railroad's own written orders and instructions, and there is no strict discipline, precision, or timeliness in the work. During the past three years there has not been even a single meeting of the railroad's technical council. There has been no consideration of the questions linked with the prospects for the future development and technical equipping of the republic's main line.

The activities of the railroad and its managers have been repeatedly subjected to sharp criticism at the Bureau and plenums of the Central Committee of the Communist Party of Azerbaijan [CPA], and meetings of the party activists. Party and administrative punishments were imposed on the chief of the railroad Comrade Kengerli, his first deputy Comrade Bagirov, and his deputy for traffic Comrade Vasilenko. However, as was indicated by the practice of their subsequent work, they did not make any practical conclusions for themselves and no noticeable improvements in the operation of the railroad occurred.

The AzCP Central Committee notes that other deputy chiefs of the railroad -- Comrades Muradov, Makarov, Mekhtiyev, and Khayatov -- have been poorly fulfilling their duties, have not been demonstrating the proper activity rate in their work, and have been taking a conciliatory attitude toward the existing shortcomings.

The AzCP Central Committee, as a result of the failure to direct the operation of the railroad, the regular nonfulfillment of the basic technical-economic indicators, the low level of labor, production, and executive discipline in the collectives, and the violation of party principles governing the selection, placement, and education of cadres, has removed Comrade F. I. Kengerli from his duties as chief of the Azerbaijan Railroad.

Comrade T. M. Bagirov has been removed from his duties as First Deputy Chief of the Azerbaijan Railroad as a result of his tolerant attitude toward serious shortcomings in the operation of the railroad, the unsatisfactory state of affairs in the providing of passenger services, and his low demandingness toward the operation of the subordinate services.

As a result of the unsatisfactory organization of the operational work of the railroad, and the lack of supervision over the activities of the subordinate service and over the observance of the traffic schedule for passenger and freight trains, Comrade I. P. Vasilenko has been removed from his duties as deputy chief of the Azerbaijan Railroad and chief of the traffic service.

Deputy chiefs of the Azerbaijan Railroad Comrades E. E. Muradov, I. S. Makarov, M. M. Mekhtiyev, and A. M. Khayatov, as a result of failure to take the proper steps to improve the work of their subordinate services, departments, and enterprises in the railroad, have been issued a strict warning and have been required to guarantee the fundamental improvement of the work in the sectors that are managed by them, and to show a greater activity rate in the job of eradicating the shortcomings and introducing the proper order in the operation of the railroad.

The Administration of the Azerbaijan Railroad has been obliged:

-- within the shortest period of time to develop and carry out steps aimed at the considerable improvement in the work of railroad transportation, the unconditional fulfillment of the established plans for shipments, the strict observance of the schedule for train traffic, the high quality of maintenance of the locomotive and railroad-car pool, the track structures, energy supply, signaling, and communication, and the carrying out of additional measures to assure the safety of railroad traffic;

-- to achieve a regular improvement in the work style and methods of the apparatus of the administration, to raise the level of management of the subordinate enterprises. To educate in the administrative personnel of the apparatus and the structural subdivisions high executive discipline and responsibility for the assigned work sector; to raise the level of on-the-job and professional qualification;

-- to guarantee the strict procedure in the work of all managements, the improvement of the qualitative indicators pertaining to the work of the railroad, to create in every collective an atmosphere of intolerance toward violators of labor and technological discipline and toward instances of abuses.

The party organizations of the enterprises in the Azerbaijan Railroad are obliged to increase their demandingness toward the administrative personnel for the

guaranteeing of precise and continuous operation of railroad transportation, and to direct the efforts of the workers toward the elimination of the existing shortcomings in economic activities, the reinforcement of labor and production discipline, and the decisive eradication of manifestations of poor business practices and instances of abuses of one's official position. They are obliged to improve the mass-political work in the collectives, to guarantee the broad propagandizing of economic and occupational knowledge.

The republic's party, Soviet, and Komsomol organizations, for purposes of increasing the effectiveness of the work of railroad transport, must guarantee the broad introduction of the experience of the advanced railroad collectives, must achieve the most rapid improvement of the activities of all subdivisions and sectors of the Azerbaijan Railroad, and must render to them the necessary practical assistance in matters of increasing the effectiveness of the use of rolling stock, the guaranteeing of the repair and intactness of the railroad cars and containers, and the manning of the subdivisions and sectors with personnel in the leading occupations.

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## RAILROAD

### BRIEFS

NEW ELECTRIC LOCOMOTIVE--The Novocherkasskiy electric locomotive building plant has begun the production of a new model of the "VL-80S" locomotive. It was developed at the All-union Scientific-and-Research, Planning-and-Design and Technical Institute of Electric Locomotive Building. The new version will permit the operation of electric locomotives with 2, 3 or 4 sections. Optimum power is selected as a function of train weight, with operating costs being reduced significantly. The economic effect of a single locomotive will be about R146,000. Series production is planned for next year. [By B. Samoylov, Novocherkassk] [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 14 Oct 82 p 1] 9194

ER-2R NEW ELECTRIC LOCOMOTIVE--Production of parts and components for the new electric locomotive ER-2R, which operates on DC, has started at the Riga car-building plant. It differs from the current model ER-2 by virtue of the greater comfort level of the saloons, convenience of operation and a series of technical innovations. Recuperative-rheostat braking, in which a part of the electric power is returned to the contact network, is employed. According to the estimates of specialists, this saves about 20 percent on electric power, as compared with the earlier model of the locomotive. [By A. Dement'yev] [Text] [Riga SOVETSKAYA LATVIYA in Russian 23 Oct 82 p 2] 9194

FIRST ELECTRIC LOCOMOTIVES ON LINE--Baranovichi (GUDOK correspondent)--Electrification of sections of the main run between Orsha-Brest on the Belorussian main line is continuing. In the near future, power will be put into the contact network from Stolbtsy to Baranovichi, where electric commuter trains will be in operation for the first time. The first 7 VL80S freight locomotives have also arrived at the Baranovichi depot. As deputy head of the depot L. Davydovich has reported, maintenance workers have already begun activating the new equipment. Maintenance workers are also preparing at the Baranovichi depot. The traction tracks have been renovated, and equipment and testing stands have been readied. [Text] [Moscow GUDOK in Russian 14 Nov 82 p 4] 9194

THREE NEW SUBWAY STATIONS--Leningrad--Three more stations were put into operation yesterday on the 4th section of the Moscow-Petrograd line of the Leningrad subway system: "Chernaya rechka", "Pionerskaya" and "Udel'naya". Tunnel run on the new section is about 7 kilometers. Now the total length

of the lines in the Leningrad subway system is 80 kilometers. [By P. Vladimirov] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 6 Nov 82 p 4] 9194

BAM: FROM YANCHUKAN ON TO MUYAKAN--Movement of work trains has opened on the Buryat sector of BAM [Baykal-Amur Main Line] as far as the Yanchukan siding. From here it is just a stone's throw to the station of Muyakan at the 664th kilometer on BAM, where the first train is due to arrive on the eve of the 60th anniversary of the USSR. The competition to reach this boundary is being conducted on the initiative of collective SMP-581 of the general sub-contracting trust of Nizhneangarsktransstroy and tunnel unit No. 11 of Bamtonnel'sstroy Administration, approved by Dorprofsozh [Road Committee of the Union of Rail Transport Workers] of Transbaykal transport builders. A "workers' race" was set as the basis of the competition. [By A. Prigodin] [Text] [Moscow STROITEL'NAYA GAZETA in Russian 10 Oct 82 p 3] 9194

KODARSKIY TUNNEL ON BAM--Chita--On the Chita section of BAM tunneling has started for the Kodarskiy Tunnel. This is the last, the seventh underground corridor on the steel main line. Construction of the 2-kilometer tunnel, the northernmost "subway" in our country, has been awarded to the collective tunnel unit No. 12, the best sub division of the "BAMtonnel'sstroy" administration, which already distinguished itself in tunneling the 7-kilometer Baykal underground run. Work began from the east entrance. Gennadiy Kuznetsov's combined mining and tunneling brigade did the blasting. The first meters of rocky mountain mass have been penetrated. The Kodarskiy Tunnel is a key objective on the route of the Baykal-Amur Main Line. When its construction is completed, and this is planned for 1984, through train traffic will be opened over the entire steel road. [By M. Kikhal'kov] [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 14 Oct 82 p 1] 9194

BANK-TO-BANK HANDSHAKE--Naberezhnyye Chelny, Tatar ASSR--Construction of the largest bridge in Tatariya across the Kama is being wrapped up. Blocks for the last 37 spans of the crossing above the dam under construction for the Nizhnekamskaya GES [Hydroelectric power station] have been put in place. The dimensions of the combined railroad and automobile bridge are impressive--1150 meters long and 40 meters wide. Two railroad lines will cross it. Parallel to these, a 6-lane highway joining Naberezhnyye Chelny and other cities on the Kama with Kazan', Izhevsk and Ufa, is being laid out. In a word, the bridge will join all of the transport arteries criss-crossing the rapidly developing Nizhnekamskiy territorial-industrial complex. The builders have planned to place the first phase in operations by the 65th anniversary of the October Revolution. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 19 Oct 82 p 1] 9194

COMPUTER-COORDINATED CARGO HANDLING--Nakhodka--An important step toward more complete automation of cargo transfer operations has been made in Vostochnyy port. A computer has taken on the management of freight flow in coal. An information-computer center calculates the amounts of coal arriving daily in railroad cars at Nakhodka-Vostochnaya station, gives commands to a coal complex which loads coal onto ships and determines the amount, with an

accuracy to a single kilogram. The computer also performs commercial functions. Vostochnyy port is becoming a unique testing ground for the USSR Ministry of the Maritime Fleet. An ASU-computer [automated control station-computer] has already been incorporated here and other systems are being tested. It has been decided to incorporate the experience of Vostochnyy port at other large harbors of the nation. [Text] [Moscow GUDOK in Russian 20 Oct 82 p 1] 9194

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## OCEAN AND RIVER

### CURRENT PLANS FOR CAPITAL CONSTRUCTION IN RIVER TRANSPORT

Moscow RECHNOY TRANSPORT in Russian No 11, Nov 82, pp 2-3

[Article by F. Sirotin, RSFSR deputy minister of the river fleet: "Fulfill the Capital Construction Program"]

[Text] The entire Soviet nation, guided by the Communist Party, is acting with enormous creative enthusiasm and purposefulness to implement the extensive program worked out by the 26th Congress of the CPSU for the economic, social and political development of Soviet society. Implementation of the USSR Food-Supply Program, approved at the May Plenum of the CPSU Central Committee, is an important step in strengthening the entire national economy and increasing its efficiency. Comrade L.I. Brezhnev said at the plenum: "Preparing and implementing the Food-Supply Program is an entirely new step in our planning system and in managing a socialist economy. The program embodies a result-oriented and comprehensive approach to solving the food-supply problem."\*

Extremely important tasks for developing and reinforcing material and technical resources have been assigned to the river transport system in the 11th Five-Year Plan. Further improvement in efficiency and quality of transportation operations will depend, to a considerable extent, on fulfillment of these tasks, and a more complete fulfillment of the river transport requirements of the national economy and the populace. These tasks were described in the "Basic Directions for the Economic and Social Development of the USSR During 1981-1985 and During the Period Up to 1990," in the decree of the CPSU Central Committee and USSR Council of Ministers "Measures for Developing River Transport in 1981-1985," and in the USSR Food-Supply Program for the period up to 1990.

River transport developed further in the first year of the 11th Five-Year Plan. The ministry's enterprises built self-propelled and nonself-propelled ships with an overall cargo-carrying capacity of more than 264,000 tons, tugboats with 31,000 kilowatts of power and passenger ships with passenger capacity of 7,600. The enterprises also put into operation transshipment complexes with mechanized berths at Nizhnevartovsk, Labytnangi, Kotlas, Cherepovets and Svetlyy. They built the Osetrovo and Moryakovskiy ship raising structures for fleet maintenance and operations bases, as well as children's preschool institutions at Osetrovo, Kachug, Lesosibirsk, Arkhangel'sk and Cherepovets, a school in Petrokrepost', a club at Chkalovsk, a hospital for the Zhatay Ship

\* PRAVDA, 25 May 1982

Building and Repair Plant, plus a number of other production and nonproduction facilities. The plan for housing was exceeded by 26,700 m<sup>2</sup>. Capital investments during 1980 increased by 12 million rubles.

In 1982, the plan for building self-propelled, cargo-carrying and nonself-propelled tankers is being fulfilled. However, the ministry's enterprises have lagged behind in building nonself-propelled cargo-carrying tonnage.

To implement the USSR Food-Supply Program, the USSR Ministry of the Ship-Building Industry jointly with the RSFSR Ministry of the River Fleet has been tasked with building 90 river vessels for carrying vegetables. Building these vessels will provide a greater degree of safekeeping for agricultural products and will also speed up the development and construction of special transportation resources for small rivers. In connection with these tasks, the Technical Administration of the Ministry of the River Fleet must speed up the preparation of technical documentation for building such vessels, and Glavflot [Main Administration of Shipping and of Ship-Repair Establishments] must put these vessels into series-production at a rapid rate. Questions of distributing the construction of these special vessels among the industry's enterprises must be resolved at least cost possible to the overall ship-building program.

In 1982, a modern transshipment complex has been activated at the port of Rostov and preparations are being completed for putting into operation a complex at the port of Nizhnevartovsk. More than 60,000 m<sup>2</sup> of housing, plus pre-school institutions for 920 children have been built. Compared with 1981, more basic resources were brought into action, more building and installation work in the river transport sector was completed, more capital investments were made in municipal construction and in building educational and health-care institutions. The capital construction plans for developing the material and technical base of the Volga United, Volga-Don, Northern, Northwestern, Irtysh and Bel'skiy steamship lines, the "Teplokhod" Plant and the enterprises of Glavvodput' [Main Administration of Waterways and Hydraulic Engineering Enterprises] are being successfully carried out. A considerable amount of work has been done to expand the river ports at Kotlas and Osetrovo, construct the second line of the Sheksna sluice, and rebuild the structures of the White Sea-Baltic Canal. Much progress has also been made in setting up a reservoir to serve as a repair point at the settlement of Belya Gora, building mechanized piers for the supply bases at Nadym and Labytnangi, constructing protective structures for the "60th Anniversary of October" plant, building the port at Koz'modem'yansk and the complex of buildings for the vocational and technical school in Moscow, plus a number of other projects.

However, from January to October the plan for capital investments and building and installation work was not fulfilled. The Yenisey, Amur and Moscow steamship lines showed the greatest delays. The ports of Krasnoyarsk, Khabarovsk and Komsomol'sk-na-Amure and the fleet maintenance and operation base at Malysheva did not fulfill the plan for building bulk cargo piers.

To a considerable extent, these failures can be explained by the unsatisfactory work of the subcontracting construction organizations and especially the Ministry of Transport Construction. Joint measures by the Ministry of Transport

Construction and the Ministry of the River Fleet, which determined the volumes and time periods for construction work, and the supply of reinforced concrete and other structures to river transport construction sites, were not completely fulfilled.

Our joint review with the Ministry of Transport Construction of the progress being made in carrying out the plan for building and installation work was a positive experience. We reviewed the progress being made by the Dal'transstroy [Far Eastern Transport Construction Trust] and the Amur Steamship Line, the Tomsktranstroy [Tomsk Transport Construction Trust] and West Siberian Steamship Line, the Gortransstroy [Gorkiy Transport Construction Trust] and the Volga United Steamship Line, the Lenabamstroy [Lena Construction Trust for the Baykal-Amur Main Line] and the Lena Construction Trust for the Baykal-Amur Main Line] and the Lena United Steamship Line and many other important building sites. As a result of the review, many shortcomings that were brought to light were eliminated. Twice we made on-site examinations of the construction progress at the Osetrovo Water Transport Junction facilities. This was needed because the Lena United Steamship Line had made a number of mistakes in supplying equipment and goods to nearly-completed projects, and the ministry's Glavsnab [Main Supply Administration] had not provided timely and necessary assistance to the steamship line. Due to lack of organization, similar mistakes occurred on the Amur Steamship Line in supplying equipment for the fleet maintenance and operation base at Zeya and the port of Khabarovsk.

The ministry has taken appropriate measures to improve the organization of supplying equipment to construction sites. The steamship lines and the ministry's enterprises, under the Glavsnab's direction, must redesign their work and complete the supplying of construction sites strictly according to schedule. This is especially important for nearly-completed projects.

Today the timeliness of delivering standard equipment and manufacturing non-standard equipment for the large transshipment complexes at the port of Vazhiny and Kambarka is worrying the designers and builders. For example, more than 1,000 tons of nonstandard equipment must be manufactured by the ministry's enterprises for the port of Kambarka. By the ministry's decision, this work must be done by the Kama Steamship Line's enterprises, the Third International Ship-Building and Repair Plant of the "Volgotanker" Steamship Line, the experimental plant of the Leningrad Institute of Water Transport and the experimental plant of the Central Planning and Design Bureau.

Setting up highly-productive freight-handling machinery is an important condition for developing and strengthening the material and technical base of river ports, since this is directly related to reducing processing time at transportation facilities.

During the current 5-year plan, based on designs of our scientific and planning institutes, it is planned to put into experimental operation a railcar unloading machine on the Volga United Steamship Line capable of handling 760 tons per hour, a floating chain-conveyer loader capable of handling 1,500 tons per hour and a special machine for cleaning crane and railroad tracks. There will be vibrating machinery for cleaning coal from cars on the Volga United and Amur Steamship Line, plus new salt-loading devices on the Kama Steamship Line.

The Central Planning and Design Bureau's experimental plant will manufacture a pneumatic grain loader for the piers under construction at the port of Kalach, as well as a set of pier equipment for unloading grain at Moscow's Yuzhnyy Port.

As is well known, Western Siberia specifically is the region where river transport requirements must be met first. In connection with this, there is a special significance in quickly putting into operation the mechanized piers at the general-purpose supply bases in Nizhnevartovsk, Sergino, Labytnangi, Nadym and Urengoy, which can handle more than 5 million tons of freight traffic. The initially activated pier complexes, are already in operation in Nizhnevartovsk and Labytnangi. A more complete and timely delivery of goods for the oil and gas complex of Tyumen' Oblast depends on how quickly other piers are built. The task of speeding up pier construction has been assigned to the Irtysh Steamship Line and the Ministry of Transport Construction's Zapsibtransstroy [Western Siberia Transport Construction] Trust.

The material and technical base of industrial enterprise is being strengthened. Renovations are underway and production capacities are being expanded at the fleet maintenance and operation bases at Malysheva, Tarskiy, Pechora and Samus'. Also the Bor Ship-Repair Plant and the Kalinin Fleet Maintenance and Operation Base are being built. However, the pace of construction at the Bor plant and the Kalinin fleet base is slower than provided for in the annual plans of the Volga and "Volgotanker" steamship lines. Also, the Moscow Steamship Line and the Podvodrechstroy [Underwater River Construction] are lagging behind in expanding the Belogorodok Shipbuilding and Ship-repair Plant.

There is no justification for falling behind in construction of living quarters and children's preschool institutions. Only the Volga-Don, Northern, Northwestern, Pechora, Western and Irtysh steamship lines are successfully carrying out housing construction. The Kama, West Siberian, Yenisey and Lena United steamship lines are not fulfilling the plan for capital investments. The task for these lines is to allocate the necessary materials and required number of workers, during the remainder of the year, for building living quarters. The "Volgotanker" and Volga United steamship lines have the tasks of eliminating shortcomings in organizing construction of children's preschool institutions and making the capital investments which were planned for these purposes.

In accord with the comprehensive program for improving the management of river transport, using modern computer technology and automated systems, the further development of the "Rechflot" [River Fleet] Automated Control System is envisioned, including communications and radio navigation equipment. Considerable amounts of capital investments have been allocated to implement the long-term program. It is important that the plans being developed for construction and renovation of the ministry's enterprises provide for the development of communications equipment on the basis of automated work positions using mini- and microcomputers for data processing.

The condition of water routes and the operational reliability of navigable structures have a great influence on the transport fleet's operations.

Development of waterway facilities is impossible without a corresponding reinforcement of their material and technical base. The ministry is devoting constant attention to this problem.

Construction of the second line of the Sheksna sluice on the V.I. Lenin Volga-Baltic Waterway began in 1981. Planning work is in progress for the "Celebrated" sluice of the Northern Dvina system of sluices, and the navigable dike of the "Andreyevka" Water-Engineering System is being rebuilt. Funds will be allocated in 1983 to rebuild the dike of the "Trudkommuna" Water-Engineering System in the Moskva River system of sluices. The water-engineering works of a number of other transportation systems need to be reequipped, which should be implemented in the planning process. Capital works have been started to open up a number of small rivers in the oil and gas fields of Western Siberia for permanent navigation.

Despite the success this year of the Main Administration of Waterways and Water-Engineering Works in carrying out the plans for capital investments and for building and installation work, the cleaning structures of the administrative base of the Amur BUP [Basin Administration of Waterways] are not being built at an acceptably rapid pace, and the plans for building a number of other structures are not being fulfilled.

To a great extent, efficient use of river transport depends on the presence and equipment of departmental piers at industrial enterprises. At present, more than 1,000 departmental piers are operating on the internal waterways of the RSFSR. The transshipments at these piers, which are handled by the resources of the ministry's ports and the shipping clients, amount to approximately 40 percent of all dry cargo, almost all oil and petroleum products, floated lumber, cement in bulk and a significant amount of agricultural products, mineral and construction materials.

In a number of steamship lines, the departmental piers handle a large volume of the loading work. In the Volga United Steamship Line, they handle 51.2 percent of the loading work; in the Sukhona line they handle 50.8 percent; in the White Sea-Onega they handle 60.5 percent; in the Irtysh Line, the figure is 58.7 percent.

However, equipment condition and work organization at these piers do not meet the demands for accelerated handling of the transport fleet.

At present, there are 70 departmental piers under construction, with a combined length of 11.5 kilometers and a cost of about 300 million rubles. Construction is planned for an additional 45 mechanized piers with a combined length of 6.4 kilometers. Unfortunately, the start of construction is being delayed for the piers of the Ministry of the Construction Materials Industry's enterprises in Vol'sk, Voskresensk, Zhigulevsk, Kasimov and Mokhsogollokh; the Ministry of Construction of Petroleum and Gas Industry Enterprises' piers are being delayed in Megion, Tomsk, Kazym and Strezhevoy; the USSR Gosnab's piers are being delayed in Kalinin, Kazan and El'dikan. Therefore, the steamship lines, the Main Administration of Capital Construction, the Main Administration of Ports and the Main Cargo Administration must work with these ministries to expand the program for constructing departmental piers.

The slow pace of constructing departmental piers, and the occasional refusal to build them are explained not so much by limited capital investments, as by the absence of contractors. Thus, it is very important that the Ministry of the River Fleet organized subunits to construct river piers on internal waterways for republic ministries and departments. As part of the Podvodrechstroy, special detachments were set up in Gorkiy and Perm. Construction of departmental piers, provided for in the 1982 plan, is underway for the Ministry of the Fruit and Vegetable Industry at Zelenginskiy and Nikol'skiy, for the Union of the Consumers' Societies of the RSFSR in Stupino and for the Ministry of Agriculture in Kotlas. Under these conditions, the task of the GUKS [Main Administration of Capital Construction] is to help carry out the assigned program and consistently develop the program in the future years of the 5-year plan.

In conjunction with this extensive program of capital construction in river transport, the responsibility of the planning institutes has increased significantly for timely, high-quality preparation of planning and budgetary documents and comprehensive planning for projects. The planning institutes must assure that plans are drawn up for river transport enterprises and facilities which meet the modern demands of scientific, technical and social progress and the conditions for moving the economy into an intensive phase of development, as was envisioned by the decisions of the 26th CPSU Congress. These demands and conditions must be met in the plans being developed for building large river ports at Kalyazin and Temryuk, a ship-repair plant at Volgorechensk and other important projects.

The ministry's planning institutes (Giprorrechtrans and Lengiprorrechtrans) [State Institute for Planning in River Transportation and Leningrad State Institute for Planning in River Transportation] have developed the basic directions in the 11th Five-Year Plan for planning ports, ship-repair enterprises and waterways. These two institutes have also drawn up, ratified and coordinated, with the RSFSR Gosstroy [All-Russian Central State Construction Office], a comprehensive program for increasing the degree of automation in planning work.

By eliminating the abovementioned shortcomings in organizing capital construction and by carrying out the program for development and reinforcement of river transport's material and technical base, we will be able to more fully satisfy the national economy's needs for transportation of goods and passengers.

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## OCEAN AND RIVER

### TECHNOLOGICAL IMPROVEMENTS PLANNED FOR RIVER, MARITIME TRANSPORT

Moscow VODNYY TRANSPORT in Russian 20 Nov 82 p 1

[Article by A. V. Goldobenko, chairman, Central Board of Directors, Scientific-Technical Society of Water Transport: "Put Scientific and Technical Advances to Work in Production"]

[Text] The task of intensifying the economy and raising the efficiency of public production by every means stands out particularly among the key national economic challenges of the 1980's and the 11th Five-Year Plan.

One of the main ways to accomplish this task of intensification of the economy and achieve greater results with smaller expenditures is to accelerate scientific-technical progress. This is precisely the policy followed by the maritime and river transport scientific and technical community.

In the time between the 7th and 8th congresses of the NTO [Scientific-Technical Society] of Water Transportation, republic and basin boards of directors and primary organizations, with the constant help of party and trade union bodies, did a great deal to mobilize scientists, engineers, technicians, and workers — all the members of the NTO, to carry out the decisions of the 25th and 26th party congresses. The society became more active in such basic areas as using scientific and technical advances in the field of organizing the shipping process; introducing new equipment, progressive technology, and automated control systems; and, developing fundamentally new types of means of transportation, machines, and equipment. A great deal was done to eliminate manual labor, especially in loading-unloading, repair, and auxiliary operations.

The high rate of scientific-technical progress in water transportation in recent years has qualitatively changed the technology of maritime and river shipping and had an enormous impact on stepping up technical re-equipping of the fleet, ports, and ship repair enterprises. Fundamentally new classes of ships with a high level of automation, greater comfort in living and service quarters, every convenience for recreation, study, and sports, and with provision for necessary sanitary-hygiene and safety conditions for water transportation workers have appeared on our rivers and seas. For example, the maritime fleet has adopted container ships of the Vasilii Kucher class with a capacity of 39 20-ton containers; the Kapitan Smirnov with a capacity of 1,350 containers; ro-ro class ships; lighter carriers; specialized ships for transporting heavy objects weighing up to 500 tons; railroad ferries; and, icebreakers. The river fleet

has the XXVI S'yezd KPSS class diesel-powered river cargo trains with capacities of 10,000 tons; 2,000-horsepower pushboats; barges that can be formed into large cargo trains with capacities up to 22,000 tons; highly reliable Luch class surface-effect passenger vessels; and others.

It should be observed that in our country practically all pushboats and barges have automatic hitching devices which make the process of forming a train of vessels much easier and quicker. A group of NTO members — scientists, designers, and production workers — was awarded the USSR State Prize in 1979 for development and introduction of these devices.

Significant changes have also taken place in the ports. Container terminals have been built in Leningrad, Ilichevsk, Osetrovo, Krasnoyarsk, Omsk, and in Vostochnyy Port. Specialized regions to handle ro-ro ships have been set up in Ilichevsk, Leningrad, Riga, and Novorossiysk, while there are powerful complexes to process coal and ore in the ports of Murmansk, Nikolayev, Vostochnyy, Perm, and Astrakhan, as well as in Poyarkovo, Medvezhyegorsk, and Ust-Donetsk.

Formation of a new fleet and construction and reconstruction in the ports created the conditions for a substantial increase in cargo shipment in containers. Container shipping rose 17 percent in the last five years, while shipping in stacks increased 70 percent. The introduction of containers and stacks made it possible in 1982 to raise the work productivity of the maritime fleet by 11.3 percent compared to 1977 and the productivity of the river fleet by 6.8 percent. The productivity of port workers in the maritime fleet was up 12.6 percent, while for the river fleet it was 15.2 percent. The levels of comprehensive mechanization rose to 94.6 and 91.6 percent respectively.

Unfortunately, the benefits received from the introduction of container shipping and shipping in consolidated batches are still not being taken into account adequately today. But certain examples show them very clearly. The system of shipping timber in stacks, which has been developed and introduced on a broad scale in practice within the country and for export, employs semirigid reusable strops. It has made it possible to raise the labor productivity of dock workers 2.5-3 times and increase dock carrying capacities 3-4 times. Even greater results have been achieved where cargo is shipped in containers on such lines as Nakhodka — Magadan, Vladivostok — Petropavlovsk, Osetrovo — Yakutsk, and Leningrad — Cuba. Members of the NTO have played and are playing a large part in development and construction of stacking and container equipment. At the same time, in the development of container and stack shipping we are still just approaching the "Equator." Calculations show that by the year 2000 container shipping in maritime and river transport will triple, shipping in ro-ro ships will increase 2.7 times, transportation by ferry will double, lighter shipping will increase 20 times, and about 75 percent of the cargo suitable for stacking will be shipped by the more progressive method. All this illustrates that the scientific-technical community has broad opportunities for applying its creative efforts and talents.

Special attention, particularly in republic, basin, and primary organizations of the NTO, should be devoted to comprehensive development of the lighter carrier system. As studies show, it is more efficient and universal in

application than shipping cargo by mixed river-sea class vessels. It is important here not to permit locally oriented decisions, but to find the optimal schemes of work on rivers and sea lanes so that we can get the maximum return from the advantages for which this system is being built. The sections for economic administration and operation of the fleet and the port sections should provide a great deal of help in solving this problem.

One of the important challenges facing the scientific-technical community is broad introduction of new, efficient technology and new cargo-handling devices that raise labor productivity in the seaports and river ports. A good deal has already been done in this direction.

Energetic work has gone forward in the seaports in 1981-1982 to establish all-weather grain-processing complexes. As a result, today the ports can unload up to 100,000 tons of grains from ships at one time during rain, snow, or even with winds up to 8-9 points. Naturally this produces a significant time savings, reduces ship and railroad downtime, and most importantly, improves the working conditions of dock workers. We should not fail to mention that members of the NPO made a large contribution to successfully solving this problem.

Handling different types of cargo demands a constant search for more modern technical concepts that promote reduced labor expenditures and replace manual labor with machine labor. Definite progress has been made in many seaports and river ports on this score too. We may very properly include among them the handling of large-diameter pipe for the Siberian - Western Europe gas pipeline and the handling of food in SPO-4 stacks. The scientific-technical community has taken an active part in introducing inventions and efficiency proposals which aim at reducing the proportion of manual labor in the port. The NPO of Water Transport gave broad support to the initiative of the Kaliningrad port workers under the slogan "Raise comprehensive mechanization to the maximum level!" This helped raise the level of comprehensive mechanization, which reached 98.8 percent in river ports in 1981 and 93.8 percent in seaports.

I will give a few more interesting examples. In 1981 comprehensive mechanized-automated technology for handling large-diameter steel pipe was developed by comrades Rostovtsev and Pustovalov, members of the NTO, and introduced in the port of Vanino. The introduction of grapples made it possible to completely eliminate the manual operations of fastening and unfastening the strops. As a result, labor productivity rose 1.5-2 times and the economic impact was 46,200 rubles a year.

In the port of Perm, V. I. Naymushin, V. Ya. Kirchanov, A. S. Tikhomirov, and K. F. Trenin, members of our society, developed and introduced a dosing area for bulk cargoes together with railroad car scales, a bunker, and a crane, which precluded the need for railroad cars to make unproductive empty runs to the Perm Marshaling yard.

The scientific-technical society devotes a great deal of attention to questions of conservation of fuel-energy and material resources. Scientists together with production workers are doing a great deal to devise systems and instruments that will support the use of heavy, economical grades of fuel in main power plants.

A search is underway for new, inexpensive metal substitutes in shipbuilding and repair and for ways to lengthen the life of certain machine assemblies.

The scientific-technical communities of the Black Sea, Upper Volga, Novorossiysk, Latvian, Dnepropetrovsk, and Northern boards of directors gave broad support to the initiative of the primary NTO of Water Transport organizations of the crews of the ships Severodonetsk (Black Sea Steamship Company, slogan -- "The economy must be economical") and OT-2053 (Volga Unified River Steamship Company, slogan -- "Stop fuel losses"). Both these initiatives are going forward successfully.

Scientists, engineers, and workers are doing a great deal to lengthen the navigation season on our rivers. The river fleet has added powerful line icebreakers and icebreaker attachments, and ships built specially for sailing in ice conditions have begun to arrive. About 15 million tons of various types of cargo was shipped as the result of lengthening the navigation season in 1981-1982.

The system of cooperation among different forms of transportation based on a continuous schedule-plan of work by a transportation center, developed by the Black Sea and Baltic steamship companies, is extremely important for making fuller use of means of transportation.

As we know, the system was endorsed by the CPSU Central Committee in March 1978 in the decree entitled "Labor Cooperation among the Collectives of Maritime, Railroad, Motor Vehicle, and River Fleet Workers in the Leningrad Transportation Center," and received broad creative support from the water transportation scientific-technical community. A joint plenum of the boards of directors of the NTO's of water, rail, and motor vehicle transportation and the highway system was devoted to this crucial problem, as were two all-Union scientific-technical seminars.

Further improvement in the system of management is a broad field of activity for members of the NTO of Water Transport.

The tasks facing the collectives of the maritime and river fleets in the 11th Five-Year Plan are very important. The principal ones are complete and timely satisfaction of the transportation needs of the national economy and the population and raising the efficiency and quality of work by the transportation system. To meet this challenge all members of the NTO must work tirelessly to accelerate scientific-technical progress and devote all their efforts to carrying out the decisions of the 26th party congress.

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OCEAN AND RIVER

NOVOROSSIYSK PORT BETTERS PERFORMANCE

Moscow VODNYY TRANSPORT in Russian 2 Nov 82 p 1

[Article by S. Parshikov, Novorossiysk: "Quality Guaranteed"]

[Text] Our country's anniversary, the 60th anniversary of the formation of the USSR, is approaching. Workers of the maritime fleet are striving to celebrate this day with shock labor. The collective of the port of Novorossiysk, the initiator of all-Union socialist competition to fulfill the assignment of the second year of the five-year plan ahead of schedule, is doing its part toward the overall success.

"In the last quarter," says A. Mikhalichenko, deputy chief port controller, "more than 70 ships were processed ahead of schedule. With a ship plan of loading 240 railroad cars dock workers attained a record level and dispatched an average of 247. The brigades of Hero of Socialist Labor V. Suslov, A. Kurt'ko, V. Fal'ko, V. Gorprychenko, and I. Lobodenko achieved especially good results in cargo-handling operations. They consistently fulfilled their assignment by 120 per cent."

When you look over the socialist obligations of the port collective for the current year, your attention is caught by one of the main points. Here is what it says: "By developing competition with allied forms of transportation as part of the transportation center and introducing an optimal schedule for fleet processing based on continuous schedule-plans, reduce ship dock time by 5,500 ship-hours compared to the norm. Free at least 700 railroad cars for the national economy by increasing static loading."

"The port workers know this point by heart, as they do all the others," says L. Machek, senior engineer for socialist competition, entering the conversation. "It is the main point. Dock machine operators are making every effort and using all their know-how to fulfill it."

To confirm what she said she produced the reports for the last, third quarter. In them we read: "The diesel ship Yeysk saved 39 hours; the Komsomolets Belorussii left the dock 72 hours ahead of schedule; the Matvey Muratov was processed 32 hours faster than scheduled; the dock time of the diesel ship Smena was cut by 35 hours." There are many more such examples.

"How do you explain such successes?" I asked.

"The main explanation is the great intensity of competition in honor of the 60th anniversary of the formation of the USSR," L. Machek responds. "Back at the start of the year port specialists worked up special cargo documents for the dock workers. They are a quality log and a check ticket. To see how they are used, let us look at the workplace of the dock workers."

A ship was being unloaded in the western region. It was mostly carrying boxes of different sizes. Receiving clerk Lyuba Felfilova counted them carefully one more time, checked to see that they were securely fastened in the railroad car, and attached special sheets to them. The sheets said, "Loaded by A. Krut'ko's brigade. Packing quality guaranteed." After this came the signatures of the brigade leader and three dock workers. The receiving clerk also left the check tickets in the railroad car. The size of a sheet of notebook paper, they contained the words: "Subject to immediate return to Novorossiysk Station of the North Caucasus Railroad. Report the condition of the cargo by letter."

Needless to say, such documents could not have been developed without creative work by port specialists. The result has been that the dock workers are more accountable for the quality of their work. The recipient now knows exactly where the goods came from, who shipped them, and who is accountable for defective work. The information received from the documents helps engineers in competition when they are summarizing results.

In short, intensified monitoring of fulfillment of the obligations adopted for the year raised the effectiveness of competition among brigades to a higher level. Four collectives of dock workers recently completed their production assignment for cargo processing for the first two years of the five-year plan. These were the consolidated comprehensive cost-accounting brigades headed by V. Fal'ko and D. Guts and the consolidated comprehensive brigades led by A. Krut'ko and L. Mikhalevich.

The fast pace of work, competition, and constant striving to achieve the promised goal enabled the Novorossiysk port workers in the first nine months of the year to reduce ship dock time by 10,498 ship-hours and to process 312 sea-going vessels on time and 325 ahead of schedule.

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OCEAN AND RIVER

RIVER TRANSPORT WORKERS ENCOUNTER DIFFICULTIES IN SUPPLYING BAM

Moscow VODNYY TRANSPORT in Russian 2 Dec 82 p 2

[Article by G. Kokorina, chief of the planning department of the East Siberian Steamship Company: "But the Volume of Cargo Keeps Declining..."]

[Text] Our newspaper has written numerous times about the problems of shipping cargo for the BAM, of the efforts being made by Siberian river fleet workers to provide participants in this grandiose construction project with the materials, equipment, and goods they need for full-fledged living and work. But the endeavor of river fleet workers does not always and everywhere find attention and support from the managers of this vast region. And this letter to the editors testifies that all the possibilities for more active participation by river fleet workers in stepping up construction of the BAM have not yet been exhausted. This should be discussed forthrightly, especially now when there is time to do serious preparation for next year's shipping season.

Way back in 1975 our East Siberian Steamship Company began shipping cargo for construction of the BAM across Baikal in direct mixed rail-water transportation. At that time a fleet and port facilities with a total capacity for processing and shipping 250,000 tons of cargo during the navigating season had already been built on a rush basis. The value of the newly built fixed capital was 30.1 million rubles. Mechanized docks were put into operation in the port of Baikal and in Severobaykalsk, Kultuk, and Nizhneangarsk.

During the 10th Five-Year Plan the shipment of cargo for BAM grew, reaching its highest figure in 1977-1978: 140,000 tons.

Then when the Buryat segment of BAM from Ust-Kut to Nizhneangarsk was put into operation, the bulk of the cargo traveled by railroad and shipping on Lake Baikal began to decline. In 1979 124,000 tons was shipped, and in 1980 even less, 97,000 tons.

For 1981 the plan of cargo delivery for BAM on Baikal was set at 150,000 tons, as in all previous years. But as stated above, the carrying capacity of the fleet and ports had already reached 250,000 tons. Despite this, loads for the Buryat sector traveled in direct rail transportation around Lake Baikal, going

more than 2,000 additional kilometers. Furthermore, because of car downtime in the overloaded segment of the road from Tayshet to Lena the delivery of loads to construction sites was regularly delayed,

In 1981 a session of the operational group at USSR Gosplan directed by deputy chairman of USSR Gosplan A. N. Lebed' adopted a resolution which stated: "In the third and fourth quarters of 1981 Soyuzglavtsement [Main Administration for Interrepublic Deliveries of Cement] (Comrade Ivanov) and Soyuzglavugol' [Main Administration for Interrepublic Deliveries of Coal] (Comrade Ul'yanov) must present 60,000 tons of cement from the Timlyuyskiy Cement Plant and 40,000 tons of Cherekhovo coal for shipment across Lake Baikal for organizations of GlavBAMstroy [Main Administration for Construction of BAM] with transshipment in the ports of Baikal and Kultuk. GlavBAMstroy (Comrade Mokhartov) must ship all reinforced concrete articles, metal construction elements, and bricks from subordinate enterprises located in Ulan-Ude, Shimanovsk, and Nakhodka across Lake Baikal through the above-mentioned ports."

Let me say right away that this resolution was not carried out. Because cargo was not presented for transshipment across Baikal, just 87,000 tons of cargo was shipped in 1981.

A similar situation was observed in the 1982 shipping season. With the same plan of 150,000 tons the steamship company shipped slightly more than half of this amount. Meanwhile, during discussion of the program for 1982 a joint meeting was held in November 1981 with representatives of the East Siberian Steamship Company, Vostsibglavsnab [Main Administration for Supply and Marketing in East Siberia] and Cherekhovuglesbyt [possibly Cherekhovo Coal Supply and Marketing Organization]. This meeting outlined plans to switch the same old 40,000 tons of coal from rail to river transportation through the ports of Kultuk and Baikal for customers on the Buryat segment of the main line and 60,000 tons of cement in special containers from rail to river transportation across Baikal through the port of Kultuk. In addition participants at the meeting asked USSR Glavsnab [Main Supply Administration], the Ministry of Railroads, and the Ministry of the River Fleet to include shipment of 50,000 tons of reinforced concrete articles for enterprises of GlavBAMstroy in the volume of shipping in direct mixed rail-water transportation through the ports of Baikal and Kultuk beginning in 1982.

In December 1981 the East Siberian Railroad (Chief Sh. Tsintsadze) and the East Siberian Steamship Company (Chief V. Skupov) worked out measures for full utilization of the ports of Baikal and Kultuk. These measures contemplated sending all cargo for the Buryat segment of BAM from stations east of Tayshet in direct mixed rail-water transportation and doing this shipping from the boundaries of the East Siberian Railroad with transshipment in the ports of Baikal and Kultuk, with a volume of at least 110,000 tons during the 1982 shipping season (April-October).

With great regret we must acknowledge today that none of the above-discussed resolutions and measures have been carried out. Freight continues to go around Baikal, not through the ports of Baikal and Kultuk, which I am firmly convinced would be more efficient. After all, it is perfectly obvious that organizing shipment in this way would make it possible to take load off an extremely busy rail sector, cut shipping distance, speed up cargo delivery, utilize the specially built fleet and ports, and substantially improve the use of fixed capital.

OCEAN AND RIVER

MARITIME TRAINING INSTITUTE GRADUATES FIRST CLASS

Moscow VODNYI TRANSPORT in Russian 25 Nov 82 p 1

[Interview with Pavel Andreyevich Tsyurupa, director of the Institute for Raising the Qualifications of Management Employees and Specialists, on the occasion of the school's first graduation ceremony by A. Bondareva; date and place not specified]

[Text] The Institute for Raising the Qualifications of Management Employees and Specialists of the Ministry of the Maritime Fleet has held its first graduation ceremony. We publish below an interview between our correspondent A. Bondareva and Pavel Andreyevich Tsyurupa, the director of the institute.

[Question] Pavel Andreyevich, more than 400 management employees from the ministry, 17 steamship companies, 37 ports, and 30 shipyards have successfully completed studies at the institute. What are the typical features of your first graduating class?

[Answer] The first thing I would mention would be their deep knowledge of theory and their readiness to improve management in the operation of the fleet and the ports and in ship repair work for maritime transportation. We have devoted special attention to independent creative work by the students and tried to make this work as close as possible to present-day problems and challenges. Graduation projects were done on topics that are timely in the sector and carry practical interest. And here is another important detail. The committee for defense of graduation projects has recommended that 42 of them be introduced in production, 34 be used in the educational process at the institute, and 9 be published in informational publications.

[Question] Could you please say a few words about your graduates.

[Answer] The certificates for first and second places were awarded to prominent brigade leaders of reinforced comprehensive brigades A. F. Rotar, from the Ilichevsk seaport, and V. K. Lobkov, from the Tuapse Ship Repair Yard imeni Dzerzhinskiy. Other well-known members of the first graduating class were V. S. Serdyuk, leader of a reinforced comprehensive brigade in the Korsakov

seaport, Ye. F. Sychev from the Novorossiysk Ship Repair Yard, G. V. Yanuk from the Vladivostok seaport, G. T. Nesterenko from the Nakhodka Ship Repair Yard, and N. G. Sarayev from the Izmail Ship Repair Yard.

[Question] Your institute is unusual. What new features have they used in the training process?

[Answer] Classes using active teaching methods such as work games and reviewing production situations were very effective. Seminars for exchanging progressive know-how were also very useful, in our opinion. All students went through practical training at leading enterprises of the sector. Sociological studies made in the first officer department showed that the students have an involved attitude toward our work. Several practical suggestions were made to improve the training process. They are now being carefully studied and will be introduced in practice. Our future plans are simple and at the same time complex: continued improvement of the educational process and searching for effective new forms of teaching. This is not an easy process. After all, we are going through the formative period and have to solve both educational and social problems such as providing normal living and housing conditions for the students, medical care, and others.

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OCEAN AND RIVER

'NORIL'SK' ICEBREAKER-CARGO SHIP BEGINS SERVICE OUT OF MURMANSK

Moscow VODNYI TRANSPORT in Russian 30 Nov 82 p 4

[Article by A. Aleksandrov and G. Nikolayev: "The Noril'sk Is the First"]

[Text] The first ship of the new SA-15 series has been commissioned. It is designated for the Murmansk Steamship Company. The diesel ship Noril'sk flies the flag of the USSR and the crew, having left the Vyartsilya shipyard in the city of Turku, has set its course for the Dutch port of Rotterdam. After being loaded there with large-diameter metal pipe for gas pipelines, the seamen will depart again for their native shores.

The shipbuilders of the Finnish Vyartsilya Company are building large reinforced ice-class ships with powerful engines for our country's merchant fleet. These dry-cargo ships embody the fundamental characteristics of container carriers, ro-ro ships, and bulkers.

This was the class of ship that USSR minister of the maritime fleet T. B. Guzhenko spoke of at the session of the USSR Supreme Soviet. A new generation of such ships, designated for work in ice conditions, will be added to the country's Arctic fleet next year.

A Murmansk crew has now set off for Finland to accept the Tiksi, the next ship of this series.

The Noril'sk is a multipurpose icebreaker-cargo ship capable of sailing on its own in ice up to one meter thick and temperatures down to -50 degrees. The Arctic operating conditions caused a number of new design concepts.

It is also very important that the Noril'sk does not need established ports. It can unload directly onto the ice through a stern ramp using carts. There are also 40-ton cranes on the deck. In addition, each ship of this class will have a ground-effect platform with a load capacity of up to 40 tons. It will help move cargo to an unprepared shore.

The ship has two Vyartsilya-Zultser diesel engines and five Vyartsilya-Vasa auxiliary engines. A large share of the navigation equipment was produced in the Soviet Union.

The crew has all necessary conditions for labor and rest in the Arctic zone.

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## OCEAN AND RIVER

### BOR SHIPYARD BEGINS WORK ON NEW TYPE OF PRODUCE CARRIER FOR INLAND WATERWAYS

Moscow TRUD in Russian 1 Oct 82 p 1

[Article by V. Redin, Bor, Gorky Oblast: "A Ship for Vegetables"]

[Text] Preparation has begun at the Bor Ship Building and Repair Yard imeni 40-y Godovshchiny Oktyabrya to produce a new class of diesel-powered produce ship.

Despite their designated purpose, these ships surprise one with an elegance that is usually typical only of passenger liners. The ship is snow-white, with fluid bow and stern lines and an unusual looking captain's house on the bow. This is how the beautiful ship looks in the model.

But this elegance and the unusual layout of the produce ship are not simply in tribute to the requirements of industrial esthetics. The design was developed by specialists at the technical design bureau of the RSFSR Ministry of the River Fleet, and the engineering decisions concerning the assemblies and sections of the new ship were dictated above all by the specific requirements of the ship itself.

For example, the snow-white color of the hull is expected to minimize heating from the sun's rays. After all, the holds will be full of vegetables and fruit, and they must be kept cool during prolonged transportation. The numerous air intakes arranged all along the hull insure reliable ventilation of the cargo when the ship is moving. In one trip the ship will be able to deliver, for example, a thousand tons of melons or 600 tons of tomatoes from Astrakhan to Moscow. Special containers set in several tiers will help preserve the cargo.

"Don't be surprised at the plan of the superstructure," says deputy chief engineer of the enterprise A. Makarov. "After all, a delicate cargo requires a delicate approach. Moving the engine room to the stern and putting the navigation rooms, the radio room, and a cabin for 10 crew members in the bow section will make it possible to reduce hull vibrations substantially. This is especially important for shipping vegetables and fruit. Special instruments and devices will help the captains sail these ships, which are 84 meters long and 12.3 meters wide, just as coolly and confidently as they would with a conventional superstructure."

The new produce ships will be able to travel not only on the large rivers, but also on their lateral tributaries; in addition they can travel to the Sea of Azov,

the Gulf of Finland, and Ladoga and Onega lakes. They are powerful enough to make their own way through bodies of water covered by a 20-centimeter layer of ice. This is not accidental. In the early spring and late fall, and also during return trips from the north, they will be able to take on timber and other cargoes. Their unique mobile telescopic hold cover makes the ships universal and enables the portal cranes to put cargo of any dimensions at any place in the hold.

This universality and a number of other innovations employed in the design of the produce ships will make the labor of river fleet workers twice as productive, reduce the prime cost of shipping by one-half, and insure maximum preservation of perishable cargo.

The USSR Food Program envisions building 90 river-going produce ships in 1983-1990. By next year the first ship with the Gorky trademark will begin sailing on our vast rivers.

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NEW RO-RO COMPLETES SEA TRIALS

Moscow VODNYY TRANSPORT in Russian 4 Dec 82 p 4

[Article by V. Shchetinin: "By the National Anniversary"]

[Text] The new ro-ro ship "Shestidesyatiletie SSSR" has successfully completed sea trials in the Gulf of Finland between Leningrad and Tallinn. The ship was built by workers at the Shipyard imeni A. A. Zhdanov.

The new ship's hull is 12.6 meters longer than earlier ships of this series. The bold idea of lengthening the ship came from designers at the Baltsudoproyekt [Baltic Ship Planning] Special Design Bureau. Now cargo capacity is enlarged significantly while the energy potential remains unchanged. The new ro-ro ship will be able to take on almost 700 Zhigulis, not slightly more than 500.

During the first voyage quick tests were made of the main ship engine, its operation in different modes and different speeds, the auxiliary mechanisms, pipelines, the anchor and rudder gear, and the operation of the hydraulic lift and vehicle platforms. The log was set up.

"I had already tested a similar ro-ro ship built by the Leningraders," said Genrikh Andreyevich Smirnov, acceptance captain of the Azov Maritime Steamship Company. "It earned the State Mark of Quality. The "Shestidesyatiletie SSSR" is one of the best ships in the maritime fleet. This was demonstrated by the dock and sea trials. The new ship has more powerful rudder gear than its 'older brothers,' and that makes it more maneuverable. The ship can bring its bow in to a small dock very gently, put down the loading ramp, and unload the vehicles quickly, in 7-8 hours.

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OCEAN AND RIVER

CONSTRUCTION BEGINS FOR GDR TERMINAL OF SASSNITZ-KLAIPEDA RAIL FERRY

Moscow GUDOK in Russian 24 Nov 82 p 4

[Article by N. Kukushkin: "The 'Bridge of Friendship' Is Under Construction"]

[Text] The noise of excavators, bulldozers, and other construction machinery announced the proximity of the town of Muckran on Ruegen Island (GDR). Work has begun here to build docks for the ferries which will soon begin traveling between Muckran and the Soviet port city of Klaipeda.

Until very recently, specifically until the decision was made this summer to organize a railroad ferry between the GDR and the USSR, few in the republic, to say nothing of beyond its borders, had heard of this little town on Ruegen. Now it has given its name to a major shock construction project where workers and specialists from many districts of the country have come together.

The new port will have a 210-meter dock, and the first diesel ferry will arrive there in late 1986. Incidentally, these ships will also be built here in the GDR, at the Mathias-Tesen yard in the city of Wismar. According to the agreement they will sail under the flags of both countries.

It is still difficult for a visitor to this enormous construction project to picture how the new port will actually look. Therefore the journalists asked one of the managers of the project to talk about this. Two broad-gauged rail spurs will be laid to the docks at different levels, says Lutz Langenhan. When a ferry docks here cars will move from the hold of the ship along the lower spur and from its deck along the upper spur.

Next to the dock will be a station for freight trains, 700 meters wide and about four kilometers long. Cars will be loaded and unloaded there. Some of them will be switched from broad to narrow gauge to travel on the railroads of the GDR and other countries. They will be dispatched to the continent from Ruegen, which is connected with the mainland by a levee along which a rail and highway roadbed has been laid.

After completion of construction of the new port ferries will dock in Muckran and Klaipeda every eight hours. Millions of tons of important national economic cargo will hurry in both directions between the two fraternal countries along the new 273-mile "bridge of friendship."

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MECHANIZATION EFFORTS CONTINUE AT KHERSON PORT

Moscow VODNYI TRANSPORT in Russian 16 Nov 82 p 4

[Article by V. Bezuglyy, Kherson: "Service for Machines"]

[Text] One year ago we published a report from the Kherson seaport. It told how the level of comprehensive mechanization there had risen noticeably. At the same time it was observed that the port still did not have a special plan like the one of the Kaliningrad port workers. But the Kherson port workers expressed their confidence that they would soon have such a target program. And now I have before me the working document: "Comprehensive plan for organizational-technical measures to insure the maximum level of comprehensive mechanization of loading-unloading, repair, and auxiliary work in the Kherson seaport in 1981-1985."

The article below will discuss how they are carrying out their plans and what problems the production innovators are facing.

When formulating their plan the Kherson port workers understood that success in the matter of full mechanization would depend first of all on the capacities and capabilities of the production base and, secondly, on precise organization of active, persistent creative searching by innovators.

The first point in the plan is to work out a subject list for port efficiency workers relative to mechanization of labor-intensive manual jobs in the current five-year plan. Incidentally, all the production collectives of the sector have engaged in this painstaking work and continue to do so because, without it, one cannot progress. The Kherson port workers finished it last year. They are constantly organizing systematic surveys of scientific-technical information on comprehensive mechanization of manual labor and regularly exchange of progressive know-how with other ports of the Ministry of the Maritime Fleet and associated transportation organizations.

Another established practice is to conclude one-time agreements for creative cooperation between Kherson port workers and the crews of ships that are making regular trips with import cargoes from foreign countries. The parties obligate themselves to load the holds in an efficient manner, with due regard for special features of unloading at the port of destination.

Since the end of last year socialist competition has begun in the port of Kherson among efficiency workers, workers, and engineering-technical personnel under the slogan "A Maximum Level of Comprehensive Mechanization." Annual competitive inspections for the best efficiency proposal in this matter are contemplated. All the production subdivisions of the port are now finishing the formation of creative brigades of efficiency workers and engineering-technical personnel whose slogan is "Give engineering support to worker initiative."

Steps are being taken in the port to provide planning and design work in support of operational assignments related to new equipment and efficiency proposals. They are beginning to work with the shippers of export cargo on stacking and loading in railroad cars, which will insure comprehensive mechanization during unloading.

We could say more about successful fulfillment of the plan by the Kherson port workers. But we will limit it to this and simply cite a few figures, which speak for themselves.

Last year the level of comprehensive mechanization reached 94.2 percent, higher than the average for the sector. During the same period of time the economic impact from introduction of new and progressive ideas was 150,000 rubles (590,000 rubles was the planned figure for the five-year plan). Labor expenditures were cut by 900 standard worker-hours. One-fourth of all dock workers raised their job ratings by 25 percent and 255 received new and related specializations. Worker transience was 14 percent compared to 17 percent in 1980. The five-year plan envisioned 3,000 pallets to be used to increase the volume of shipping in stacks; 1,300 have already been manufactured. Various types of cargo-handling equipment worth almost half of the amount planned for the five-year plan has already been purchased.

These successes could be even greater, but unresolved problems stand in the way.

Let us begin with the 10-ton trailers to the lift trucks, of which the port has several. The simplicity and great potential of this means of transportation are impressive. The cargo area is the bottom of a large container that has been written off and the two heavy-duty wheels were taken from a Bulgarian lift truck which has also been written off.

"If we had 30 of those semitrailers, we would not need any roll-trailers," I was told by Viktor Vasil'yevich Levitskiy, chief process engineer of the port with whom I was walking along the docks. "They haul any cargo and can be turned practically on their own axis. We could even make them, but it is impossible to get wheels."

Viktor Vasil'yevich also pointed out the reinforced metal pallets, each capable of carrying 10 tons of general cargo, the areas for processing food goods, the turning roller carts for loading food into railroad cars, various grapples devices, and the fleet of gas and electric lift trucks. He pointed it out and immediately complained:

"All this equipment is constantly in use; it needs preventive maintenance and repair. That is certainly natural. But here we received grapples for stacked

cargo from the Berdyansk plant according to the centralized delivery system. These devices are unusable; they have cables of different length and the bolts cannot withstand the load and shear off. We even have to sort out new grapples and fix them. But we have very few repair facilities and supply of necessary materials is very poor. What is the answer? In ports like this which are receiving more and more equipment and various types of devices all the time, what we need is not repair sections with two mechanics, but rather a large repair brigade which has appropriate personnel and is supplied with all essential items. And the quicker this happens, the better."

There is no question that the chief process engineer is correct. Deliveries of new equipment are growing, and as a rule so is the volume of cargo processing. Nonetheless, it is common knowledge that parts can "make the plan" using new machinery only (especially imported machinery) only up to a certain point. After all, everything new which is used intensively must have preventive servicing and repair. And if the repair facilities which the Kherson port workers have today are already retarding comprehensive mechanization of port work, what will it be like in the future? It is obvious that the personnel and capabilities of this service have been seriously behind real needs for some time.

"Our dock workers have learned to work, which unfortunately cannot be said about the technical service people," Nikolay Fedorovich Kaminskiy, chief of the cargo region of the Kherson port, said with regret. "Our port does not have the services that it needs. For example, a Toyota engine began working badly and then stopped. I should think it would develop trouble when we drive it so hard. And then our electric lift trucks stand idle because they have been poorly maintained. We only have six of them working in the refrigerated warehouse, and that is only because gas lift trucks are not allowed there. And how about this? There is a great deal of talk in our country about mechanization of manual labor, so sometimes they just dump everything — machines, grapples, attachments, and other equipment — on the deck without planning. And we usually forget about the service that the machines need. But the equipment avenges itself by malfunctions and breakdowns. That is when we remember the repair workers and call for their help."

I listened carefully to Nikolay Fedorovich even though what he was saying was not, unfortunately, new. The same thing happens in other ports too. I asked if Kaminskiy had any practical suggestion about how to solve this problem. And he gave this suggestion:

"My comrades and I have come to the conclusion that a comprehensive brigade of dock workers should be comprehensive not just in words, but also in fact. It has to have a mechanic, a technician, and a bookkeeper. They must be full-fledged partners of the dock workers, and also receive the bonuses that are due to the brigade. After all, the mechanic, for example, will not sleep at night in this case, but will prepare the equipment just so. And he will work right alongside us in the railroad cars, holds, and on the dock. We have already begun such an experiment and we are confident that it will work out very well."

We should note here that similar experiments are already underway in other ports of the Ministry of the Maritime Fleet, specifically Odessa and Ilichevsk, and they are showing promising results.

The report from Kherson last year said, "It is good, of course, when the port has a group of mechanics, lathe operators, welders, and so on in the machine shops. They have the necessary machine tools, equipment, and materials. In this case most of the new ideas of the innovators will be realized sooner or later, in one way or another. But what if they do not have these things? It is long since time to set up well-equipped central bases for port needs. But for now, instead of such a base the Kherson port is being 'handled entirely' by one mechanic, Boris Semonovich Zhukov, who has a No 6 rating. He is a master workman with a 'magic touch.'"

I met the master. He has been a mechanic for 45 years now, 34 of them in the Kherson seaport. Boris Semonovich is a teacher of young people and a member of the bureau of the Suvorovskiy Rayon party committee in Kherson. And he is a craftsman, as they say, with God-given talent.

He told me, "Almost nothing has changed since your report last year. I now work together with Nikolay Aleksandrovich Syromyatnikov, an outstanding mechanic. Right in this wide-open little space. We do not have enough tools, and the lathes are worn out. We get steel from our friends, and have to go to plants in the city to test its quality."

Zhukov had a long list of problems. His partner added more to them. One could only be surprised (and delighted!) by the persistence and conscientiousness with which both craftsmen manage to embody the ideas of innovators in metal! Obviously, the consciences of these old-time workers would not let them do otherwise.

"Here is what I say," Boris Semenovich furrowed his brows. "It should not be just the two of us making, polishing, and repairing all the innovations and all the other equipment that there is in the port. This should be done by a brigade! And it should have masters in all the necessary specializations, as well as a process engineer. And all the orders to the brigade should be given the 'green light'!"

This is a proper demand. Large ports have already had such creative brigades for a long time, and sometimes even sections. Now it is time for the middle-sized ports like Kherson. After all, the innovator movement is gaining force everywhere in the sector. And this is directly relevant to eliminating manual labor.

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## OCEAN AND RIVER

### 'SUPERPORT' CONSTRUCTION AT TALLINN

Moscow GUDOK in Russian 15 Dec 82 p 4

[Article by B. Ryazantsev, Tallinn: "Superport on the Baltic"]

[Text] What dispatcher at a port railroad station is unacquainted with the endless demands of their partners in transportation: railroad cars, and more railroad cars. It is a familiar sight to see groupings of ships at the docks, sometimes three deep. The volume of shipping is growing, but the docks cannot be "stretched out." And that is why new ports are being built in our country, satellites in a way of the existing harbors which developed in earlier history. Vostochnyy Port, the Pacific outlet of BAM, has been built on the Sea of Japan, and not far from Odessa the superport in Ilichevsk has been completed.

The port of Tallinn is also crowded. When an unloaded ship is departing it is necessary to rearrange the ships and turn around. Each operation means a loss of time, while the dock workers and railroad cars are waiting. The decision was made to build a new port near the town of Kallavere, not far from the capital of Estonia. It is already under construction and has a name, Novotallinskiy.

Now we should explain exactly why this place was selected for the future docks. Leningrad, Riga, Ventspils, and Tallinn participated in this unique competition, offering their sectors of the Baltic coast. The choice was Muuga Bay. It has numerous advantages over its rivals. The bay is better sheltered against waves and wind than the others. If the coastal waters do freeze over at this point, the ice does not last long.

The harbor in Muuga Bay will be the deepest in the country. Ships with deadweights up to 100,000 tons will be able to call there. The docks will use the most progressive, advanced methods to process specialized and general-purpose ships: horizontal-loading ro-ro ships and lighter carriers into the holds of which loaded lighters, non-self-propelled barges, are floated. Container ships will also find steady work here.

The master plan of the port designates the sites: a grain elevator with a capacity of 300,000 tons; a refrigeration complex; and, a container terminal. To handle cargo turnover running into millions of tons the construction workers are building a port railroad line, rebuilding the service tracks and stations, and widening and supplementing the existing system of motor vehicle roads.

At the present time Kallavere is populated chiefly by chemical workers. With time the occupational makeup of the town will change. New areas are growing up which will be settled by dock workers, machine operators, railroad workers, and seamen. In short, Kallavere will gradually become a city of port workers.

In the meantime Novotallinskiy port is already winning its territory away from the sea. At first trucks hauled the earth, and now they have been joined by powerful dredging vessels. They are dredging the earth for the object of the first phase of construction, the grain complex which is supposed to go into operation during the current five-year plan. To facilitate the work of the dredging ships, which local people still call by the old name, smaller dredges deepen the bottom and set up dikes. Pipes were laid along them which take the earth from the dredges to shore.

Two dredges are working in construction of the Novotallinskiy port: the Irbenskiy and the Gogland. The second deserves a few more words. The Gogland is the largest ship of its class in the country. Not long ago this 6,000-ton dredge was used as a working exhibit at the international Interport-82 exhibition. It was exhibited by the Vyartsilya Company. It was in the ways of this enterprise in Turku that Finnish shipbuilders built the ship on order from the Soviet Union.

"I was able to familiarize myself with the ship during the acceptance procedure," said captain and dredgemaster V. Boyko. "Already at that time it made an enormous impression on me. And now I can say with confidence that only a giant ship like the Gogland could handle the volume of dredging work which we have to do in construction of the superport. Before 1 June 1983 we must move 2.5 million cubic meters!"

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/ PART SHORTAGE HAMPERS SHIP ENGINE REPAIR IN TOGLIATTI

Moscow VODNYY TRANSPORT in Russian 9 Dec 82 p 1

[Article by V. Fedulov, Togliatti: "On The Eve Of Ship-repair: A Circle of Scarcity"]

[Text] The shop for capital repair of M-400 engines at the Togliatti Ship Engine Repair Plant has the highest level of mechanization of production processes in the sector, the lowest level of personnel transience, and a unique group of highly qualified specialists. They perform miracles, but they work to the maximum. They are usually compared with surgeons who have successfully mastered heart operations; the ship internal combustion engine is the heart of our valiant fleet. And if the activity of the entire collective is evaluated by the number of complaints received, there are practically no complaints about the quality of repair work at the Togliatti plant.

There are complaints of a different sort. Representatives from the Irtysh, Volga, Amur, and Kama have been visiting the plant more often in recent times. Demand has begun to outstrip supply and the people come here hoping to speed up shipment of repaired engines. But ordinarily the only thing they take home with them is disappointment.

What can be done? The enterprise is not capable of meeting the growing demand and cannot breathe life into the 420 engines which are planned for repair each year. Emissaries from other steamship companies do not accept any explanation of the reasons and no longer believe the plant administration's words. They continue in their stubbornness, bombarding the Ministry of the River Fleet with anxious telegraphs.

This same topic is repeated month after month, year after year. I visited the plant two years ago. At that time it seemed to me that it would be very simple to find a solution to the situation. If the supply of piston rings could be straightened out all the problems would take care of themselves, because at the heart of the multifaceted question of the prolonged failure to fulfill the engine repair plan was this extremely scarce part.

The plant workers sent innumerable requests to the Ministry of the River Fleet. But taking the initiative themselves would have meant "going over the head" of the higher level, because it was responsible for questions of supplying replacement parts.

Tired of promises, the plant began operating independently, sending its own supply workers to the manufacturing association. Now they have a "tolkach" [expediting agent] from the Middle Volga there permanently. By requesting, pleading, and promising the shop representative performs an invaluable service for his enterprise and sometimes brings back a small batch of piston rings in his luggage. If it were not for him the plant would be in even greater trouble.

According to statistics the plan for capital repair of engines has somewhat stabilized in the last five years and now averages 320 engines a year. But the higher levels send down an assignment of 420 units. In all its history, which goes back to 1954, the shop has been able to handle such a volume just once, in 1977. And this goal has remained inaccessible to the present time.

Elementary addition shows that the shop in fact is losing one year of work out of five. It continues to experience this underloading today. The assignment for January, February, and March was not fulfilled, then for April the plan was fulfilled, but between May and September only 97 of 169 engines were repaired.

In October the capital repair plan was completed successfully. But this was done by taking apart engines and using their parts and assemblies in other engines. The shop has had a system for dismantling engines for a long time. They are forced to do this, and it is done with good intentions and to speed up repair.

Shop chief Anatoliy Zinov'yevich Kuznetsov showed me several sections that restore assemblies and mechanisms from M-400 and M-401 engines. They restore anything there! Crankcases, all overhead salt-water and internal-contour pumps, and oil pumps go through full capital repair, and even sleeves are "renewed" by tinning. Through their own efforts they repair everything that can be repaired.

In a relatively short time shop efficiency workers have introduced dozens of clever devices into production. It seemed to me that they would be fully capable of producing completely new engines, but no one has given them this job. How can it be that with such great technical potential and significant reserves the shop collective has been absolutely unable to fulfill its plan for capital repair of engines consistently?

Specialists thought that switching all repair workers to a brigade contract might be a saving alternative. But they had to reject this progressive form of labor organization because collective accountability for the final result would, owing to the constant shortage of piston rings, not have the desired effect.

I have in my hands one of these ill-fated rings. Assembly mechanic Viktor Bikmurzin gave it to me. You would never think, looking at its simple design, that a whole sector has revolved around this part for a long time. This is the end, but where did it start?

11,176  
CSO: 1829/125

## OCEAN AND RIVER

### NEW LIGHTER CARRIER 'ALEKSEY KOSYGIN' DETAILED

Moscow MORSKOY FLOT in Russian No 12, Dec 82 pp 41-43

[Article by V. Kirsanov of the Leningrad TsPKB [Central Planning and Design Bureau] and V. Pankov of the TsKB [Central Design Bureau] "Black Sea Ship Design": "A New Addition to the Fleet - The Lighter Carrier 'Aleksey Kosygin'" under the heading: "Operations".]

[Text] In 1984 the Soviet Maritime Fleet will begin to be reinforced with large-tonnage LESH [Lighter Aboard Ship]-type lighter carriers. The leading ship has been named "Aleksey Kosygin". These ships are being built at the Kherson shipyard.

With the motorship "Aleksey Kosygin" a beginning will be made on a lighter carrier system intended to provide effective transportation in the Far North and Far East where there are branching networks of rivers along which cargoes in lighters can be delivered to consumers.

The "Aleksey Kosygin" is a single-deck ship with cargo holds for accommodating lighters which are loaded aboard the ship by a gantry crane which moves along the whole length of the cargo spaces and out onto cantilever structures which protrude beyond the stern transom. When necessary, the holds and decks of the lighter carrier can be used for carrying containers. In its scheme for handling cargo and accommodating lighters, the lighter carrier resembles a container ship of the cellular type. The ship is being built to the Rules of the USSR Register of Shipping for the classification: KM \* L1 [1] A2. The strength of the bow and the rudder-and-propeller systems will conform to the ice classification UL.

The ship is a twin-screw, single-deck motorship with excess freeboard, an icebreaker-type stem and bow, a transom stern, a double bottom and double sides. It has an elongated forecastle and cellular-type cargo holds. The machinery compartment is intermediate between the stern and amidships, and the living quarters are situated in the bow superstructure.

Seven cargo holds are specified for the ship with watertight, pontoon-type steel hatch covers having the dimensions 20.6 X 19.0 m and weighing about 150 tons each. The hatch covers are designed so that they can be stacked on top of each other or on lighters stowed on the covers of neighboring holds. Supports, foundations, and eyebolts are provided on the covers to secure lighters or containers carried on them,

### Principal Characteristics of the Ship

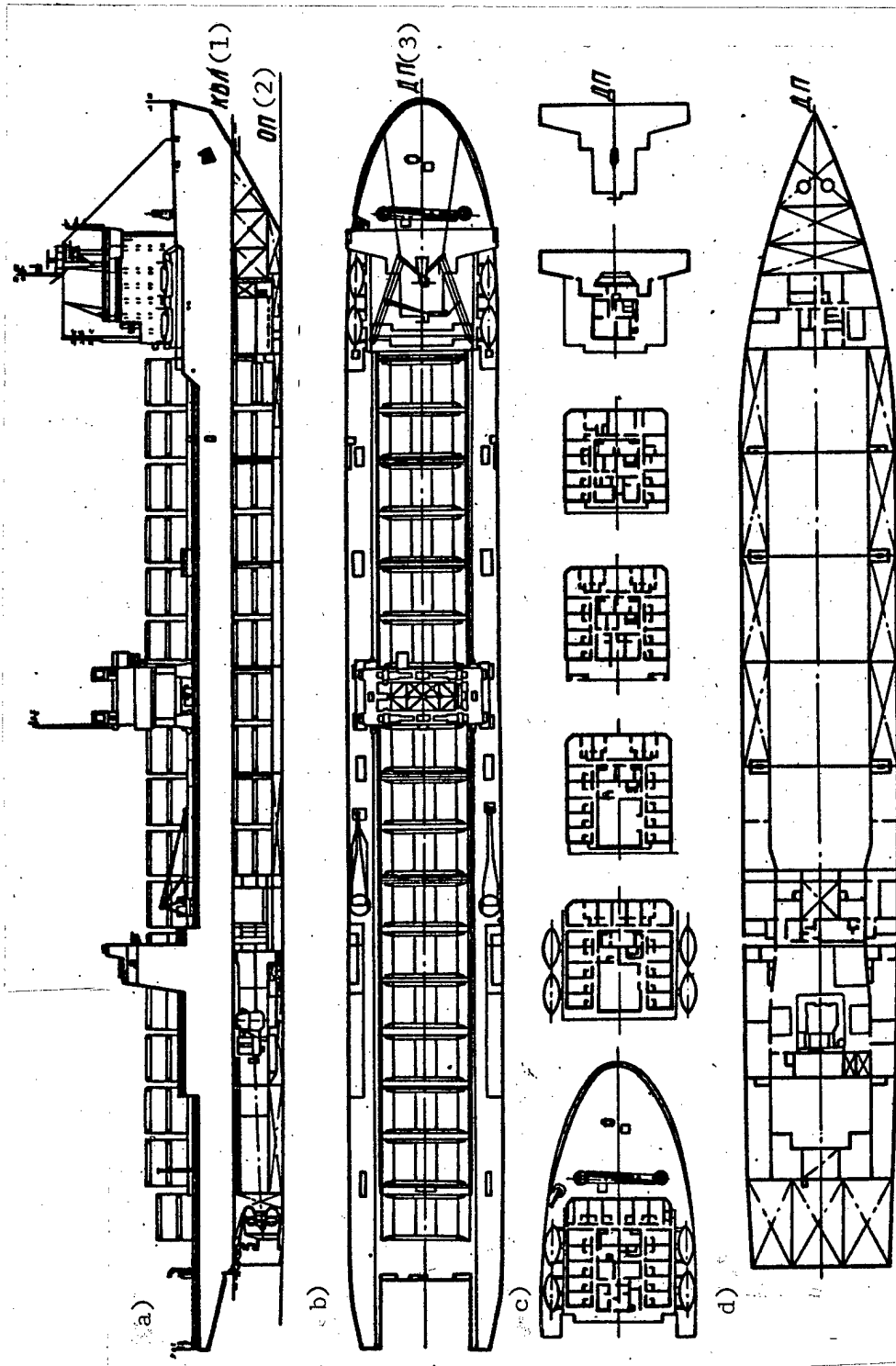
Length overall	262.8 m
Length between perpendiculars	232.0 m
Beam overall	32.2 m
Height of side amidships	18.3 m
Draft to summer load mark	11.65 m
Specification draft	10.96 m
Deadweight [depending on draft]:	35,140/39,970 tons
Displacement	69,950 tons
Tonnage:	
Gross	36,640 reg. t
Net	12,940 reg. t
Speed	18.4 knots
Endurance based on supplies of:	
Provisions	60 days
Fresh water	40 days

### Principal Characteristics of Lighters

Length overall	18.75 m
Overall width	9.5 m
Height of side	3.16 m
Draft:	
Empty	0.52 m
Loaded in seawater	2.55 m
Loaded in fresh water	2.60 m
Volumetric cargo capacity:	
Bale	555 m <sup>3</sup>
Bulk	569 m <sup>3</sup>
Cargo weight capacity	370 tons

The ship can take 82 lighters on board with 48 of them stowed in the holds and 34 stacked in two tiers on the upper deck.

Each lighter is a barge in the shape of a square container with a double bottom and dry compartments at the ends for reserve buoyancy. The hold is covered by three pontoon-type covers with rubber seals along the coamings. The covers are pressed onto the coamings by screw-type dogs. For loading on to the ship and stacking them on top of each other inside the ship, the lighters are fitted with short columns. The dimensions between the columns correspond with those of the grippers of the spreader [the load-gripping gear] of the shipboard crane. At the deck, the short column has a conical shape for mating with a gripper-socket in the spreader or with a retainer of an upper lighter. The hold interiors along the sides and bulkheads are fitted with wooden sparring and two rows of eyebolts for securing cargo. The bottom of the hold is steel without a wooden flooring.



General Arrangement of the Lighter Carrier

a) Side view, b) Plan view, c) Plans of superstructure decks, d) Second Platform plan  
 (1) Design waterline, (2) Base line, (3) Centerline plane

Lighters are secured on the ship's hatch covers and on the upper deck by means of horizontal wedges and guy-wires with fixed tensioning gear. To position lighters during loading and unloading, the holds are fitted with vertical guides having flared-out upper ends. At the bottoms of the holds there are supports for positioning and holding lighters or containers. Self-locking wedges are provided in the holds for securing each tier of lighters. During unloading, the wedges spontaneously drop out of the guides and hang down on short chains secured to the hull structure.

In the four central holds, the possibility is specified for transporting ventilated lighters connected to the hold ventilation system. Seventeen lighters with dangerous cargoes can be transported in one tier on the upper deck. These lighters are to be provided with forced, six-fold air-exchange ventilation from a system with high-output fans. Air is delivered to the lighters by special flexible hoses. The possibility also is specified for using the shipboard water fire-fighting system to deliver high-expansion foam into these lighters by means of portable hoses and foam generators.

The lifting and lowering of lighters and also the removal and replacement of hatch covers is to be done by the shipboard electric gantry crane which moves on railways running along the upper deck and extending from the bow superstructure to the stern and out onto the cantilever structures. The crane is a vital installation because the operational capability of the ship depends on its reliable operation.

The crane's load-lifting capacity at the load gripper is 500 tons. A lighter can be lifted at a speed up to 4 meters per minute and lowered at up to 6 meters per minute. Normal operation of the crane is specified in sea state 4 and with a heel of up to 3 degrees and a trim of up to 2 degrees. When secured underway, the crane is to retain its serviceability after prolonged heeling of up to 15 degrees and pitching up to 5 degrees.

The crane is designed for a 25-year service life with an average labor input of 300 man hours per year for maintenance, and a working life of 10,000 hours before major overhaul. The crane structure is a rigid three-dimensional frame consisting of an upper structure and two supports. The crane rests on the crane-way on 16 nondriven running wheels connected in pairs in pivoted carriages. The pairs of pivoted carriages are connected with a main equalizing beam which forms the travelling carriage. Carriage movement is accomplished from drivers situated in the support structures through pinion gears installed in pairs on each side of the crane which engage racks laid along the crane-way.

The load-lifting equipment of the crane consists of two winches, four block and tackle systems with devices for tensioning the hoisting lines, load-guiding units, and the load-gripping gear - the spreader.

For securing the crane when the ship is underway, there is a mechanism consisting of four hydraulic jacks installed in supporting columns and also hold-down devices to prevent capsizing. By means of the hydraulic jacks,

the crane is lifted up 10 mm and secured in this position with locks. The hydraulic drive is controlled from the upper deck. The crane has guides to limit the swinging of the spreader whether or not it is holding a lighter or a hatch cover and to assure entry of a lighter or just the spreader into the holds and the stern guides.

Electrical energy is supplied to the crane by a flexible high-voltage cable wound on a drum having a current-collecting ring. The power is supplied from the shipboard 380 V alternating current circuits through two step-up transformers.

Appropriate interlocks, alarms, and protection for the crane and its machinery are specified.

For two-way communication between personnel attending to the crane, "Prichal" radio sets are specified for the various compartments of the crane. Additional dual telephone communication between crane attendants and under-crane personnel is specified.

The crane has ladders, platforms and guard rails assuring safe access to and servicing of all parts. All crane subassemblies and parts weighing more than 20 kg have facilities available for lifting them.

Instead of lighters, the ship can take on board 1480 containers of which 704, including 100 refrigerated units, are accommodated on deck. The containers are arranged lengthwise and they are loaded and unloaded by shoreside facilities. On the upper deck containers are secured by guy-wires and turnbuckles. In the four central holds, when there is a 6-tier load of containers, the first three tiers are secured by means of shoe plates with pins and transverse container-bearing beams installed between the third and fourth tiers. The remaining tiers are secured by special container retainers. Such retainers also secure containers in the forward, and the two after, holds when there is a 3-tier arrangement of them.

The principal material for the hull, the outer shell of the superstructure, and the large foundations is mark 09G2 or 09G2S low-alloy steel having a yield strength of 300 MPa. Mark VSt.3sp4 carbon steel having an ultimate strength of not less than 240 MPa was adopted for inner walls of the superstructure, small enclosures, small foundations, and mountings. Welded and rolled shapes used in framing the hull and superstructure are made from mark 09G2 steel.

The forecastle deck, platforms, superstructure, pilot house, and bridge are transversely framed. The upper deck and the bottom in the middle part of the hull, and the stern cantilever structures, are longitudinally framed. The forward and aft extremities of the hull are transversely framed.

The underwater part of the hull is to be protected from corrosion by a "Luga-1" cathodic protection system in combination with a paint and varnish coating. The ship will be painted with synthetic paint and varnish materials in accordance with the operative rules for painting seagoing ships. Corrosion protection for ballast tanks is to be accomplished with protective coverings and with painting of the overheads and the portions of the sides and bulkheads to a depth not less than one meter with three layers of EP-755 enamel.

The anchor gear consists of two 14-ton bower anchors, high-strength cast anchor chains made of special steel, and two electrohydraulic combination anchor windlasses and mooring winches. The windlasses are equipped with a system for remotely controlling the pay out of anchor chain from the pilot house and also with indicators of the length of paid out chain installed at the windlasses and in the pilot house.

Seven automatic mooring winches are specified and the necessary number of mooring and towing bits, mooring ports, and roller fairleads. The ship will have 21 mooring lines and 4 combined mooring and towing lines. The mooring parts of the combination anchor windlasses and winches also can be used in mooring operations. Lighters can be moored at the side of the ship from special mooring ports - niches - distributed at four different heights in order to take into account various trim conditions. It also is possible to moor them alongside from bits arranged on the upper deck. Twelve pneumatic fenders are specified for mooring lighters at the side of the ship.

The ship is to have special gear for mooring and centering lighters at the stern transom in the process of loading and unloading them. The gear assures mooring and centering a lighter relative to the transom and the centerline plane of the ship so as to make it possible for the crane spreader to grip the lighter.

The shipboard lifesaving equipment consists of two plastic, closed, motor lifeboats each for 55 persons, a motor work-boat, four life rafts, and the necessary number of life rings and life jackets.

Steering gear is to consist of two R18M1 electrohydraulic steering engines and two streamlined, semibalanced rudders each with an area of 28 m<sup>2</sup>. The steering station in the pilot house is to be equipped with an automatic steering device. Electrical rudder angle indicators will be installed in the pilot house, on the wings of the bridge, in the TsPU [central control station] and the helm compartment.

The main power plant will consist of two 7DKRN 80/160-4 slow-speed diesel engines from the Bryansk machine building plant. The engine has systems for automated remote control from the pilot house and for remote control from the central control post. It also has the means of automation providing for attending the machinery department with a single watch officer when under way and none when at anchor.

The auxiliary power plant consists of four 500 kW generators, an 800 kW waste heat turbogenerator, and a 200 kW emergency diesel generator. The 500 kW generators will be driven by 8ChN 25/34-3 engines each rated at 535 kW. The diesel generators will be equipped with a system for automated remote starting and stopping from the central control station. The turbo generator will have systems for automatic regulation of the rpm and the steam pressure in the end seals. The emergency diesel generator will have an automatic starting system triggered by a loss of voltage in the shipboard electrical circuits.

The auxiliary boiler plant is to consist of two KAV 4.0/7-22 oil-fired water tube boiler units with natural circulation, and two vertical water-tube, waste-heat boilers with forced circulation.

For replenishing boiler and washing water, two vacuum evaporating plants in a unitized design which utilize heat from the fresh water of the main engine cooling system are specified. The output of each plant is 20 tons per day. An incinerator with a capacity for 60 kg/hr will be installed to burn solid wastes and fuel sludge.

Two 5-ton capacity, KEM-12-3 electric bridge cranes will be installed in the machinery compartment to lift heavy parts during repairs or inspection of the main engine and of individual auxiliary mechanisms. There also will be mono-rail hoists where this is required for repairs.

Specified as propulsors on the ship are two 4-bladed, fixed pitch propellers with 5.6-meter diameter and removable blades manufactured from mark 14KhNDL stainless steel and with hubs manufactured from mark 08GDNFL low-alloy steel. Each ship will carry four spare blades.

A full set of general shipboard fire-fighting systems are specified for the ship. There also will be a bilge water separator, an oily water collection tank, and an installation for the biological treatment and decontamination of sewage and waste water.

The lighter carrier is to be equipped with modern means of navigation and communication satisfying operative rules and conventions. The crew numbers 39 persons. Crew accommodations consist entirely of single-berth cabins. There are 15 cabins for officers and 24 for the men. Eight of the officer's cabins will be suites. Cabins are specified also for trainees and a pilot.

Supplementing the traditional public compartments (ward-room, mess hall, and lounges) on the lighter carrier there will be a library, movie theater, sports hall, swimming pool, sauna, and the necessary medical, service and housekeeping compartments which assure good conditions for the work and relaxation of the seamen. There is a year-around air conditioning system for the living compartments.

The ship will satisfy the requirements of all international conventions and the national rules relating to shipbuilding and navigation. The reinforcement of the fleet in the 11th and 12th Five-Year Plans with lighter carriers of the "Aleksey Kosygin" class, along with a simultaneous solution of the organizational and technical problems in the construction and distribution of the necessary sets of lighters, will lay the foundation for the effective introduction of a new high-quality transportation system for the regions of the Far North and the Far East.

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## OCEAN AND RIVER

### INLAND WATERWAY VESSELS DELIVER FINNISH GOODS TO MOSCOW, FREE RAIL CARS

Moscow SOVETSKAYA ROSSIYA in Russian 16 Oct 82 p 1

[Article by V. Avdevich: "Friendship Trip"]

[Text] The container ship Biryuchki docked in Moscow's Southern Port yesterday after completing the first experimental shipment of paper from Finland to the USSR. An ordinary ship and an ordinary cargo, but the route which the crew of this diesel ship traveled was not ordinary. The ship departed exactly one week ago from the friendly roadstead of the port of Mustol, went through the Saimaa Canal, along the Gulf of Finland, the Neva, the Volga-Baltic Waterway, and the Volga, and through the Moscow Canal. The river workers brought the ship to the capital right on schedule. In the opinion of specialists this trip will mark the beginning of regular paper shipment from the internal ports of Finland to the Soviet Union. What is the economic effect of this initiative?

A. P. Vvedenskiy, first deputy RSFSR minister of the river fleet commented as follows: "For many years this product has been delivered to Moscow, Leningrad, and other cities of the country by Soviet railroads. Each year they dispatch about 200 boxcars for Finnish companies. Diverting so many empty cars is not efficient, of course. By developing water shipment we will be able to free more than 30,000 units for the national economy each year. This is even more advantageous because the prime cost of shipping paper by water is lower than by rail. At the present time, however, almost 90 percent of Soviet ships return from Finnish ports with empty holds. We hope that the trip by the diesel ship Biryuchki marks the beginning of efficient use of the international fleet on the Saimaa Canal. We need the help of foreign trade organizations in this matter; they must 'legitimate' switching freight from railroads to water transportation."

We asked the deputy minister what benefits opening the new line would offer to Finland.

"Before answering the question," he said, "Let us make a short excursion into history. Twenty years ago a treaty was signed leasing the Soviet part of the Saimaa Canal and Malyy Vysotskiy Island to the Republic of Finland. In the years since both countries have made large contributions to development of this water system. For example, Finnish companies rebuilt old docks and, where necessary, built new ones, and they brought rail connections to certain ports. For their part, Soviet river workers added up-to-date ships to the international

fleet, some of them, incidentally, built at Finnish shipyards. The results of this work are impressive. Let me quote from a telegram sent by N. A. Tikhonov, chairman of the USSR Council of Ministers, to Prime Minister K. Sorsa of Finland on the occasion of the 20th anniversary of the treaty's signing. It says, 'the Saimaa Canal, rebuilt by the joint labor of Soviet and Finnish workers and specialists, is today a major transportation artery whose use is increasingly important for developing and deepening economic cooperation between the Soviet Union and Finland.' This is certainly true. The estimated cargo traffic on the canal has now reached 1.6 million tons. Shipment of import cargo will increase noticeably after the new line opened yesterday by the diesel ship Biryuchki is put into operation."

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KAMCHATKA INSTITUTE'S ROLE IN SETTING COMMERCIAL FISHING QUOTAS

Moscow GUDOK in Russian 14 Nov 82 p 4

[Article by L. Starosel'skiy, special NOVOSTI correspondent, Petropavlovsk-Kamchatskiy: "We Do Not Want the Fish Population To Decline"]

[Text] For too long people have taken too much from nature, never doubting that its resources are infinite. Today it is clear that we cannot take from nature without considering and thinking about tomorrow.

"The Food Program endorsed by the May Plenum of the CPSU Central Committee, on whose implementation the entire country is now working actively, poses the challenge of increasing the quantity and raising the quality of food products for the population. But we cannot increase production without thought, not just for today and tomorrow. We must think about what our descendants will have to eat," says candidate of economic sciences Aleksandr Yevdokimov, director of the Kamchatka Division of the Pacific Scientific Research Institute of Fishing and Oceanography (TINRO).

Kamchatka is a splendid place for research on the biology of sea creatures. It can be compared with a vast fish hatchery. Its innumerable rivers are excellent waters for valuable salmon spawning. Nowhere else in the Soviet Union, nor perhaps in the entire world, do so many species of salmon spawn. Kamchatka is the home of the humpback, Siberian, Chinook, Coho, and common salmon and the char. Rarer species of salmon are also found here. In addition, the Pacific Ocean and Sea of Okhotsk around the peninsula are inhabited by halibut, cod, pollock, herring, and many other edible species of fish.

Associates at the Kamchatka department of TINRO see their principal protecting the fish population, planning the fish catch. This is not a simple matter. If the scientists make a mistake the state plan for fishing will be too high or too low, which is equally harmful to the fisherman and production workers.

Scientific studies show that there are many factors that influence the fish population to one degree or another. Among them are reserves of plankton, seasonal climatic features, water temperature, and solar activity (it has been reliably demonstrated that global changes in fish resources are closely linked to cycles of solar activity). Scientists have reason to believe that there are

antagonistic species of fish. For example, it has been observed that in years when pollock are numerous the number of herring decreases significantly, and vice versa.

In view of the many factors involved, the Kamchatka specialists use advances in computer technology for their prognoses. Mathematical analysis of all factors that influence fish resources is done by computer at the Kamchatka department of TINRO. The department provides the national economy with prognoses for extremely varied periods of time, a quarter, a year, five years, and 15 years into the future. An evaluation of trends toward change in the population of various fish species and other sea products all the way until the year 2020 has now been developed.

The trends toward change in fish resources are practically always confirmed. Specialists have raised the reliability of quantitative prognoses to 80-90 percent.

The prognosis becomes the foundation of the plans by which the peninsula's fishing enterprises, and also fish processing industry, will operate. But the fishermen cannot exceed the established fish quota by a single ton.

But does this make them mad at the specialists?

"That happens, of course," A. Yevdokimov answers. "But generally, within a year after they are convinced that the fish population is stable or growing the fisherman thank us. After all, they also want to avoid an alternation of good years and bad years."

TINRO has one other important job: studying fish biology for the purpose of artificial breeding. This applies first of all to salmon. Fish culture on Kamchatka has one important advantage: the fish here do not have to be raised to full maturity.

Specialists at the department proposed a simple and very efficient method of accelerating the growth of artificially bred fish. The water temperature in Kamchatka rivers in the summer is 6-7 degrees C. If the water temperature for artificial breeding is doubled, the rate of growth of the young fish tripled. A modern fish hatchery capable of producing up to 300,000 young salmon a year will be operating on Kamchatka in the near future. Incidentally, there are numerous such hatcheries in the Far East.

Salmon always return to the rivers where they were born to spawn. Ichthyologists speak of the "return rate." This is the number of individuals who return to spawn after the appropriate time for each species, relative to the parent pair. It has been found that while the return rate in different years has been 2, 4, or 6 for naturally reproduced fish, with artificial breeding this indicator reaches 20, 40, and 60. This is a persuasive difference.

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BRIEFS

FINNISH SHIP DELIVERED—Helsinki, 28 Oct (TASS)—The shipbuilders of the Finnish stock company Hollming have turned over the dry cargo ship Sibirskiy-2131 to the purchaser, the All-Union Sudimport [Ship Import] Association, at its yard in the city of Raum. Shipbuilders of this company have built 12 ships in this series on Soviet orders. They are designed to sail on Siberian rivers and can be used to ship timber, containers, or bulk cargo. Since 1945 more than 200 different types of ships have been built for the Soviet Union in the yards of the Hollming Company, Reino Salo, representatives of the management of the company, observed in a conversation with a TASS correspondent. This includes dry-cargo ships, timber carriers, and tugboats. New Soviet orders for the construction of three research vessels and two cargo ships to work Siberian rivers will make it possible to load the production capacities of the company's yards for several years. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 29 Oct 82 p 3] 11176

LIGHTER CONSTRUCTION—Loksa—The first lighter of a new series designed for the large lighter carriers being built in our country has been produced at the Loksa ship repair yard. By completion of the lighter yard workers fulfilled one of the principal points of their socialist obligations assumed in honor of the 60th anniversary of the formation of the USSR ahead of schedule. This lighter will be the first vessel on board the lighter carrier Aleksey Kosygin, which is under construction. [By Kh. Tokhver] [Text] [Moscow VODNYI TRANSPORT in Russian 30 Dec 82 p 4] 11176

SHIP VISITS AFGHANISTAN—The diesel ship Boris Polevoy, a new vessel of the Central Asian Steamship Company, made its first working voyage to the Afghan port of Khiraton. Before arriving in its port of registration, Termez, it made a trip to the southern shores of the Aral Sea and then to the upper reaches of the Amu Darya. The Boris Polevoy will tow caravans of barges carrying national economic cargo. The young collective has immediately joined socialist competition among river workers and promised to perform all trips until the end of the year ahead of schedule. [Text] [Tashkent PRAVDA VOSTOKA in Russian 20 Jan 83 p 1] 11176

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