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USSR Report

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CIVIL AVIATION

IMPORTANCE, PROCESS OF AIRCRAFT MODIFICATION

Moscow GRAZHDANSKAYA AVIATSIYA in Russian No 3, Mar 86 pp 32-34

[Article by V. Sheynin, Lemim Prize winner, Cand. of Technical Sciences:
"Airplane Modification"]

[Text] The development of any area of technology, including aviation, has a dual nature: revolutionary (intermittent) and evolutionary (continuous). Correspondingly, there exist two primary trends in technological progress. First and foremost, there is the development of models which determine the appearance of a new generation of machinery, and second, there is the development of modifications.

The development of new models is based on progress in science and in many sectors of technology, on the accumulation and realization of a large number of innovations and on striving for increased efficiency by a sharp increase in aircraft productivity, the growth of which should exceed the growth of unit cost and, consequently, lead to a reduction in the cost of a unit of productivity. This is achieved by a significant increase in the size (tonnage) of the planes of subsequent generations (in each range class). The intermittent nature of development is also a result. The primary trend conceals within it a primary dialectical contradiction. On the one hand, fitting the machines out with extremely complex and expensive systems, introducing new and initially costly materials and production processes results in the cost of the machines reaching a significant value, and, moreover, depends on design invariability (in series production) and "high volume" [mnogotirazhnost]. On the other hand, machines quickly become obsolete, particularly during a scientific and technical revolution.

The evolutionary path of development resolves the contradiction to a certain extent. Its essence is modification, i.e. changing the form of a plane, providing for a growth in productivity and efficiency in the periods between the appearance of new models. Thus, a plane's level of engineering is raised and its service life is prolonged. Significantly lower cost and modification periods result in a reduction in shipping cost, profitability is increased and modification costs are quickly recovered.

Modifications appeared in aviation's start-up period, but only episodically, while their wide-spread development began in the 1930s. Since this time, there

has not been a single plane which has not been modified in practice. Methods for planning modifications appeared during development of the second generation of turboprop aircraft. The planning consists of determining the appearance of future modifications in the rough design stage for the plane and amassing definite reserves for their development. In other cases, it consists of simultaneously developing projects for both the plane and the family of modifications on the basis of a modular design method.

For the clarity of further exposition we will present definitions of the basic concepts and the classification of passenger aircraft modifications. Both the process of alteration and the plane itself, which is distinct from the basic plane by one or more of the following criteria, are called a modification. The criteria are: a special-purpose designation or specialization, area of application, basic characteristics, improved engineering, greater economic efficiency. The model on which modifications or their family are based is called the basic plane. The primary distinction of the basic plane of a new model from a modification consists of the fact that during its development, a large number of innovations are realized, which result in a higher level of technical perfection, a new level of technology. These innovations are repeated in the modifications. They make only a partial improvement, which results in an expansion of the area of their application, to an increase in productivity, or else they change the designation of the plane. Accordingly, it is possible to classify modifications on the basis of these criteria.

Design modifications are those variants of the basic plane which are developed on the basis of maximum unification. Over the course of its life, the design of almost any airplane is subjected to changes for one reason or another. These reasons are different for modifications and other types of design changes during various time periods.

Specialized modifications are airplanes having a different designation (i.e. cargo modifications of passenger planes).

Multipurpose modifications are specialized airplanes having two designations simultaneously (e.g. cargo-passenger planes).

Improved modifications are airplanes which differ from the basic model either by engineering variations which do not influence the economic efficiency or economic improvements. Multiple modifications are those planes on which both engineering and economic improvements have been made simultaneously.

Minor and fundamental modifications are distinguished on the basis of a production criterion -- the number of design changes. Replacing the motors while keeping the same number to increase power or reduce fuel consumption or lengthening the fuselage with the aim of increasing commercial load belong to minor modifications. Significant changes in wing area (connected with design reinforcement) or changes in aerodynamic lay-out and changing the number of motors or reducing the fuselage length to cut back on commercial load and the airplane's take-off weight are fundamental modifications. It should be noted that the definitions of "minor" and "fundamental" do not extend to the final result. In some cases, fundamental modification can result in a greater effect

than a minor one, and in others, to an equal effect. All depends on how the problem is posed. When improving on characteristics, which was not envisioned in the design stage, fundamental modification leads to a significant result. The possibility of minor and fundamental modifications is determined to a significant extent by the existence of reserves in an airplane in operation or by the premeditated creation of such reserves during design of the base model.

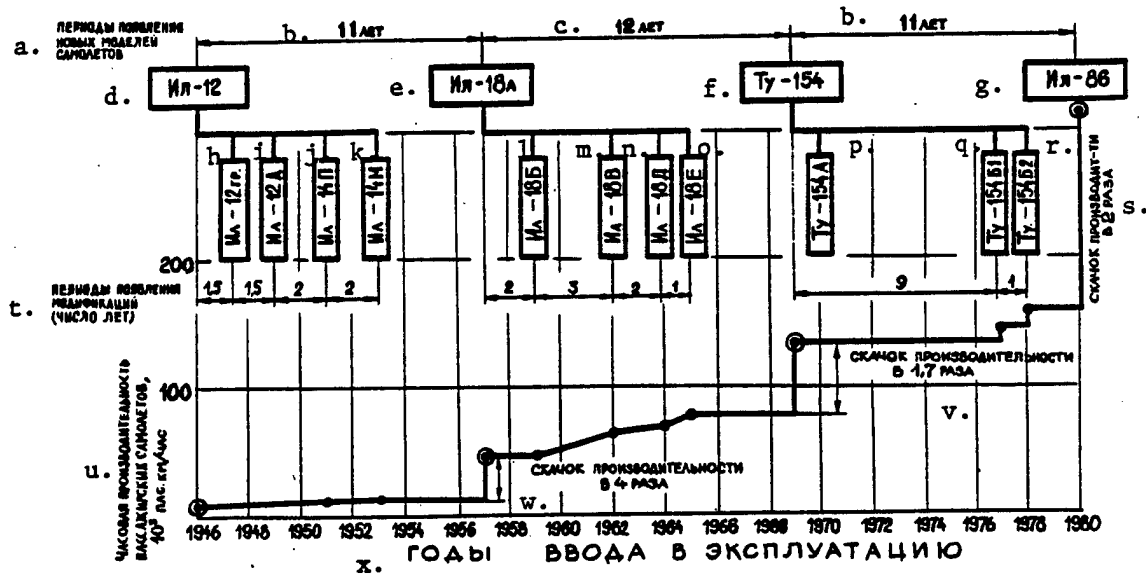


Fig. 1

KEY

- | | |
|--|---|
| a. periods for appearance of new airplane models | s. increase in productivity by a factor of 2 |
| b. 11 years | t. periods for the appearance of modifications (number of years) |
| c. 12 years | u. hourly productivity of passenger planes, 10 ³ passenger-km/hour |
| d. Il-12 | v. increase in productivity by a factor of 1.7 |
| e. Il-18A | w. increase in productivity by a factor of 4 |
| f. Tu-154 | x. YEARS WHEN PUT INTO OPERATION |
| g. Il-86 | |
| h. Il-12 civilian | |
| i. Il-12D | |
| j. Il-14P | |
| k. Il-14M | |
| l. Il-18B | |
| m. Il-18V | |
| n. Il-18D | |
| o. Il-18Ye | |
| p. Tu-154A | |
| q. Tu-154B1 | |
| r. Tu-154B2 | |

Three variants, differing in their production continuity, are possible: modifications are produced while retaining the basic airplane (they supplement it); modifications are produced instead of the basic airplane; modifications are made on airplanes in operation, series production of which has been terminated.

The greatest improvement in modified airplane efficiency is achieved when the commercial capacity or range is retained or increased while retaining or increasing take-off weight. Modifications with increased range at the expense of reduced commercial capacity and take-off weight are less efficient. This is, moreover, the more fundamental type of modification, inasmuch as similar change is associated with a reduction in fuselage length. Reducing the commercial capacity and take-off weight of an airplane results in a decrease in the stresses acting on the fuselage, wing, tail assembly and landing gear structures. Excess strength and mass are formed, the elimination of which is linked to a reexamination of the entire load-bearing structure. In those cases when a reduction in fuselage length does not lead to a reduction in commercial capacity and take-off weight of the plane, the quantity of changes is significantly less. Excess mass can show up only in fuselage design as a result of a reduction of its length and bending moments.

It is of interest to examine the influence of alterations on airplane efficiency. Two trends in airplane development are shown in Fig. 1. Medium size air liners are selected as examples. In the upper part of the chart, the periods for appearance of new models and modifications are shown. In the lower part is a graph of the growth of hourly productivity, which is discontinuous when new models appear and smooth with the appearance of modifications. We have only taken into consideration those modifications which have retained their designation. The chart makes no pretense to providing a complete picture. For example, only one new model is shown at a time, whereas there were more, and they differed by their time of appearance, productivity and efficiency.

As has been noted, the type of load-bearing unit is the basic distinctive feature of new airplane models, however many other innovations also appear at the same time. Thus, during the conversion from piston to turboprop, and subsequently to jet engines, the aerodynamics of the wing (sweep, thickness), airplane design (airtightness of the fuselage) and strength (reiterated stresses and fatigue phenomena appeared) were changed. The problems of controllability, stability and many others were resolved anew. Speed could serve as a distinctive parameter of the new generations of machines (it increased significantly upon conversion to jet technology, and then increased by about mach 0.05 for each generation. We have adopted hourly productivity, taking flight speed into consideration, as a basic parameter, the change in which characterizes the development of technology.

With the appearance of new models, there occurs a discontinuous change not only in productivity, but in several other characteristics of the plane as well. Thus, the take-off weight of the airplanes depicted in Fig. 1 changed with each new model by approximately the same measure as did productivity.

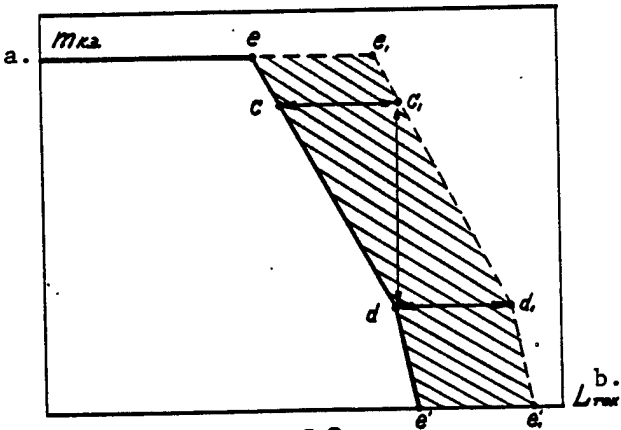


FIG. 2

KEY

- a. m_{cl} -- commercial load weight
- b. L_{com} -- commercial range
- c. a' -- full operating cost (kopecks/ton-kilometer) the criterion for economic efficiency.

d. $\frac{m_f}{m_{cl} \cdot L_{com}}$ -- the criterion for fuel efficiency, where m_f is fuel weight

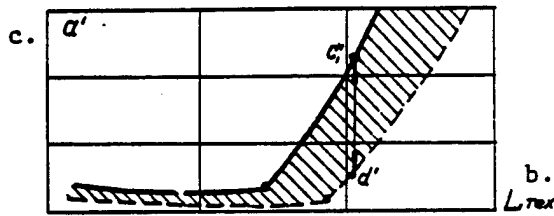


FIG. 3

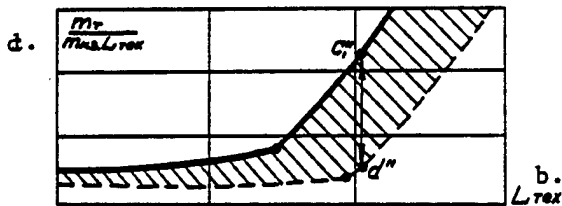


FIG. 4

The development of modifications generates the problem of standardization. It is known that it is economically expedient to reduce the number of variants of equipment which are in operation simultaneously to a minimum and to specify their maximal unification and change models relatively infrequently. This simplifies aircraft maintenance and makes it less expensive; it also facilitates spare parts and operating materials supply. On the other hand, a systematic updating of airplanes, reducing the periods between the appearance of new models and modifications, although it leads to diversity of the fleet, promotes the development of technology and improvement in efficiency and, in the final analysis, in its economic efficiency. What is to be preferred, how is this contradiction to be resolved? Obviously, consideration of concrete features is needed, first and foremost the total economic effect, which must prevail over the negative effect of frequent model replacement.

Replacing a plane's engines with more efficient ones, increasing the take-off weight where necessary, and with more powerful ones is a widespread form of modification. Such modifications differ not only by the relatively small number and simplicity of design changes, but by the nature of the change in efficiency (namely the nature, and not an improvement, of an indicator). In this case, engines may be replaced not only on airplanes under construction, but on airplanes in operation, and the modification can be repeated numerous times on the same type of airplane. Operation of the basic plane can continue with the originally installed engines, while a new modification is replacing it or a previous modification in production. This occurs when a new modification is subjected to a number of other substantial changes or is designated for other lines.

As a result of similar modifications there occurs an improvement in the primary characteristics of a plane, as shown by the graph of the change in lifting capacity against range in Fig. 2 (here the points on lines ed and e_1d_1 correspond to commercial load, the value of which is limited by the maximum value of the take-off weight, while in segment de' and $d_1e'_1$, range is limited by the maximum fuel load). In this case, commercial range increases with the maximum, including the maximum, with the take-off weight being kept the same. The segment ede' of the graph under consideration is shifted to the right (to the side of greater ranges) as a result of reduced fuel consumption by more efficient engines, and it occupies the position $e_1d_1e'_1$.

Changes in the criteria of economic (shipping costs) and fuel efficiency of a basic airplane and its further modification are shown in Figs. 3, 4. It follows from the graphs that replacing engines increases efficiency as a result of growing productivity and increasing range, with the commercial load kept equal to that of the basic airplane (sections cc_1 and dd_1). Such modifications are designated for use on longer routes. The greatest efficiency is achieved in these modifications on those lines which are also accessible for the basic plane as a result of increasing the commercial load to a value c_1d equal to the reduction in fuel consumption. A quantitative evaluation showing a significant growth in economic and fuel efficiency is shown, for example by segments c'_1d' and c''_1d'' .

It is right to examine the effect of this type of modification with all other conditions being equal. If an increase in the empty weight of the plane occurs when the power plant is replaced, which may be the result of other technical improvements which were made at the same time, it is expedient to pair the resulting negative weight and economic effect with the corresponding increase in the maximum values for commercial load weight and the number of passenger seats. Let us emphasize again for clarity, that the mentioned negative effect will manifest itself only in modifications which expand the area of application, and only in two instances: on flights along routes which are shorter than estimated and in the case of inadequate fuel economy of the new engines to compensate for the growth in empty weight of the plane. If this negative effect is not paired as shown, operating costs can decrease (in comparison with the basic plane) only on flights with a range greater than estimated.

The Il-62M, on which the engines were replaced and other changes were made at the same time which also promoted an increase in range, can serve as an example of this type of modification within domestic aircraft building. The changes included the following: increase in fuel system capacity by installation of a keel tank, replacement of the grill-type reverse [reshetchatyy revers] with a hinged-type [stvorchatyy], which led to reduction in resistance, improved aerodynamic qualities and fuel efficiency. The first of the mentioned changes, apart from increasing the maximum fuel reserve, permitted flights to be made with the center of gravity position being more to the rear, which results in a decrease in resistance from elevator trim, thereby reducing fuel consumption. This all increased the fuel, and consequently the economic efficiency.

The modifications to the Tu-154, whereby engines were replaced and the number of passenger seats was increased, can serve as another example of similar alterations leading to a [positive] economic effect. Both increased not only economic, but fuel efficiency as well.

In conclusion, let us emphasize once again the exceptionally great role played by modifications in the development of aircraft technology. The latest achievements in the area of civil aviation are in many ways the result of the development of modifications. Suffice it to say, that a significant portion of the world airplane fleet (the most efficient part) is composed of numerous modifications. The role of this tendency has grown immeasurably during the period in which wide-bodied airplanes have been developed, and the research effort on modifications has acquired during this time a new and significantly more progressive nature based on economic demands and the optimization of design decisions, as well as on modification planning.

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MOTOR VEHICLES AND HIGHWAYS

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OFFICIAL ON IMPORTANCE OF DEVELOPING VEHICLES FOR FAR NORTH

Moscow AVTOMOBILNYY TRANSPORT in Russian No 12, Dec 85 pp 39-41

[Article by D. Velikanov, corresponding member of the USSR Academy of Sciences and section head, IKTP [Institute of Comprehensive Transport Problems]:
"Motor Vehicles for the North"]

[Text] The economy of the northern and eastern regions of our country is developing vigorously. The very rich natural resources of this region are being mastered.

Transport is of extreme importance in the utilization of these riches. As yet, there are railroads, including the recently constructed Baykal-Amur mainline, only in the southern part of this region. Navigation here continues by water route only during the brief summer period. This is why the role of motor vehicle transport continues to grow in these regions of the country.

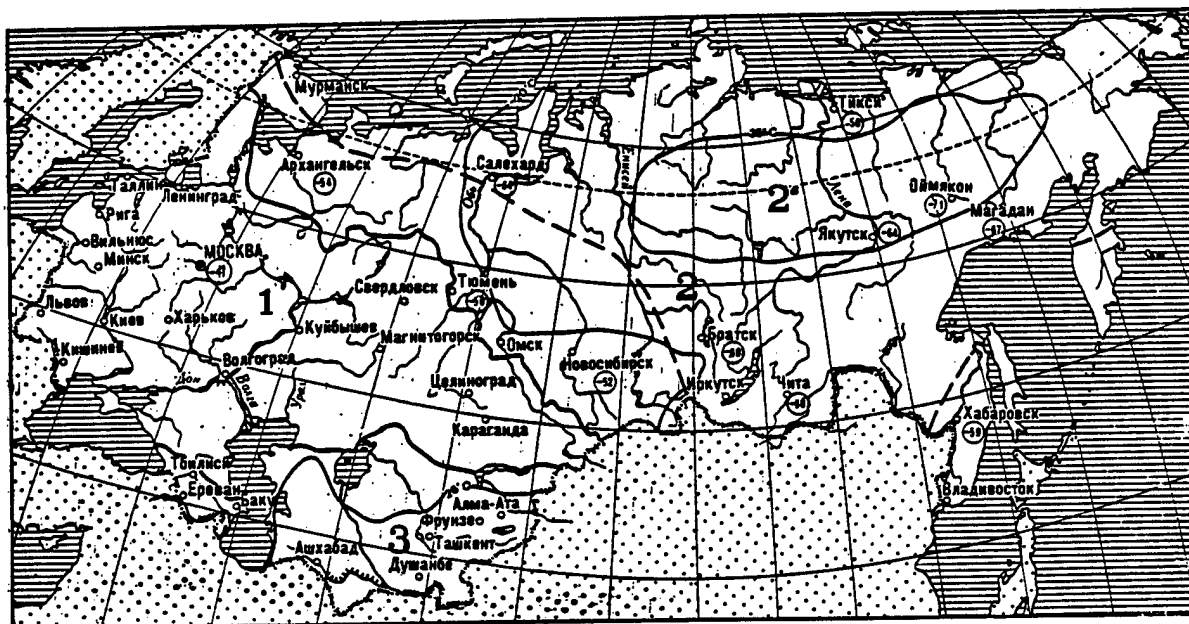
Currently it is of critical significance in all those mines where open-pit dump trucks with particularly large capacity, up to 180 tons (the BelAZ-7521), are in operation. Throughout Siberia, motor vehicles are successfully transporting cargo along several lengthy routes (e.g. Magadan and Barguzin).

Road construction under Siberian conditions is extremely difficult. The harsh climate, lengthy winter, great expanses of marshy areas, tundra and taiga, zones of permafrost all require large labor and material input for construction of road construction. Therefore a significant amount of motor vehicle shipments are still made where no road exists for practical purposes or over winter roads.

The vehicles in use in the northern and eastern regions of the USSR, as well as all operating materials for them, must be specially adapted for operation under harsh climatic conditions. This is not a new question. Attention has been devoted to it more than once in the pages of this journal.

The decisions of the Party and the government specify an expansion in the production of specially designed vehicles adapted to operation in northern conditions. The motor vehicle industry produces trucks and buses made for the north. However, up to now there are still varied interpretations of the geographical boundaries of the cold climate zone, for which motor vehicles,

as well as design and operating materials made for the north are required. Output of such vehicles is still inadequate, and certain modifications of them which are critically necessary to motor transport workers are still not being produced at all.



Natural climatic zones of the USSR

1 -- moderate climate zone; 2 -- cold climate (2a -- Far Northern zone);
3 -- hot climate

Boundaries between the zones are shown by solid lines, permafrost boundary by dotted line. Isotherm values correspond to the average monthly temperatures for January and July. The absolute lowest air temperature in the climate zone is shown inside the small circles.

Division of the territory of the USSR by natural climatic zones is regulated by the appropriate State Standards. However GOST [State Standard] 16350-80 "Machinery, Instruments and Other Mechanical Articles (reprinted in 1983)" cannot be used to establish the boundaries of the zone for using vehicles made for the north, since it does not take into consideration the effects of the harsh climate on the person (passenger and driver) inside the vehicle. In

northern conditions, both the cab and the passenger area require special heating.

All of the northern part of the European USSR is omitted from the cold climate zone in the mentioned State Standard. However, it is well known to motor transport workers on the shore of Kola Peninsula that given even a slight decrease in air temperature, e.g. down to -5 to -10 degrees C. together with a strong wind (wind speed here often exceeds 40 kilometers per hour) persons in the passenger area of a typical bus will freeze. This particular severity of the northern climate may not be overlooked.

Specialists of the Institute of Comprehensive Transport Problems affiliated with USSR Gosplan propose to draw a new, expedient boundary for the cold climate zone which may be used by planning organizations. The geographical boundary of this zone coincides with the boundaries of administrative rayons (cf. illustration).

Within the confines of the cold climate zone, zones with particularly cold winter temperatures are denoted (average temperature in January is -35°C). In agreement with RSFSR Minavtotransport [Ministry of Motor Transport], these rayons are conditionally called "The Far North" (cf. "Regulations for Maintenance and Repair of Motor Transport Rolling Stock" -- Appendix VI-11, Izd. "Transport", Moscow, 1972). It is appropriate to point out that in the Far North zone, the air temperature in winter gets down to -50°-60° C., and in Yakutsk ASSR (in the town of Oymyakon) one finds the northern hemisphere's cold pole.

The geographical boundaries of the cold climate and Far North zones established by the IKTP [Institute of Comprehensive Transport Problems] were agreed to by all interested organizations, examined and adopted at an All-union Scientific and Technical Conference in 1976 and reapproved (1984) at a session of scientific councils of USSR GKNT [State Committee of the USSR Council of Ministers on Science and Technology] in Yakutsk on problems of the North. Thus, currently, and until such time as appropriate changes are made in State Standard 16350-80, when using motor vehicles made specially for the north, one must necessarily be guided by the geographical boundaries of the cold climate zone as presented above.

The requirements for design features for motor vehicles for the cold climate zone have been set forth more than once by this author in the pages of this journal and elsewhere. We will therefore now limit ourselves to a list of the most important, the basic ones. These include special warming or heating of truck and car cabins and of buses designated for lengthy trips; warming insulation for storage batteries; availability of devices to facilitate starting cold engines as well as protection from excessive cold; using tires and other industrial rubber and plastic parts made from freeze-resistant materials; using oils, lubricants and other industrial liquids with low solidification points, etc.

The cost of motor vehicles made for the north is somewhat higher than those in series production. Shipping costs using them and amortization deductions

are also higher. But this should be justified by the advantages of using special transport facilities under harsh climatic conditions. It is understood that the use of vehicles which have been maximally adapted to local operating conditions will not be justified for all regions of the cold climate zone. These vehicles are needed primarily for operation in zone 2a, conditionally called the Far North.

It is very important to make it possible for motor transport enterprises situated in the cold climate zone to select and order independently those vehicles necessary for them which have been specialized to the extent that can best be justified for their particular needs. Thus, for example, not one motor transport enterprise to which the ZIL-130S is being supplied needs the expensive winch mounted on it. On a majority of the duty [vakhtovyy] buses developed based on the "Ural-375K" and having a heated body, there is no need for using all of the devices designed to operate at temperatures below -30° C.

Industry currently produces 10 modifications of trucks made for the north. These include the ZIL-130S, "Ural-375K," MAZ-533501, KrAZ-257B1S and the open pit dump trucks BelAZ-540S and BelAZ-548S. They also produce 6 modifications of buses (eg. UAZ-452AS, KavZ-685B, OAZ-672S, PAZ3201S and LiAZ-677A). Production of such vehicles increases yearly. However, the need has now arisen for increasing the number of modifications made for the north and include among them the motor vehicles proposed below.

/Light trucks (0.4-0.8 ton) for cities and all types of settlements over the entire territory of the cold climate zone./ [boldface type] They are needed to replace the GAZ and ZIL vehicles presently in use to transport light freight shipments and for non-transport service to the populace. There is no need to produce these vehicles in 4-wheel drive format [polnoprivodnyim], with increased capacity for cross-country travel. It is entirely possible to do without this, which will permit the cost, metal consumption and operating fuel consumption to be reduced. Being outfitted as front-wheel drive is promising for such vehicles.

The national economy needs a **/four-wheel drive 1.5-2.0 ton truck designated for use on any roads, including where there is no road/** [boldface type] made for the north. The design for such a vehicle has already been developed for practical purposes, based on a GAZ-66 truck. Production of this vehicle must be increased.

/Tractor-trailer rigs with maximum cargo capacity/ [boldface type] are extremely necessary for all types of high-volume shipments. The size should be the limit permissible for axle loads on the road. With them, minimal transportation cost, minimum fuel consumption and the highest labor productivity of all workers engaged in transportation can be achieved.

For now, only two models in this group of motor vehicles are produced for the north (and in very limited quantities), the MAZ 533501 (4x2) and the KrAZ-257B1S (6x4).

In general, /truck and semi-trailers made for the north/ [in boldface print] are absent from the presented group of motor vehicles. They must be included in the standardized list and produced from the MAZ-6422 or KamAZ-5412 (6x4) or the MAZ-5432 (4x2).

All cargo vehicles made for the north should be maximally adapted to mechanized loading and to the use of containers and packets of all types so as to cut back on labor costs in loading and unloading.

/A small capacity bus, useable as an urban taxi/ [in boldface print] is needed in many cities in the cold climate zone. The UAZ-452AS being produced now is successfully used for medical care for the populace. But it is not suitable as the basic vehicle for an urban taxi, which does not need the 2 front seats, and the passenger area should be larger.

/Diesel buses of various designation, which have been made for the north/ [in boldface print] are needed by the national economy. Their passenger areas should be well heated and have defrosters where necessary. In the regions with the lowest air temperatures, it is necessary to employ buses with oversized seats. It is also necessary to include /duty buses of simplified design/ [in boldface print] in the standardized list, based on truck designs (eg. on the type being produced at the Neftekamsk Dump Truck Plant (cf. AT [AVTOMOBIL-NYY TRANSPORT], 1985, No. 3, inside back cover).

Passenger taxis are needed in every city under modern-day circumstances. The possibility of using them should be constantly provided, weather conditions not withstanding, even on the coldest days. /Passenger taxis made for the north/ [in boldface print] are not yet produced. Therefore individual parts are primitively made from frost-resistant materials for these vehicles at the motor transport enterprises. For example, in Yakutsk they make a leaf spring flexing limiter for the GAZ-24-01 taxi from a bunch of felt washers. This is necessary since rubber articles become brittle as glass at temperatures of -40° C. The driver's place is also hand-rigged in all passenger cars. Without this, it is impossible to work behind the wheel in the north. First and foremost, passenger taxis made for the north are needed for dozens of cities situated in the regions of the Far North.

The GAZ-24 is not adequately adapted for operation as a taxi. It is difficult for passengers to get in and out, especially with luggage, and the driver's seat is not separated from the passenger area. For now, it will be necessary to produce a taxi made for the north based on the "Volga" until such time as a more highly specialized vehicle is designed.

Passenger cars made for the north are also needed for other purposes. Not only organizations and enterprises, but the general public should be able to use them as personal transportation.

/Various passenger car models/ [in boldface print] should be included in the standardized list of motor vehicles. A special modification of the "Moskvich 2141" can be one of them. The utilization of a four-wheel drive passenger car will be efficient in many instances in the cold climate zone. The VAZ-2121

now in production is not adequately suited to be made in a northern version. The LuAZ-969 and UAZ-469, which are designed to carry cargo and passengers, turn out to be too heavy for passenger cars upon evaluation. Their fuel consumption is great, and comfort is inadequate. Therefore the demand for four-wheel drive passenger cars made for the north is still critical.

Among the basic motor vehicle models made for the north, off-road open-pit dump trucks with extra large capacity have their own place. They are widely used in all open-pit type operations and on large-scale construction sites. Where possible, they should be replaced with continuous types of transport such as conveyors or pipelines which operate on electric power.

And the demand for open-pit dump trucks nevertheless grows annually. It is therefore necessary to increase their capacity. A predominant part of these dump trucks is used in the cold climate zone. This is why they should be manufactured in a northern variant and should be included in the standardized list of such vehicles.

The more widespread use of motor vehicles made for the north will permit an improvement in driver work conditions and passenger comfort. The reliability of motor transport will also improve.

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MOTOR VEHICLES AND HIGHWAYS

PERFORMANCE, FEATURES OF KRAZ-260 TRUCK MILITARY MODELS

Moscow ZNAMENOSSETS in Russian No 1, Jan 86 p 30

[Report by Col V. Sukhinin: "The KRAZ-260: the Break-in Period"]

[Text] A new truck with high cross-country capabilities--the KRAZ-260--has been added to the motor transport inventory of the Army and Navy. It is the replacement for the KRAZ-255B and is designed for carrying passengers and freight, and for towing trailers on all kinds of roads as well as under cross-country conditions. Installed in the KRAZ-260 is a 300-hp diesel engine with maximum torque of 110 kg of force per meter. This permits using the vehicle not only as a means of transport, but also as a base for repair of various kinds of military equipment.

The KRAZ-260 is capable of carrying up to 9 tons of cargo on the bed and up to 10 tons in the trailer in field conditions. When traveling on roads with improved surfaces it can carry up to 30 tons, and on the concrete strip at an airfield--up to 75 tons. It has no difficulty ascending a 30-degree slope, or fording streams up to 1.2 meters deep. The fuel distance is impressive: the vehicle can cover the distance from Moscow to Leningrad without replenishing its fuel tanks!

Equipped with wide-profile tires with adjustable pressure from 1 kg/cc to 3.8 kg/cc, the vehicle can operate both in loose snow and sand as well as in swampy areas. Other measures also increase its cross-country ability: for example, it is equipped with a mechanical dual-range eight-speed transmission with a separator. The distributor box has an asymmetric interaxle differential, which permits distributing the torque between the front axle and the axles of the rear bogie with a ratio of 1:2.

The specialists tried to provide an army vehicle which would be easy to operate, despite the complexity of its design; however, it demands skill and competence of its drivers, especially during the break-in period, when the vehicle is "learning to walk." The length of the break-in period has been established by the manufacturing plant at approximately 1,000 km. This distance is not included in the annual norm for the useful life of the vehicle.

As is well-known, during the break-in period it is forbidden to overload the vehicle or to tow a trailer; speed should not exceed 60 km/h, and operating the vehicle with low tire-pressure or in cross-country conditions is forbidden as well.

In order to protect the engine it is very important to observe the shut-down procedure. After finishing a trip it is necessary to allow it to run at medium rpm's for 3-5 minutes, after which the fuel feed is stopped. Abrupt engine shut-down, especially under a load, can result in turbo-compressor failure, since its rotor continues to spin for a certain time after the engine is shut down, and oil is no longer supplied to the rotor bearings.

On a trip experienced drivers carefully monitor the running gear: the heat of the wheel hubs, the main transmission housing of the drive axles, and the ball bearings of the front drive axle.

They frequently check the oil level in the engine and in other components, simultaneously inspecting the gasket seals, where fuel or oil may leak out. They are no less scrupulous in checking the mechanical soundness of various parts and components on the vehicle, and pay closest attention to the tightness of the wheel lugs, bolts on the steering mechanism, and the like.

The well-designed instrument panel, situated on the front panel of the cab, permits even a young specialist to discover a problem with one system or another while on the move.

Experienced drivers do not allow the engine to overheat, nor to overcool. They put the vehicle in motion when the temperature of the coolant is no lower than 50 degrees C. When on the move they maintain the temperature within the limits of 75-98 degrees C. They do not permit the engine to operate under load at temperatures lower than 70 degrees C, since in this case the fuel combustion conditions are degraded, and products of incomplete combustion condense on the walls of the cylinder sleeve--causing a great deal more wear on the sleeves and piston rings, and reduced engine economy. The temperature condition of the vehicle is regulated in motion by both automatic thermostats, and manually by means of flaps which change the air flow passing through the radiator. Deviation in engine heat from the norm means it is necessary to check belt tension, proper adjustment of the fuel system, and the accuracy of sensors and indicators.

Monitoring the lubrication system is no less important. Engine oil pressure at nominal revolutions of the crankshaft (2100 rpm) must be within the range of 4-7 kg/cc; and at minimum rpm, no less than 1 kg/cc. The oil pressure norm in the turbo-compressor lubrication system at 2100 rpm is no less than 3 kg/cc, and at minimum rpm at idle speed, no less than 0.5 kg/cc. Experience has shown that at first some of the drivers forget to react in a timely manner to the indicator lamps installed in the cabin. Therefore it is not improper to reiterate that it is forbidden, for example, to put the vehicle in motion or to continue driving, if the indicator lamp is lit, indicating reduced air pressure in the lines of the braking system.

Winter places special demands on the operator seated at the wheel of the KrAZ-260. Quite often, when driving on icy patches of road or on newly-fallen snow, the vehicle starts to skid. In this situation one must not lock the interaxle differential of the transfer case or the interwheel differentials of the middle and rear axles.

During the cold season one must also learn that the wheel valves on the system for regulating tire pressure may be opened only after the vehicle is first driven for 20-25 km. By that time the chilled operating edges of the sealing rings will have warmed up, and the seal of the connection will be more airtight. At the same time the lack of air pressure on the inflated surfaces reduces the likelihood of a blowout.

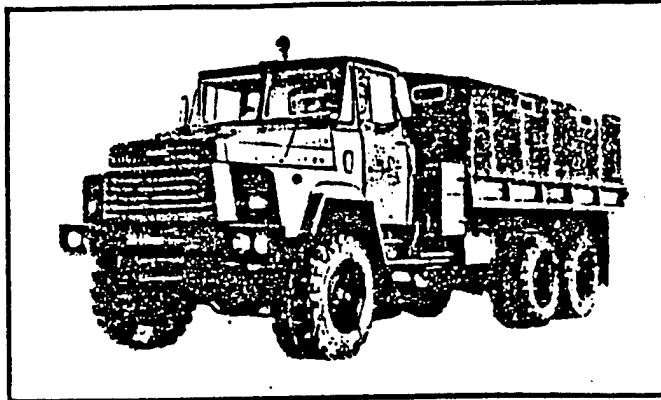
When the vehicle is halted in winter at a parking place (even for a single night), the conscientious driver always releases the pressure in the pneumatic system, in order to remove the moisture and oil from the water trap. Nor does he forget to disconnect the storage battery from the grounding terminal in order to reduce discharge; nor to close the valves on the wheels to avoid possible leakage of air from the tires.

The break-in period is completed with technical servicing of the vehicle, which stipulates carrying out operations in accordance with motor vehicle technical service order No 1, as well as carrying out work specified by factory instructions.

Practical experience shows that many drivers who service the KrAZ-260 after the breaking-in period do not remove the cotton cloth casing from the oil purification filter in the main return pipe of the pump reservoir for the power steering system. Nothing bad will happen--they say. But this leads to increased resistance in the main oil pipe and to poor performance of the hydraulic booster.

Another frequent lapse--quite often the nut on the pump pulley for the power steering booster is not tightened, nor are the bolts for fastening the fourth transverse frame. And it also happens that the operating fluid is not changed in the main cylinder for the clutch release. The quality of carrying out these operations must be monitored more carefully.

Observance of correct break-in procedure is rewarded a hundredfold in the future operation of the vehicle: fuel and oil consumption will not increase, while parts and mechanisms will serve longer--and they will operate more reliably.



Technical Data	KrAZ-260	KrAZ-260G	KrAZ-260V
Engine Horsepower	300	300	300
Working Capacity of All Cylinders, liters	14.86	14.86	14.86
Payload of Vehicle, kg	9000	--	--
Maximum Load on Chassis, kg	--	10000	--
Allowable Load on Saddle, kg	--	--	9500
Gross Weight of Vehicle, kg	22000	21680	20900
Maximum Speed In Highest Gear, km/h			
with Gross Weight of Vehicle	80	80	--
with Gross Weight of Tractor-Trailer	--	--	75
Braking Distance of Vehicle at Gross Weight at Speed of 40 km/h, in meters	17.2	17.2	17.2
Referenced Fuel Consumption in liters per 100 km			
at Constant Speed of 50 kp/h	34	34	48
Minimum Turning Circle, meters	13.0	13.5	13.0
Fuel Tank Capacity (dual), liters	165	165	165
Auxiliary Tank	50	50	50

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MOTOR VEHICLES AND HIGHWAYS

GAS CONDENSATE-DIESEL FUEL MIXTURE DEVELOPMENT

Tashkent PRAVDA VOSTOKA in Russian 13 Mar 86 p 1

[Article by UzTAG correspondent Yu. Kruzhilin: "Contrivance in Imitation of Reconstruction"?]

[Text] "...Many scientific discoveries and major inventions go years and sometimes decades without finding practical application... At the basis of a similar attitude toward things are the ambitions of separate groups of scientists, hostility on the part of authorities toward 'somebody else's' inventions, and producers' lack of incentive for their implementation". (From the Policy Statement of the CPSU Central Committee, 27th Party Congress).

The Uzbekneft Association has received a request from India. Local engineers are interested in work that was carried out in Uzbekistan: a new type of motor fuel. Oil-industry workers transferred the request to the proper quarter--the Tashkent Highway Institute (TADI). And now they don't know how to answer.

We would remind you of what we are talking about.

It is known that diesel motors are much more economical than gasoline ones and that they pollute the air less. Having implemented them more widely, we save millions of tons of oil--the chief energy resource for modern times--and clean up the air in cities. The party has made dieselization a priority project.

But here is the problem: there is not enough diesel fuel. New factories and enormous capabilities are needed.

And here is where the group of TADI scientists comes in: they say that they have found the richest source of diesel fuel, one whose set-up does not require capital expenditures.

The assertion is not unsubstantiated. Hundreds of KrAZ [Kremenchug Motor Vehicle Works], MAZ [Minsk Motor Vehicle Works], KamAZ [Kama Motor Vehicle works] and Ikarus vehicles have been operating on the new fuel for several years. It has been proven: in the first place, consumption of such fuel is lower in comparison with ordinary fuel. Secondly, the service life of motors is increased. Thirdly, there is a two-fold reduction in the emission of hazardous substances into the atmosphere.

A condensate is proposed as the new fuel--a combustible liquid close to oil in composition. It comes out of wells together with natural gas and is sent to plants for processing. It turns out that this is not necessary. Vehicles can be fueled with the condensate and they will operate normally. And to avoid additional adjustment of the engines, a little ordinary diesel fuel is added to the condensate. Therefore it would be good to have the simplest mixers right at the businesses. And that is all that is needed.

Since we do not have such mixers, scientists propose to obtain similar fuel at operational plants. The costs are minimal. The calculated effect--up to 400 rubles for one vehicle. And in Tashkent, for example, there are about 40,000 diesel vehicles.

USSR Gosstandart has permitted adoption of the new fuel. The chief executor of the project, docent E. Pyadichev, thinks that it is already possible to convert the entire diesel fleet of Tashkent to such fuel this year. The Fergananeftteorg-sintez Association, where an experimental batch was produced, is fully capable of providing the necessary quantity of fuel for this. All it takes is to open some taps and close some others.

But this year we will not get the promised savings.

Instead of expanding the experiment, its participants are now expanding... a clarification of relationships. The former administration of the scientific-research sector of TADI prohibited the experiment's participants from going on business trips and from continuing to work on economic contracts a year ago. Now here is the question: why. It is easier, of course, to prohibit than to permit again later. Acts, requests, service reports and complaints are being written. Business is standing still.

Maybe the work only seems important?

"Not at all so", answers the TADI rector for science, A Sovetov. "The work is definitely worthwhile".

"A necessary and useful thing", confirms general director of the Uzavtotrans-tekhnik NPO [scientific-production association], L. Akhmetov.

"As far as I know it is a long-term project", agrees assistant minister of higher and secondary special education, Z. Salimov.

Everyone agrees. The assistant minister writes to TADI: you report that you do not have a single topic in the state plan. But the topic of the new fuel is mentioned there. Investigate and report.

Not a peep, as they say. The powerful Uzavtotranstekhnika NPO is even now ready to implement the new item if they will get busy with it... not they, but the same Pyadichev. But he has no time. His activity is being checked by the eighth commission already. One has to defend oneself...

Result: implementation of the new motor fuel definitely did not make it into the state plan for the first year of the five-year plan. The role of the head

development engineer has been transferred to one of the Ural institutes. In the course of a year much extra fuel will be consumed. Tons of soot and other unhealthy substances will be thrown out into the air of the capital.

"Contrivance in imitation of reconstruction"--the position of those who are for innovation in word, but who in deed do not lift a finger for the sake of innovation was thus clearly and concisely described at the 27th CPSU Congress. Is it not so in the given situation? Instead of circulating fuel in motors there is only circulating paper.

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MOTOR VEHICLES AND HIGHWAYS

SEMINAR DEVOTED TO LNG FILLING STATION NETWORK

Moscow STROITELNAYA GAZETA in Russian 16 Mar 86 p 3

[Article by USSR Minmontazhspetsstroy press-center correspondent, Yu. Utkin:
"A Conveyor for Thousands of Twins"]

[Text] Who is to fill a vehicle with gas fuel? A seminar at USSR VDNKh [Exhibit of National Economic Achievements] was dedicated to this problem. Every year the number of vehicles in our country operating on compressed natural gas increases and the network of motor vehicle gas compressor stations (AGNKS) expands.

By 1990 the number of gas-powered vehicles is scheduled to reach one million. For them it is necessary to build more than one thousand AGNKS. This will permit an annual savings of up to 10 million tons of gasoline, the production of which requires the extraction and processing of 20 million tons of oil. In the last year alone, motorists saved 48,000 tons of gasoline by using 55 million cubic meters of gas in its place.

So, 1,000 filling stations! That is a large and important program. Clearly, industrial methods for their construction and assembly are indispensable. How can a real construction flow be organized here, like a factory conveyor? This was the topic at the all-union seminar "Industrial Assembly of AGNKS", which took place not long ago at USSR VDNKh.

It was noted at the seminar that the rate of construction of these stations does not meet today's demand. Thirty-nine of them should have been put on line in 1984 and 26 were; last year only 56 were put into operation instead of 64.

The equipment for these stations is identical and standard and, therefore, it would seem that their construction should be standardized. But far from it. Today construction and installation organizations lack not only a standardized work plan, but any kind of well put together one.

And it is the client, Mingazprom, that is primarily responsible for this. The chief design organization named by them, YuzhNIIGiprogaz (Donetsk), delayed the development of a standard AGNKS by years. It is perfectly obvious that putting them up as has been done so far--from pre-cast reinforced concrete--is too costly. Decisions are needed that stipulate building-modules of light metalwork.

At the same time Mingazprom institutes--YuzhNIIgiprogaz, VNIPITransgaz, Gidrogaztsentr and others are indebted to the erection gang--in their designs they do not stipulate industrial methods for the assembly of technical equipment and pipelines. The drafting is of poor quality. In order to figure out, for example, how the gas lines of the compressor section go, one has to study 3-4 sheets. In violation of standard documents, in particular SNiPa [Construction Standards and Rules] 3.05.05-85, detailed drawings for high-pressure pipelines are not being produced.

Alterations of the plans are very frequent, which leads to unjustified stoppages. This happens, on the one hand because of the designers who are interested in improving units, and on the other hand at the urgent request of the installers themselves, who have to replace the planned units and parts with those that were distributed by the client. To a significant degree because of the fact that the range of pipe diameters is inadmissably large, the number of standard sizes of fittings and fixtures is growing uncontrollably. Fittings alone number 1683!

The situation is also aggravated by the fact that the complete equipment for pipelines, for example, or for the shut-off fixtures are wretchedly supplied. Ready units and blocks are frequently not sent from the base to the site only because one or two parts are missing.

The quality of fittings for pipelines elicits many criticisms. Elbows and t-joints come with misaligned openings, without chamfers, in various diameters and rusted. Thus, at the site of the Smolensk AGNKS the Tsentrotekhnmontazh Trust redid 600 out of 1063 fittings, and Trust No. 7 had to manufacture 250 parts over again at the Saratov station.

Technical equipment and units of pipeline arrive "in clumps". More than half the time allotted for installation goes to assembling them at on-site supply bases. Just an increase in the quality of fittings produced by Mingazprom's Baku Gas Fixtures Plant would allow installers to reduce labor by 7-9 percent.

Besides this, seminar participants stated with satisfaction that as practical experience accumulates, the efficiency of construction-installation work on AGNKS is growing. Thus, the Tsentromontazh Trust, for example, participating in the construction of the first such station, at the intersection of Kashirskiy Blvd. and the Moscow Ring Road, spent more than 2000 man-days on the assembly of equipment and pipelines. And at the next one, the Smolensk AGNKS, labor was reduced by one third, the total duration of construction by one fourth, the cost of installation from 11,200 rubles to 7500 rubles, and its quality was noticeably improved.

It was possible to achieve this thanks to the fact that all the technical equipment at the on-site base was segregated into several large blocks. All the pipes (both low and high pressure) were also assembled by the industrial method.

Having analyzed the state of affairs, the seminar participants recommended the adoption of specific measures for the quickest possible completion and approval of standard designs and for production by industry, starting this year, of all equipment for AGNKS only in modular-unit and modular-container form.

MOTOR VEHICLES AND HIGHWAYS

MOBILE FILLING STATIONS FOR REMOTE AREAS URGED

Moscow STROITELNAYA GAZETA in Russian 4 Apr 86 p 2

[Article by chief of Glavtyumenneftegazstroy mechanization directorate, V. Stogov:
"Mobile Filling Stations"]

[Text] Whoever has been in the areas of pioneering assimilation of our harsh, practically uninhabited territories will, I think, agree that achieving rational economical utilization of fuel and fuel-oil materials here is more complicated than in long-settled regions.

And the problem here is not only in the difficult geographical and natural-climatic conditions, the tremendous distances and the shortage of transport that characterize Siberia and the Far East, but also in psychological costs.

Oil is all around, so does it make sense to economize on a few drops or liters of the product...

At Tyumen sites the practice of filling vehicles and machines with fuel gives rise to criticism more than any other. Is it advantageous to put a capital filling station up next to the site? If one has in mind a large and concentrated site such as the Surgut GRES [State Regional Electric Power Plant] or the Tobolsk Petroleum Chemistry Integrated Works, it is possible to answer affirmatively if only because such an AZS [Vehicle Filling Station] will prove useful to the operators after the departure of the builders. But how would it be in pipeline, oil and gas industry, and agricultural construction sites that are spread out over hundreds and thousands of kilometers and that are often relatively small objectives like pumping or compressor stations? In fact many of them, once they are put on line, operate practically without human intervention on semi-automated and automated regimes. Who needs an AZS in the taiga or the tundra?

Nonetheless there are more and more of them. The simplest containers are used for this--cisterns and barrels that are brought to the construction site and periodically filled with fuel. Unfortunately, it is precisely here that the problem begins. It is the so-called open method of refuelling. You drive the vehicle up, arm yourself with a bucket and fill it up, being your own controller and accounting clerk.

But is there a way of fighting such negative appearances--a way that would take into account the specifics of builders' operations in conditions of pioneering assimilation? There is. It is the establishment of mobile fuel distribution points in modular form. SibNIPIgazstroy and the Sibkomplektmontazh Association of Minneftegazstroy have experience in designing and manufacturing them.

There is nothing complicated in the construction of such points. The M596Zh type is an insulated aluminum block 12 meters in length and a little more than 3 meters in width that is divided inside into a machine section, where pumps and ordinary fuel pumps are installed, and a heated section for the operator-accounting clerk. The weight of the block, fully equipped, does not exceed 15-16 tons, therefore it can be transported by trailer or K-700 tractor. In the summer on a platform and in the winter even more simply--on runners or a sled. On site the block connects to nearby buried containers with various types of fuel and it is ready to go.

Thus refuelling of motor vehicles and machines proceeds by a closed method--aided by familiar refuelling "pistols"; opportunities for control and accounting, levels of service and operation, and suppression of possible intrigues are sharply increased. The time for supplying the site with fuel is brought to a minimum.

In 1986 our chief directorate, along with SibNIPIgazstroy and Sibkomplektmontazh, plans to install 50 similar points at construction sites in Tyumen Oblast. In the long term we hope to expand their production and application.

That is what I wanted to talk about particularly. In my opinion the problem extends far beyond Tyumen. I think that the builders of BAM [Baikal-Amur Railway] and those in other areas where there is accelerated assimilation of once remote parts of the country would not refuse mobile mini-AZS. Indeed, why only builders? Similar points would doubtless be useful to geologists and representatives of other branches of the economy. In a word, the demand for them could be numbered in the hundreds and thousands of units. And that is why the design and production of mobile filling stations must be centralized, taking into consideration the latest achievements in science and technology in this field, including supplying them with more modern control and accounting instruments. The problem seems to me worthy of the attention of machine-building ministries, Minpribor, ministries of motor vehicle industry and transport, and specialized institutes.

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PREPARATIONS FOR TSKHINVALI BYPASS CONSTRUCTION

Tbilisi ZARYA VOSTOKA in Russian 7 Feb 86 p 1

[Article by ZARYA VOSTOKA Correspondent Anatoliy Khugayev under the heading: "The Five Year Plan is Our Only Client": "A New Highway is Coming"]

[Text] Yet another bright light has begun to glow on the map for new construction in South Osetian Autonomous Oblast. Preparatory work has commenced on construction of the section of the road which will bypass the city of Tskhinvali, capital of the autonomous oblast. The work here is being carried out by Highway Construction and Repair Administration No 12, of the Georgian SSR Ministry of Highways.

The section of the highway which bypasses the city of Tskhinvali is an integral part of the approved variant of the new Gori-Tskhinvali-Gufta motor route, which will in the future be a continuation of the Transcaucasus superhighway through the Rokskiy Pass. It will permit diverting the heavy flow of through-traffic from the capital of the autonomous oblast, and will reduce the noise and air pollution in the city limits.

More than two years ago, says Aleksey Margiyev, chief of the Road Construction Department of the South Osetiya Obispolkom, the Tbilgiproavtodortrans [Tbilisi State Planning Institute for Highways and Motor Vehicle Transport], working on an assignment from the Georgian SSR Ministry of Highways, developed two variants for building the Gori-Tskhinvali-Gufta highway. According to one version the road was to continue to bypass the villages, but in that case would have destroyed dozens of acres of fruitful gardens. The second variant, which will be put into practice, establishes the goal of protecting these tracts of land. The route begins at kilometer three of the existing Gori-Tskhinvali-Oni highway, follows the left bank of the Bolshaya Liakhva River, and at kilometer 30, not far from the village of Ditsi in the Goriyskiy Rayon, it intersects the aforementioned highway.

"The section which bypasses the city of Tskhinvali is farther on. It is being built beyond the boundary of planned development for the capital of the autonomous oblast, passing such populated places as Prisi, Kheiti, Dzartsemi, and Kemerta; it crosses the Sveriskhevskoe Gorge and the Bolshaya Liakhva River by means of two bridges (one 87 meters long, and another 132), and at kilometer 43 once again follows the Gori-Tskhinvali-Oni highway. One quite important detail: from here to the settlement of Gufta the highway will be completely reconstructed and major repairs will be made."

It should be noted that the cost of the second variant exceeds the first by 2.5 million rubles; however, agriculture will receive an additional 450-500 hectares of new arable land, the profits from which according to preliminary calculations will reach 14-15 million rubles.

The significance of the new route is especially great because it will connect the Transcaucasus superhighway with the basic highways of Georgia, will significantly increase their capacity, and will provide a new impetus to the socioeconomic development of South Osetiya and rational utilization of the bountiful natural resources of the autonomous oblast. The highway will open the way to numerous mineral resources located in previously inaccessible locations, and will promote the development of a network of health-care institutions and resort complexes. Also receiving a significant impetus to development will be the deposits of commercially-valuable minerals, and particularly the well-known lead and zinc deposits in Kvaisa. Access to high mountain pastures will be easier, which will permit developing animal husbandry in the oblast.

9006

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INADEQUATE YAROSLAVL OBLAST ROAD NETWORK EXAMINED

Moscow IZVESTIYA in Russian 23 May 86 p 2

[Article by IZVESTIYA Special Correspondent V. Stepanenko under the rubric: "Between Sessions of the USSR Supreme Soviet": "Country Roads"; passages enclosed in slant bars printed in boldface in text]

[Text] Country roads: their construction and operation in Yaroslavl Oblast were discussed at a joint session of standing commissions on transportation and communications of the houses of the USSR Supreme Soviet.

The state of Yaroslavl's roads was carefully studied and grasped by a joint preparatory commission of deputies. Members of the commission included kolkhoz brigade leader L.P. Lagutina, driver V.I. Timochkin, and kolkhoz chairmen Ya.I. Plitman and P.S. Berezovskiy. None of them was raised on the asphalt, as they say. They all know the meaning behind "A melancholy time; a sight to behold", when the rains begin to churn the dust into impassable mud and the poor road conditions literally paralyzes village life and work.

An old "smart muzhik from Yaroslavl," sent on his way as in Gogol's "Three Birds," would size up the roads according to the principle that, the long way is easy; close to home it's trickier. And he would sum up this simile as follows: its not from the long journey that one learns, but from the short one. The short one, in our conception, means--to the field; to the farm; from rural soviet to rural soviet: in a word--a country road. It unites not only the populated places, but the years, the centuries. And naturally, it teaches--it teaches the lessons of management.

/Impassable Roads--an Economic Concept/. Tractors and machinery wear out before their time; too much fuel and spare parts are used; unscheduled repairs are required; the quality of the products of fields and farms is reduced and there are direct losses; the technology of agricultural production is disrupted and work time is used in an irrational manner--all of these are additional expenditures. Having good roads is a direct advantage to the farms.

Yaroslavl has, of course, hard-surface roads, asphalt-concrete roads, on which "a long journey is easy." On such roads one becomes an optimist, and the old injunction not to seek a cart track when there is a post road seems completely self-evident. But is the oblast satisfied with its kilometers of "post roads"?

As the members of the deputys' preparatory commission found out, more than 110 local kolkhozes and sovkhoses (a third of the total number) either do not have well-built roads at all to connect the central farmsteads with the rayon centers, or their condition does not guarantee reliable connections at all times of the year--"close to home, it's trickier." On such roads, even in dry weather, the drivers of scheduled busses, partly in jest, partly in earnest, warn their passengers: "I'll take your body along, but I won't answer for your soul." Every year water and heavy wheels tear up over 100 kilometers of gravel roads--they don't get the proper care. For this reason scheduled busses do not go to nearly one farm in five.

/Impassable Roads--A Social Concept/. Out of 1,470 stores of the oblast union of consumers' societies, more than one third are very poorly supplied with food products and with the necessities of life, because of seasonal road conditions. Thus the old saying, "If you go a day's journey, bring bread for a week," is very appropriate here. One need not even talk about timely delivery of letters, newspapers and other correspondence in the spring and fall seasons... And you see, it turns out that a poor road is a road with one-way traffic: people are leaving the remote areas.

All of these and many other facts and figures which characterize Yaroslavl roads also became topics of discussion at the session of the standing commissions on transportation and communications.

First of all, who builds the roads in Yaroslavl Oblast, and most important--how are they built? The majority of road building is provided by two organizations: the Yaroslavavtodorog [Yaroslavl Highways] Administration of the Ministry of Highways, and the Dorspetsstroy [Special Highway Construction] trust of the RSFSR State Agroindustrial Association. The deputies directed their questions to representatives of these departments as well.

/Rates of Construction/: The plan for putting into operation highways for oblast and local purposes in the 11th Five Year Plan was 94 percent fulfilled. But, as far as roads within the farms are concerned, characteristic examples are as follows: on the Yasnaya Polyana Sovkhoz, a 14-kilometer road has been under construction for seven years already; and on the Melenkovskiy Sovkhoz, almost as much time was required in order to lay down 1.8 kilometers of asphalt.

In their speeches the deputies analyzed such figures as well. According to the general development plan, the oblast is supposed to have more than 5,000 kilometers of good-quality intrafarm roads. And how much do they have? In all, only 300--less than one kilometer per farm. According to data from the RSFSR State Agroindustrial Association, 40 percent of the roads on the balance of the kolkhozes and sovkhoses are subject to complete restoration. And they are still only "subject"--while right alongside them are about 25,000 hectares of arable lands.

/Quality of Work/. In the last five-year plan almost 97 percent of the highways were rated "good" or "excellent" by the Dorspetsstroy trust; but today one kilometer of asphalt in ten already needs major repairs. Deputy

I.Ye. Klimenko, presiding at the commission meeting, remarked on this regard that economizing on materials and resources when laying down a road can backfire in terms of major expenditures for repairs before they should be needed. The situation is typical for many oblasts: when winter has passed, you'd better have several million rubles ready. Mismanagement costs dearly.

Naturally, the question arose among the deputies as to what sort of reaction occurred at the Oblast and Rayon Soviets in the face of such mismanagement. Both the report of V.F. Gorulyev, obispolkom chairman, and the report of the co-chairman of the joint deputies' preparatory commission I.P. Prokopiyeu, naturally, took note of "a certain amount of work for expanding road construction." And at the very same time it is clear that in half the rayons of the oblast during the five-year plan not once was the question of roads examined at rayon soviet sessions, and only four (out of 17) rayispolkoms received reports from road-builders. The deputies concurred with the conclusion of the preparatory commission: the local authorities do not have sufficient business acumen, initiative or perseverance to change the situation which has come to pass.

Today, when our party, and its 27th Congress, has taken a decisive course toward strengthening the independence and activeness of local Soviets, the deputies have brought up the precise point that the Soviets cannot, and must not stand by the side of the country road! "I am not satisfied with the report of the chairman of the obispolkom," said Deputy S.A. Lukyanchenko in his speech. "Road building in the oblast, and the roads themselves, are practically unsupervised--which is simply not permissible in our day and age."

In order to build an asphalt road one must have as a minimum crushed stone and gravel, binding materials, and vehicle transport, as well as a whole complex of road-building machinery. Finally, one must have skilled cadres. Tied around every kilometer of road is a stubborn knot of problems. And not infrequently it is a "gordian knot."

Yaroslavl Oblast has its own quarries--its own territorial quarries; but they are subordinate to a wide variety of bureaucracies. They allocate gravel and crushed stone for local roads..."as a form of patronage." It is a paradoxical situation: every year about a half-million cubic meters of stone is hauled out of the oblast--and the same amount is hauled in! Here you see in truth that the right hand does not know what the left is doing. Clearly the bureaucracy shows its selfishness: it takes, and gives nothing in return.

During the many years of operation of the Yaroslavl petroleum refining plant imeni D.I. Mendeleev hundreds of thousands of tons of so-called acid sludge has accumulated in settling ponds--in "black ponds." It has settled in layers, just like geological deposits, by which one may learn of the epochs. These waste materials should be reprocessed--and it would be possible to provide a complete supply of raw materials to oblast asphalt plants, which are today operating at half-capacity. But the question is held up once again by the mass of bureaucratic confusion and formal bureaucratic replies. Over a five year period, only 30,000 tons of binding materials in all have been received from these wastes--a drop in this black flood. But even this

drop is the result of the enterprise and enthusiasm of local workers, and is not a regular feature of the operation of the USSR Ministry of the Petroleum Refining and Petrochemical Industry. As Deputy I. Dzhabbarov stressed, "The ministry which is supposed to refine and sell for the needs of the national economy the waste products of its production has not to this time gotten a grasp on this important matter." It's easier to create settling ponds, you see!

Road building administrations are experiencing severe personnel shortages. And one should not be surprised: 40 percent of the work is hard, manual labor. At present road builders have not made use of the quantity, nor the quality of the equipment allocated to them. Nor have they worked out the socio-domestic conditions. The plan for introducing living space for the workers of Yaroslavavtodor in the past five-year plan was fulfilled by only 75 percent. In the city of Uglich, for example, a 27-apartment building has been under construction for over six years now. The record for long construction projects is about to be broken at building projects for road builders in the city of Danilov and the village of Zavolzhskiy... And so you see how the country road comes full circle--from the quality of life of the road builders to the quality of their work.

How can this vicious circle be broken? What measures must the ispolkom of the Oblast Soviet take in order to combine the efforts of the road-building organizations and the enterprises of industry and agriculture in order to turn their attention toward country roads? It was just for this purpose that the commission was gathered--to call attention to the shortcomings and reveal the "root of evil", and to find and pose a concrete solution to the problem. To a complex of problems!

On all these and many other problems, the deputies heard the reports of responsible officials of the ministries and departments of the Russian Federation--the Minister of Highways V.A. Burkhnov; Deputy Chairman of the State Agroindustrial Association, V.M. Vidmanov; Minister of Motor Transport Yu.S. Sukhin; Chairman of the State Committee on Construction Affairs S.N. Sabaneyev; and also Deputy Minister of the USSR Petroleum Refining and Petrochemical Industry V.Ye. Popov.

In the opinion of the deputies, "The reports of the ministers admitted and proposed more than they solved."

And after all, the question of country roads is a serious one. This is the face of the modern village, the blood vessels of the great and complex agroindustrial complex. And the struggle with impassable roads requires a combination of efforts and concrete, decisive actions. This was frankly pointed out at the session of the commission. And its recommendations were directed to these ends.

9006
CSO: 1829/192

PROBLEMS OF CENTRALIZED FOODSTUFFS SHIPMENT IN SARATOV OBLAST

Moscow SELSKAYA ZHIZN in Russian 3 Jun 86 p 2

[Article by I. Zveryev, chief, Saratovagropromtrans Transport Production Association, under the rubric: "The AIC: Reserves for Speedup": "With the Same Old Shortcomings"]

[Text] With the transition of kolkhozes and sovkhoses to intensive forms of management, motor vehicle transport workers are faced with the task of fundamentally improving shipment of goods. Great hopes are being placed in centralization, centralization, and in setting up permanent control centers in every rayon for controlling the flow of motor transport shipments in the rural area.

In the Saratov Oblast agroindustrial complex [AIC] there are over 1,340 enterprises and organizations, which have 28,000 trucks at their disposal. Moreover the majority of these organizations have a very small motor pool--from 10-25 vehicles. The question inevitably arises: is scattering the technical resources in this manner advantageous to the state? Analysis has shown that at the major motor vehicle facilities (100 or more vehicles) the average indicators are much sounder in comparison with the small ones: time in service and daily trips of the vehicles--by 10.7 and 57.4 percent; while output per ton and per ton-kilometer are greater by factors of 2.17 and 2.25, respectively. And operating costs for shipments are, as a matter of fact, 47 percent lower.

And if one recalls the positive features of the experiment with the former "Transselkhoztekhniki" [possibly, Agricultural Transportation Equipment Trust]--these were primarily such indicators as: productivity of vehicles, which was 23.3 percent higher than in agriculture itself; and the operating costs for shipment and for gasoline consumption, which were 28 and 30 percent lower, respectively. That is understandable, because the major enterprises have a stronger material base, planned preventive maintenance is carried out more strictly, and the personnel are more skilled.

We were among the first in the RSFSR to establish a production transport administration for agroindustry, which includes 39 self-supporting enterprises with almost 5,000 trucks. These means of transport provide transportation of fuel and lubricants, mixed animal fodder, cattle, poultry, oxygen, fuel, and other materials. Recently they have begun to introduce centralized delivery of goods from rail transport through a comprehensive transport dispatch service. Presently such services are operating at 14 centers.

The main thing, however, is the fact that our quite good indicators were not what counts. Transport administrations often receive complaints for holding up shipments. And this has forced us to seek a way out. We found it in enlisting for effective work the vehicles of those enterprises and organizations which have transport but which operate it poorly. The direction was found in the accumulated experience in the oblast of using trucks from various ministries and departments in the period of the harvest campaigns, when the mobilized transport is transferred to operational control of the rayon shipment control centers (SCC).

But why, we asked ourselves, should we not organize control centers with a program for the entire year? In comparison with the seasonal variant, there are significant differences here. First of all, the departmental transport withdrawn for the harvest with permission of the obispolkom is wholly transferred to the control of the oblast SCC. This is a firm assignment. It is worked out in an exclusively purposeful manner, although at times it works to the disadvantage of the owners of the vehicles. And departmental transport cannot be transferred to a permanently-operating shipment control center, because that equipment has its own technological purpose.

A second aspect: The Saratovavtotrans [Saratov Motor Transport] territorial association temporarily furnishes personnel to the rayon SCC's from its own subunits. The number of engineering and technical workers and employees is planned for the association according to the norms, which simplifies matters. But when SCC's are organized for year-around operation, one cannot get along without expanding the permanent staff.

And a third point: Whereas shipment control centers set up for the harvest periods deserve recognition and support at all levels, proposals for radical improvement of the use of departmental motor transport have most often been greeted with scepticism. We sensed this immediately, as soon as we began to organize a permanent center in Balakovskiy Rayon in 1981.

Our choice for the experiment was dictated by objective considerations. The transport enterprise in Balakov is one of the most progressive. It is a large rayon: there are 15 kolkhozes, 10 sovkhoses, and 16 enterprises and organizations which provide services to agriculture. The annual volume of shipments of agricultural products reaches a million tons. Scientists helped to compile the technical documentation and define the functions of the SCC, the staff, and means of communication, and outlined the organizational levels. They rated the position of chief of the shipment control center as equal to the deputy director of an enterprise, and they designated a senior engineer and a dispatcher. And they allocated the facilities.

In a word, in spite of the fact that they looked askance at all this from above, things were moving ahead--albeit slowly. After carefully analyzing the work of the available motor transport in the rayon, we discovered some very negative trends. Every department and enterprise was striving by whatever means to acquire as many vehicles of different models and modifications as possible--without troubling themselves about using them in a skillful and productive manner. It's enough just to have them--just to be on the safe side. At the same time the facts showed that departmental motor transport is not used at all like industrial transport. Even during the

summer, kolkhozes and sovkhoses put only about 42 percent of their operational vehicles to use in intrafarm transport. The remainder ran between various points, to include outside the borders of the oblast.

With such a state of affairs, a vehicle traveling empty becomes a habitual and widespread phenomenon. And well, departmental vehicles operating at less than capacity, and operating on routes outside the oblast, has become almost the norm as well. Time-keeping at the Balakov brick plant, for example, provided the following results: half the transport from enterprises and organizations of the rayon agro-industrial association return without loads, and quite often stand idle for 3-4 hours.

The experience of life favors the SCC's, which permit significantly increasing the productivity of the rayon's motor pool, and reducing the demand for transportation resources. In other words, it is necessary to find out the actual need for technological transport for each enterprise and organization, and place the excess under centralized operational administration. This would significantly improve shipment of goods, and would increase the returns from every vehicle.

And if that is so, then it would appear that direct vital interest would be translated into energetic action. At the same time it is not inappropriate to think about the order of USSR Goskomselkhoztekhnika [State Committee for the Supply of Production Equipment for Agriculture], which made it mandatory to set up rayon (inter-rayon) shipment control centers everywhere in 1985. We thought--well, the ice is breaking, and we won't have to stew in our own juice any more; the correctness of our chosen path has been recognized, and has received support at the national level. And in Saratov it was as if we turned to face a very important question. In March of the last year the presidium of the oblast agroindustrial association made the decision to set up such a center, which in turn would impose upon itself the duty to organize permanent rayon services.

Well, as they say, it looked good on paper... With a great deal of effort, we managed to organize a Balakovskiy Rayon and an Oblast SCC with our own resources, albeit with incomplete staffing. But it turned out that we were unable to set up shipment control centers in every rayon. And we need 400 radio stations, 40 teletypes, 80 switchboards for dispatcher communications, and 40 UAZ [Ulyanov Motor Vehicle Works]-type vehicles. And of course, to service all of this equipment we need engineers, dispatchers and economists. Questions of including them in our table of organization remain open.

In July of last year a union meeting of rural transport workers was held in Balakov. At that time there were in all 350 SCC's in operation in the country. The results of their work spoke for themselves. Now, when a uniform structure has been formed for the management of an agroindustrial complex, it is easier to bring the business we have begun to a logical conclusion.

But for now... When the USSR State Agroindustrial Association was created, the motor transport of the abolished ministries and departments was automatically transferred to the new structure, with all their old shortcomings. But after all, there is no getting away from the necessity to perfect the control of motor transport for the agroindustrial complex! How long until we bestir ourselves? We are firmly convinced that permanently-operating SCC's will bring only good to the country's national economy.

9006

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RAIL SYSTEMS

DETAILED FIGURES FOR RAIL TRANSPORT WORK IN 11TH FYP

Moscow .ZHELEZNODOROZHNIY TRANSPORT in Russian No 4, Apr 86 pp 38-43

[Report prepared from materials from the Ministry of Railways Administration for Accounting and Bookkeeping: "Railroad Transport in 1985 and the 11th Five-Year Plan"]

[Excerpts] Work results are in for 1985 and the 11th Five-Year Plan overall. The material-technical base of railroad transport was further developed. Much was done to increase the traffic and freight capacities of the lines, the structure of the rolling-stock inventory and the utilization of rolling stock were improved, the traffic process was intensified, and labor productivity was improved. A number of social measures were implemented and railroad workers' material well-being and working conditions were improved.

In the final year of the 11th Five-Year Plan the line collectives and the collectives of the transport sections and enterprises focused their efforts on developing movements of large-capacity trains, improving the utilization of freight-carrying capacities and freight car space, taking specific steps to strengthen discipline and organization, and perfecting the economic mechanism. Socialist competition for the successful completion of planned tasks, achieving noteworthy gains and greeting the 27th CPSU Congress in a worthy manner was conducted in the collectives on a large scale.

Main Results of Work

During the 11th Five-Year Plan the operating length of the railroad network was increased to 145,300 kilometers. Some 3,200 kilometers of new track (including the Baykal-Amur Main Railroad Link) and 4,000 kilometers of secondary track were brought into use, and 5,600 kilometers of main track were electrified. Some 11,700 kilometers of main track were equipped with devices for automatic blocking and centralized dispatch. Table 1 shows the figures for changes in the technical facilities of the network (expressed in thousands of kilometers) during the 11th Five-Year Plan.

During the last 3 years of the five-year plan railroad transport not only made up the debt incurred during the first 2 years in terms of products shipped in the national economy but even overfulfilled the plan from the start of the five-year plan by 52 million tons, and, compared with 1980, increased the

Table 1. (track lengths expressed in 1,000's of kilometers)

Indicator	as at 1 January		1986 as % of 1981
	1981	1986	
Track in operation	141,8	145,8	102,4
including sections:			
with two or more permanent ways	47,1	51,4	109,1
as a percentage	33,2	35,4	+2,2
with automatic blocking and centralized dispatch	80,1	81,8	114,6
as a percentage	56,5	63,4	+6,9
electrified	43,7	49,4	113,0
as a percentage	30,8	34,0	+3,2
Developed length of mainlines	191,4	198,7	103,8
including:			
with heavy rails (R65 or heavier)	103,9	135,3	130,2
as a percentage	61,3	68,1	+6,8
length of continuous welded track	47,4	55,6	117,3
as a percentage	24,8	28,0	+3,2
length of track on concrete ties	51,4	59,3	115,4
as a percentage	26,8	29,8	+3,0
length of track with heat-hardened rails	57,0	86,8	152,3
as a percentage	29,8	43,7	+13,9
Developed length of station track	86,6	91,9	106,1
as percentage of station track	61,0	63,5	+2,5
Availability of centralized electric switches, thousands	175,4	211,0	120,3
as percentage of all switches	58,5	66,1	+7,6

total volume of freight shipped 230 million tons, freight turnover 279 billion ton-kilometers and passenger turnover 32 billion passenger-kilometers.

The firm fulfillment of the freight plan both overall and for most kinds of freight and the improved level of operations and the makeup of technical facilities all exerted a positive effect on improving rolling stock utilization. The comprehensive indicator characterizing the work of freight cars--car turnover--was accelerated by 7.8 hours during the last 3 years while in the first 2 years it had slowed by almost 5 hours. Over the 3 years, locomotive productiveness increased 23,000 ton-kilometers gross while in 1981-1982 it dropped 7,000 ton-kilometers gross. In 1983-1985 stage speed increased 0.3 kph. The target set in the five-year plan was significantly exceeded for the indicator for train average weight. Over the five-year plan the increase was 214 tons, of which 162 tons were gained during the last 2 years.

During those years the growth rate for the main economic indicator--labor productivity--was 9.2 percent against a target of 6.1 percent. As a result, all increases in the volume of transport work were achieved without increasing the numbers of operations workers.

The basis of the results achieved was primarily the purposeful and meaningful work done in the sector headquarters to improve management in all elements of the transport system. Exactingness was increased toward personnel at all levels of management and their responsibility enhanced. All this made it possible to strengthen labor, production and technological discipline, improve organization and bring proper order to each section and each work place.

Table 2 shows the figures for plan fulfillment for the movement of national economic freight during the 11th Five-Year Plan.

Of the 17 kinds of freight listed in the annual products list, over the 5 years the plan for freight shipments was overfulfilled as follows: for coal, 9.5 million tons; for coke, 2.1 million tons; for ferrous metals, 6.3 million tons; for grain cargoes, 25 million tons.

The plan for total dispatch was fulfilled by the 24 railroads except the Gorkiy, Northern, North Caucasus, Kuybyshev, Sverdlovsk, South Urals, West Siberian and Kemerovo railroads.

Implementation of a set of concrete measures made it possible for railroad workers to insure an increase of 114 million tons in the volume of freight shipped through the period May-December 1985 compared with the corresponding period in 1984 and to make up the debt incurred at the start of the year and fulfill the annual plan for total freight dispatch ahead of schedule, by 28 December. For the whole of 1985 more than 3,941 million tons of national economic freight was moved, which is 36 million tons, or 0.9 percent, more than the plan and 48 million tons, or 1.2 percent, more than the previous year.

Table 2

Indicator	1981—1982		1983—1985		1981—1985	
	plan fulfillment	+ of plan	plan fulfillment	+ of plan	plan fulfillment	+ of plan
Freight dispatched total, millions of tons	7454,9	-62,4	11 667,5	+114,6	19 122,5	+52,2
including:	1432,3	-5,9	2 217,0	+15,4	3 649,3	+9,5
coal	66,5	+0,3	100,3	+1,8	166,8	+2,1
coke	851,2	-8,3	1 277,1	-9,6	2 128,3	-17,9
oil and petroleum products	627,1	-18,2	972,7	+10,2	1 599,8	-8,0
ores	132,5	-6,2	203,2	-0,3	335,7	-6,5
fluxes	384,5	-7,2	607,8	+13,5	992,3	+6,3
ferrous metals	290,3	-57,5	450,5	-42,5	740,8	-100,0
timber	196,4	-7,8	305,3	-1,3	501,7	-9,1
cement	204,4	-10,2	324,6	+2,3	529,0	-7,9
industrial raw materials and moulding materials	241,9	-25,4	421,4	-6,8	663,2	-32,2
chemical and mineral fertilizers	275,3	+10,3	419,6	+4,7	694,9	+25,0
grain cargoes	6957,7	-137,3	10 957,8	+52,8	17 925,5	-84,5
Freight turnover, billions of tariff kilometer-tons						

Here, in 1985 the quality of shipment for minerals [porodovaya pogrutzka] was improved. Of the 42 planned kinds of freight the plan was fulfilled for 30 designated items. Table 3 shows the figures for plan fulfillment for freight in the annual products list.

The plan for the total dispatch of freight was fulfilled by all railroads. The greatest contributions here were made by the Kemerovo Railroad, which carried 4.2 million tons above plan, the West Siberian Railroad with 2.6 million tons above plan, the Krasnoyarsk Railroad with 2.5 million tons, the Far Eastern Railroad with 1.3 million tons, the Tselin Railroad with 3.8 million tons, the Central Asian Railroad with 1.9 million tons, the Moscow Railroad with 1.5 million tons, the October Railroad with 1 million tons, and others.

The plan for shipments of very important freight listed in the annual products list was not fulfilled for timber, petroleum products, fluxes, refractories, industrial raw materials, mineral fertilizers and peat. Underfulfillment of the annual plan for shipments of timber occurred mainly on the Northern Railroad, which failed to ship almost 3 million tons, the Sverdlovsk Railroad, which was more than 3 million tons short, the East Siberian and October railroads each with 1.7 million tons short, the Gorkiy Railroad with 2.3 million tons short, and the Krasnoyarsk Railroad with 1.2 million tons short.

There was a shortfall of 6 million tons of mineral fertilizers on the railroad network. Here, the shortfall on the Lvov Railroad was more than 1.7 million tons, on the Alma-Ata Railroad about 2 million tons, on the Gorkiy Railroad 1.1 million tons, and on the Southeastern and Central Asian railroads 0.8 million tons each. Shortfalls in shipments of fluxes amounted to 573,000 tons; 271,000 tons on the Tselin Railroad, 176,000 tons on the Moscow Railroad, 201,000 tons on the Sverdlovsk Railroad, and 130,000 tons on the Dnepr Railroad.

Of the freight listed in the operational products list, the plan for shipments of construction materials was overfulfilled 24.2 million tons; other overfulfillments were as follows: scrap ferrous metal, 3.2 million tons; chemicals, 3.3 million tons; potatoes, vegetables and fruit, 1.8 million tons; sugar beets, 1.1 million tons; automobiles, 76,000 car loads; metalwares, 75,000 tons; foodstuffs, 42,000 tons; containerized freight, 67,000 cars; and so forth.

One economically expedient means of insuring increasing volumes of freight shipments is the organization of shipments of raw materials and finished products along exit routes. In recent years, in order to improve the efficiency of through-freight shipments a whole series of organizational measures have been implemented on the railroads. In particular, since 1984 a procedure has been established for setting up the through-freight trains according to the weight envisaged in the schedule for train movements; the bonus system for workers in enterprises and railroads dealing with the organization of through-freight shipments has been reviewed; and the ministry and the central committee of the railroad and transport construction workers trade union have lent their support to the proposals from collectives in the

Table 3

Indicator	fulfillment	percentage of plan	± of plan		
			of plan	including for May-December	1984
Total dispatched, millions of tons	3941,3	100,9	+36,3	+89,5	+48,6
including freight in annual products list	2552,3	99,6	-10,7	+30,4	+21,7
coal	753,7	101,8	+13,0	+24,6	+21,0
including for the USSR Min of Coal Ind.	718,7	101,1	+10,0	+19,8	+21,8
coke	33,5	101,1	+0,4	+0,4	-
oil and petroleum products	419,2	97,1	-12,3	-9,3	-9,7
peat and peat products	11,0	78,0	-3,5	-2,4	-3,3
iron and manganese ore	259,1	100,6	+1,7	+7,1	-0,2
nonferrous ore and sulfur raw material	66,9	102,0	+1,3	+1,4	+1,2
fluxes	67,6	99,2	-0,6	+0,6	-0,6
ferrous metals	205,8	102,4	+4,8	+5,6	+4,0
metal structures	5,6	103,3	+0,2	+0,2	+0,2
timber	149,7	91,3	-14,3	-6,6	-1,9
refractories	29,5	98,1	-1,2	-0,1	-0,2
cement	103,6	100,2	+0,2	+2,0	+1,7
industrial raw materials and moulding materials	107,5	98,2	-2,0	+1,9	-2,4
granulated slag	23,6	92,8	-1,8	-0,7	-0,4
chemical and mineral fertilizers	146,4	96,1	-6,0	-1,7	+6,4
grain cargoes	144,3	106,1	+8,3	+6,8	+4,6
concentrated fodder	25,2	102,7	+0,7	+0,7	+1,2
other freight	1389,0	103,5	+47,0	+59,1	+26,9
including construction freight	768,7	103,3	+24,2	+29,9	+8,6

Tselin, Baltic and Sverdlovsk railroads to organize socialist competition to raise the level and improve the efficiency of through-freight shipments.

As a result, in 1985 the proportion of through-freight operations made up 43.6 percent of all freight shipments, against the plan of 44.3 percent, while the average makeup of through-freight trains was increased by 5 cars, or 11 percent. The target set for through-freight operations was met by 12 of the railroads, including the Baltic Railroad with an overfulfillment of 2.5 percent, the Belorussian Railroad with 1.5 percent, the Tselin Railroad with 1.2 percent, the Krasnoyarsk Railroad with 1.3 percent and the Kemerovo Railroad with 1 percent. Throughout the network and on many railroads the quality of plan fulfillment was improved for through-freight operations and the number of underloaded through-freight trains was reduced 24 percent. Here, the proportion of underloaded through-freight trains in which the railroad was blameworthy was reduced to 39 percent against 50 percent in 1984.

The proportion of freight carried on through-freight trains among all freight shipments grew, including up to 72.7 percent for nonferrous ores and sulfur raw material, up to 84.6 percent for shales, up to 43.5 percent for transshipments of freight from water transport, up to 39.1 percent for construction freight, and up to 49.4 percent for imported freight. However, the level of through-freight operations fell for the following categories: coal by 0.4 percent, petroleum cargoes by 1.3 percent; and it also fell for shipments of iron and manganese ores, industrial raw materials and a number of other freights. The average distance across which freight was shipped by through-freight trains remained at the 1984 level of 636 kilometers.

The target set for increases in the static load was met by all railroads, increasing 1,290 kilograms compared with 1984. The level of static loads was raised for most bulk freights. The largest increases were for oil and petroleum products (1,070 kilograms), ferrous metals (1,090 kilograms), chemical and mineral fertilizers (1,010 kilograms), construction freight (1,720 kilograms), industrial raw materials (1,840 kilograms), refractories (1,510 kilograms), grain (2,260 kilograms), fluxes (2,420 kilograms), iron and manganese ores (2,800 kilograms), coal (1,950 kilograms), and scrap ferrous metals (2,780 kilograms).

All railroads fulfilled the plan for static load. Seventeen of them exceeded it by more than 1,000 kilograms. In particular, the above-plan increases were as follows: for the October Railroad, 1,340 kilograms; for the Dnepr Railroad, 2,370 kilograms; for the Donetsk Railroad, 2,010 kilograms; for the Azerbaijan Railroad, 1,350 kilograms; for the Southern Railroad, 1,760 kilograms; for the North Caucasus Railroad, 1,340 kilograms; for the Tselin Railroad, 1,430 kilograms; for the Kemerovo and Far Eastern railroads, 1,410 kilograms; for the Baykal-Amur Mainline, 2,040 kilograms.

In 1985 freight turnover in railroad transport was 3,719 billion tariff ton-kilometers. This is 80 billion or 2.2 percent more than in 1984 but 11.2 billion, or 0.3 percent less than the plan. More than 34 billion ton-kilometers of the increase in freight turnover was attributable to a 10-kilometer increase in average distance traveled. In particular, the increase for ferrous metals was 34 kilometers, for chemical and mineral fertilizers 41

kilometers, for grain cargoes 7 kilometers, for refractories 42 kilometers, for iron and manganese ores 23 kilometers. At the same time the distance fell by 2 kilometers for coal and timber, 10 kilometers for nonferrous ores and sulfur raw materials, and 20 kilometers for concentrated fodders.

Transport of Passengers and Freight

In insuring passenger and freight transport the railroad workers continue to occupy a leading position within the country's transport system, and they are now accounting for more than 45 percent of intercity passenger turnover.

During the 11th Five-Year Plan railroad transport carried 20.7 billion passengers. Here, the size of passenger turnover was 1,811.4 billion passenger-kilometers. Compared with 1980, the size of passenger transport grew 2.3 percent while passenger turnover rose 9.3 percent. Thus, the task for growth in passenger turnover set for railroad transport for the 11th Five-Year Plan was fulfilled.

Almost all passenger turnover (99.9 percent) was accomplished with the use of progressive means of traction, including 66.6 percent electrified traction. In urban commuting services more than 78 percent of transport is done with motor-coach [motorvagonny] trains.

Table 4 shows the change in the size of passenger transport by kinds of travel for the 11th Five-Year Plan. Compared with 1984, in 1985 passenger turnover increased by 10 billion passenger-kilometers, or 2.7 percent, and the plan was overfulfilled by 4.1 billion passenger-kilometers, or 1.1 percent. The Baltic, Southern, Dnepr, Azerbaijan, Volga and Kuybyshev railroads failed to cope with the plan.

Together with other measures the high rates of passenger transport operations achieved during the period May through December 1985 were promoted by implementation of the measures outlined by the ministry for developing heavy-weight movements and improvements in the organization of car movements in specific directions. During this time total transfer increased by 14,700. This indicator improved on 24 railroads, and to the greatest extent on the West Siberian, Southern, Donetsk, South Urals, Sverdlovsk and Kemerovo railroads. At the same time, for the entire network, transfers were 5.9 percent below the norm.

The increased weight and longer length of trains made it possible to insure an increased transfer of cars using fewer trains. Thus, the average daily delivery was 6,900 loaded trains, which is 83, or 1.2 percent, less than in 1984. This helped in reducing operating expenses, making better use of the locomotive inventory and locomotive crews, increasing the throughput capacities of the lines, and creating better conditions for the maintenance of track, contact-wire lines and other devices.

The higher level of operational work from May 1985 exerted a positive effect on the utilization of rolling stock, when the 1984 level was exceeded for all indicators, particularly during the fourth quarter of 1985 (see table 5).

Table 4

Indicator	1980	1985	1985 against 1980	
			%	±
Passengers carried, millions	4072, 2	4165, 0	102, 3	+92, 8
including:				
urban commuters	3720, 9	3773, 5	101, 4	+52, 6
percentage of total	91, 4	90, 6	—	-0, 8
long-distance passengers	351, 3	391, 5	111, 4	+40, 2
Passenger turnover, billions of passenger-kilometers	342, 2	374, 0	109, 3	+31, 8
including:				
urban commuters	111, 1	116, 7	105, 8	+5, 6
percentage of total	32, 5	31, 2	—	-1, 3
long distance	231, 1	257, 3	111, 3	+26, 2
Average distance, kilometers	84	90	107, 1	+6
Average distance for urban commuters	30	31	103, 3	+1
Average distance for long-distance passengers	658	655	99, 5	-3
Average number of people per car	33, 8	33, 6	99, 4	-0, 2
Average per car in urban commuting	40, 4	40, 4	100, 0	—
Average per car long-distance	31, 3	31, 2	99, 7	-0, 1
Number of cars on long-distance trains	15, 2	15, 4	101, 3	+0, 2

Table 5

Indicator	± against 1984			
	1985	including		
		Jan April	May-December	4th quarter
Car turnover, days	+0,14	+0,57	-0,06	-0,23
Average car idle time, hours:	-0,28	+1,38	-1,08	-1,52
per single loading operation	+0,06	+0,55	-0,18	-0,30
per technical operation	+117	-535	+438	+643
Average daily productivity per car, kilometers net	+1290	+460	+1670	+1550
Average static load per car, (+ kg)	+78	+59	+85	-93
Average gross weight per train, tons	-6,2	-20,2	+0,7	-9,5
Average daily distance covered per locomotive, km	+4	-41	+25	-47
Average daily productivity per train, thousands of ton-kilometers gross	-0,7	-1,6	-0,2	-0,4
Average stage speed, kph				

In 1985 a 3.3-hour slowdown in the overall car turnover on the network led to nonfulfillment of the plan. More than 50 percent of the slowdown in car turnover resulted from a 4.5-percent increase in car idle time for technical operations against the established norm and a 1.2 percent drop against the previous year's level.

The average idle time per loading operation was reduced from 23.33 to 23.05 hours and 0.05 hours against the plan. Targets were met and the 1984 level was improved upon as follows: for car turnover on 8 and 16 railroads respectively; productivity 11 and 18; idle time per loading operation on 12 and 20; idle time for technical operations, 8 and 15. On the Belorussian, South Urals, East Siberian, Far Eastern, Baykal-Amur, Tselin and Krasnoyarsk railroads all indicators for car utilization were improved and plan targets were met in full.

Average daily locomotive productiveness rose 0.4 percent against 1984 but the plan was underfulfilled by 54,000 ton-kilometers gross. On 16 railroads it was improved and the plan was fulfilled by the October, East Siberian and Baykal-Amur railroads.

For the network as a whole train weight increased 78 tons to 3,033 tons. All railroads except the Alma-Ata, Southwestern and Azerbaijan railroads insured fulfillment of the planned task. Train weight was increased by more than 100 tons on the following railroads: October (102 tons), Kemerovo (105 tons), East Siberian (106 tons), South Urals (109 tons), Gorkiy (131 tons), and Baykal-Amur (195 tons). This made it possible to assimilate all increases in freight turnover and achieve additional throughput capacities, primarily on high-density lines averaging 150 trains per day. At the same time, the target for a number of qualitative indicators for the utilization of rolling stock was not met.

Results for last year show that the schedule for the dispatch of freight trains was 1.1 percent lower than in 1984; for passenger trains the figure was 2.5 percent. The greatest declines in the schedule for dispatch of passenger trains were permitted on the Baltic Railroad (13 percent), the Southeastern (7.3 percent), the October (5.3 percent), the Gorkiy (4.2 percent), and the Lvov, Southwestern, Donestk and Odessa railroads (more than 3 percent each).

Compared with 1984 the percentage of depot malfunctions of diesel locomotives fell almost 0.2 points and was close to the established norm; the norm was met on 22 railroads. However, on the Tselin and Southwestern railroads it grew significantly, while on the West Kazakhstan Railroad the norm was exceeded by 2.9 percent, and on the Alma-Ata Railroad by 7.2 percent.

Although 0.4 percent below the norm, the indicator for the technical status of electric locomotives for the accountability period increased 0.1 percent. Because of violations in the system of planned preventive maintenance and repair of locomotives 15.1 percent of diesel locomotives and 8.8 percent of electric locomotives were operated beyond the times established for TO-3 maintenance. This to some extent affected the increased number of locomotive breakdowns for both freight and passenger trains.

Depot repairs on freight trains were 0.5 percent above plan and 1.6 percent higher than the preceding year. The plan was unfulfilled on the West Siberian and Southeastern railroads. The Volga, Southern, Lvov and Baltic railroads, which are experiencing a major shortage of covered cars, are behind in meeting targets for their repair. The plan for depot repair of passenger cars was overfulfilled 0.1 percent. Here, the Volga Railroad had a shortfall of 75 cars, and the Azerbaijan Railroad a shortfall of 84 cars.

At the initiative of the Muscovites, the industrial enterprises of the ministries and administrations prepared about 1 million freight cars and almost 310,000 containers for transport against an annual commitment of 800,000 and 280,000 respectively. At the same time, the inventory still contains a large number of damaged freight cars and containers, and instances of them being forwarded to other railroads have not been eliminated.

On some railroads the uncoupling of freight cars for technical reasons has become more frequent, particularly on the Transbaykal, October, Southeastern and Northern Railroads. The halting of trains at intermediate stations using PONAB instruments still frequently occurs, and on individual railroads the percentage of unconfirmed heating of axle boxes remains very high. Thus, on the Kuybyshev Railroad it is 22.2 percent, on the West Kazakhstan 17.6 percent, on the Transcaucasian 26.7 percent, and on the Lvov 14.5 percent, which indicates defects in the technical maintenance of instruments and in their adjustment.

Containerized and Packaged Transport

The five-year plan for the shipment of freight in containers was fulfilled in the amount of 229.4 million tons, or 102.2 percent, including 102.8 percent in large-tonnage containers, which is 5 million tons above the plan. In 1985, with a plan of 50.5 million tons, 52.3 million tons, or 103.6 percent of the plan, were loaded. Some 19.5 million tons were shipped in large-tonnage containers, which was 37.3 percent of total freight loaded in containers. The Donetsk, Volga, Central Asian and Far Eastern railroads failed to fulfill the annual plan.

With a surplus of containers, 61,300 standard units, or 97 percent of the target, were made up on the unloading areas, an increase of 8.6 percent compared with 1984. Most losses of loading resources occurred because of unsatisfactory dispatch and unloading in the departure areas, holidays and work done during the first half of the day. Long delays are occurring in dispatch from the areas for the loaded containers received because of the untimely handover of empty cars. In 1985 the average daily availability of these containers was 131 percent of the norm, and the residue of containers for dispatch increased compared with 1984.

During the 11th Five-Year Plan the Ministry of Railways provided major assistance for dispatching ministries and administrations in the organization of packaged freight shipments, in particular in the selection of means and methods for packaging and the sizes of packages, and in the organization of test shipments and creating conditions for loading and methods for securing packages inside the cars.

The average annual growth rate for packaged shipments of packaged and piece freights in transport packaging was 5.5 percent. As a result, the five-year plan was fulfilled early in December. A total of about 939 million tons of these loads were shipped, that is, as many as were shipped during the 10th and 11th five-year plans [as published--ed]. However, in 1985, with a plan for the shipment of 210 million tons of packaged freight, only 208.1 million tons were shipped, or 99.1 percent of the plan. Growth was 5.3 percent against 1984. The lag occurred because of failure to present rolled ferrous metal sheet for shipment and shortfalls in deliveries of packaging facilities to some ministries.

In 1985, the mechanized remote-controlled loading and unloading work plan was fulfilled for a total of 876.6 million ton-operations of freight-handling work, or 101.2 percent. Overall, the five-year plan was fulfilled 100.1 percent.

Industrial Railroad Transport

Overall, the territorial associations of the Ministry of Railways' Industrial Railroad Transport fulfilled the five-year plan for all technical-economic indicators, in particular in terms of total annual plans for shipments, for which the fulfillment figure was 102.1 percent. Some 52 million tons of freight were shipped above the plan. The volume of loading and unloading work was fulfilled 101.7 percent, and 30 million tons above-plan were processed. Plan fulfillment for profit was 110.2 percent and above-plan profit in the amount of R29.5 million was made. Seven territorial associations--the Moscow City, Sverdlovsk, Vladimir, Ukrainian, Moscow, Volgograd and Kaliningrad associations did not fulfill their profit plans, which was largely instrumental in the 5-percent underfulfillment of profit overall. With a target of 114.3 percent, labor productivity was 114.6 percent. The income plan was fulfilled for all kinds of activity, amounting to R303.2 million, or 102.5 percent of the plan and 104.1 percent against the previous year.

All associations fulfilled the 1985 plan for transport volume 102.3 percent except for the Vladimir Association (90.6 percent) and the Moscow Association (99.7 percent). Freight shipments were 12.5 million tons above plan, an increase of 25.5 million tons, or 4.8 percent, over 1984. The plan for volumes of loading and unloading work was fulfilled 101.6 percent, with 5.8 million tons handled above the plan. The Vladimir, Volgograd and Moscow associations failed to fulfill the plan in terms of this indicator (with 91.8 percent, 96.0 percent and 98.9 percent respectively).

In 1985 car idle time exceeded the norm by 0.73 hours; figures for the Armenian, Kuybyshev, Sverdlovsk and Volgograd territorial associations were 4.76 hours, 3.17 hours, 2.35 hours and 2.35 hours respectively.

Industrial Enterprises, Construction

The volume of sold output for the industrial enterprises of the Ministry of Railways was R2,432 million, or 101.5 percent of the plan, and for the plants of the Main Administration for Rolling Stock Repair and Spare Parts Production

the figures were R1,818 million and 101.4 percent. All plants of the Main Administration for Signals and Communications (TsSh) and the railroad enterprises fulfilled the plan. Of the 17 TsSh plants, 7 failed to fulfill the deliveries plan, including the Dnepropetrovsk Svetofor Plant, the Kharkov Enameled Articles Plant, the Yelets Electromechanical Plant and the Dnepropetrovsk Electrotechnical Equipment Plant. Output worth R36.1 million above plan was obtained, R90.8 million more than in 1984.

Taking into account the obligations assumed for deliveries (by contract), the volume of sold output for the Ministry of Railways overall was underfulfilled 2.1 percent, including 2 percent by plants of the Main Administration for Rolling Stock Repair and Spare Parts Production; the greatest shortfalls were for the plants in Lyublinskiy (7 percent), Barnaul (7.6 percent), Ordzhonikidze (17.9 percent), Panyutino (9 percent), Kanash (4.9 percent), Voronezh Diesel Electric Repair Plant (7.5 percent), Poltava (5.1 percent), and Orenburg (5.7 percent).

In 1985 the plants of the Main Administration for Rolling Stock Repair and Spare Parts Production fulfilled the rolling stock repair plan for electric locomotives, diesel locomotives, electric units, diesel trains, 5-car and 12-car refrigerated units, independent refrigerated cars and subway cars. And whereas growth was significant for locomotives and 12-car and 5-car refrigerated units, the repair programs for freight cars and for passenger cars were fulfilled 92.8 percent and 91.3 percent respectively, which was lower than the 1984 level.

Overall, the plan for diesel locomotive repairs was not fulfilled by the Voronezh, Orenburg and Poltava plants, and for electric units by the Tbilisi Electric Unit Repair Plant; nine plants failed to fulfill the plan for repairs to freight cars, including the Barnaul, Panyutino, Ordzhonikidze and Kanash plants; 10 plants did not fulfill the plan for repairs to passenger cars, including the Voronezh, Ulan-Ude, Ordzhonikidze and Zhmerinka plants. Of the most important kinds of output, lagging occurred in the fabrication of individual frogs at the Dnepropetrovsk and Orenburg plants, and in the production of containers at the Main Administration for Containerized and Packaged Transport plant in Gryazi-Orel; and also in car roller wheelsets and certain other products.

Railroad transport is one of the national economy's materials-intensive sectors and each year the state spends considerable sums to develop it. In 1985, for the whole of the Ministry of Railroads, including the Baykal-Amur Mainline, the volume of capital investments assimilated amounted to R6.1 billion, or 101.1 percent. At the same time, for the existing network 99.8 percent of assets allocated from centralized funding sources were assimilated. In the utilization of funds special attention was paid to increasing the traffic capacity and transport capacity of high-density routes, development of stations and junctions and the repair base, first and foremost the locomotive and car facilities, and the construction of social and everyday projects.

Construction of the Baykal-Amur Mainline was accomplished at a high level, with the utilization limit for capital investments standing at 116.3 percent even given that the capital construction plan was underfulfilled 6.5 percent

for production projects along the existing network, while underfulfillment for nonproduction projects totaled 10 percent. A total of R166 million was not utilized. In particular, assimilation was 100.5 percent for container shipment and commercial operations facilities and 105.1 percent for signals and communications. At the same time significant lagging occurred in car and locomotive facilities, at plants of the Main Administration for Rolling Stock Repair and Spare Parts Production, municipal projects and in establishments of people's education. Funding for capital construction was used to the limits on the Baltic, Transcaucasian and Central Asian railroads and the Baykal-Amur Mainline. Some 23 railroads substantially overfulfilled the plan for construction and assembly work that they themselves carried out. In addition to those already named, they included the Donetsk, North Caucasus, Gorkiy, South Urals, Kemerovo and other railroads.

For 1985 as a whole the program for construction and assembly work was implemented at a level lower than that planned and, taking BAM into account, was fulfilled 98.5 percent, with R40 million unutilized. Some R87 million of the annual limit for the existing railroad network was unutilized, mainly through the fault of the Ministry of Transport Construction and other ministries and administrations. Organizations of the Ministry of Railways exceeded the target by R1.1 million.

Railroad construction organizations fulfilled the plan for total construction volume 97.6 percent and the plan for state capital investment projects 100.4 percent. At the same time it should be noted that the trusts of the Volga, Tselin, Krasnoyarsk, Odessa and West Siberian railroads failed to cope with the plan for the utilization of funds. Some 92.3 kilometers of secondary track and more than 723,000 square meters of housing were constructed through the efforts of the railroad trusts. The targets for most production and nonproduction projects were met.

One positive result of capital construction in 1985 was overfulfillment of the plan for the commissioning of housing by an amount of 14,000 square meters. At the same time, the organizations of the Ministry of Transport Construction were 35,300 square meters under plan.

As previously, one decisive direction in making technical progress was the electrification of the railroads. In 1985 the length of electrified track increased 1,444 kilometers.

Under conditions of high-density traffic great importance is attached to the construction of second and third mainlines, for which the increase was 769 kilometers in 1985. Thanks to new railroad lines the length of the network increased 1,193 kilometers. Much work was done to construct, develop and reconstruct classification yards and lengthen station track. Some 2,580 kilometers, or 117.1 percent of the plan, were equipped with automatic blocking and centralized dispatch, and 3,100 kilometers of intercity cable line was laid and 5,269 switches equipped with centralized electric switching.

During 1985 large volumes of work were completed to restore technical facilities for railroad transport by means of capital repair. The annual plan for track restoration was fulfilled for all kinds of maintenance, but at the

same time lagging occurred in laying continuous welded track (67 kilometers) and concrete ties (276 kilometers).

Railroad transport received from industry 580 new electric locomotives (98.3 percent), 647 mainline diesel locomotives (98.3 percent), 493 switchers (99.8 percent), 65,400 freight cars (100.2 percent), 2,676 passenger cars (94.2 percent), and 71,000 containers (94.2 percent). Lagging in the delivery of locomotives occurred mainly through the fault of the Tbilisi Plant; the Gryazi-Orel plant was short in its deliveries of medium-tonnage containers.

In 1985 the average monthly wage for workers engaged in transport work was R216, an increase of 2.3 percent over the year. For the network as a whole and for most railroads the correct relationships were insured between labor productivity growth rates and wages.

On some of the railroads they are only slowly eliminating the shortcomings in the organization of labor for workers, which is indicated by the increase in the number of hours idle and overtime work and the number of disruptions of labor and leisure conditions.

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RAIL SYSTEMS

RAILWAYS OFFICIALS DISCUSS TASKS, MINISTRY REORGANIZATION

Moscow GUDOK in Russian 18 Apr 86 pp 1-2

[Article: "On an Accelerated Course: From an Expanded Meeting of the MPS [Ministry of Railways] Collegium"]

[Excerpts] AS WAS REPORTED IN "GUDOK" ALREADY, THE OTHER DAY AN EXPANDED MEETING OF THE MINISTRY OF RAILWAYS COLLEGIUM WAS HELD WITH THE PARTICIPATION OF CHIEFS OF RAILWAYS, A NUMBER OF DEPARTMENTS, METRO LINES AND INDUSTRIAL RAILWAY TRANSPORTATION ASSOCIATIONS; RECTORS OF VUZ'S; CHAIRMEN OF THE RAILWAY COMMITTEE OF THE RAILWAY TRANSPORTATION WORKERS TRADE UNION; MANAGERS OF A NUMBER OF ENTERPRISES; SECRETARIES OF PARTY ORGANIZATIONS, SUBUNITS [PODRAZDELENIYE] AND ENTERPRISES; LEADING WORKERS; PRODUCTION INNOVATORS; SCIENTISTS; INDUSTRY SPECIALISTS AND TRANSPORTATION VETERANS. THE TASKS OF RAILWAY WORKERS IN IMPLEMENTING THE DECISIONS OF THE 27TH CPSU CONGRESS WERE DISCUSSED.

WAYS FOR RADICAL IMPROVEMENT IN THE OPERATION OF TRANSPORTATION AND A VIGOROUS REORGANIZATION OF MANAGEMENT METHODS IN LIGHT OF PARTY DEMANDS WERE EXAMINED IN DETAIL IN THE REPORT OF MINISTER OF RAILWAYS N. S. KONAREV AND IN THE SPEECHES OF MEETING PARTICIPANTS.

MEMBER OF THE CPSU CENTRAL COMMITTEE POLITBURO AND FIRST DEPUTY CHAIRMAN OF THE USSR COUNCIL OF MINISTERS G. A. ALIYEV SPOKE AT THE EXPANDED MEETING OF THE COLLEGIUM.

CPSU CENTRAL COMMITTEE TRANSPORT AND COMMUNICATIONS DEPARTMENT HEAD V. S. PASTERNAK, MINISTER OF TRANSPORT CONSTRUCTION V. A. BREZHNEV, DEPUTY CHAIRMAN OF THE RSFSR COUNCIL OF MINISTERS L. A. GORSHKOV, DEPUTY CHAIRMAN OF USSR GOSPLAN V. YE. BIRYUKOV, TRANSPORT AND COMMUNICATIONS DEPARTMENT HEAD OF THE USSR COUNCIL OF MINISTERS ADMINISTRATION OF AFFAIRS K. V. KULAYEV, USSR FIRST DEPUTY PROCURATOR GENERAL N. A. BAZHENOV, MANAGERS OF A NUMBER OF MINISTRIES AND DEPARTMENTS, CHAIRMEN OF LOCAL PARTY AND SOVIET ORGANS, AND THE PARTY AND TRADE UNION ACTIVE MEMBERSHIP OF MPS PARTICIPATED IN THE WORK OF THE COLLEGIUM.

The state has invested substantial capital in the industry and quite a lot was done for retooling it. And what's the return?

During the first 2 years of the five-year plan, transportation operated with large stoppages and it didn't cope with the shipping plans. This had an

extremely adverse effect on the activities of the entire national economy. As a result of measures that were taken during the last 3 years, we succeeded in not only eliminating lags from the shipping plan, but also in exceeding it. The sharp reduction in the shipping rate during the first quarter of 1985 was compensated for. With selfless and heroic labor, industry workers overcame the lag and finished the five-year plan, having met their commitments.

At the same time, it's impossible to close our eyes to serious shortcomings. The shipping plan for some of the most important freight wasn't fulfilled during the past five-year plan. The qualitative indicators of operational work fell short. The losses of loading resources were great because of miscalculations in the use of railcars, locomotives and other technical facilities of transportation. There were many valid criticisms for organizing passenger hauls. The conditions for serving passengers at railway stations and trains were poor. The obviously bad situation with the safety of train traffic causes alarm.

The 27th Party Congress called for a most serious reorganization, a sharp turn, and a fundamental change in all areas of activities and, undoubtedly, such a reorganization and sudden change are necessary right now in railway transportation.

The ability to manage competently and effectively and to use all levers for achieving high final results assumes the most paramount importance. It's very important that each railway worker realizes just how much of a beneficial effect the efficient, smooth functioning work of a shipping conveyor has on activities of the entire national economic complex and, on the contrary, what a pernicious effect malfunctions and miscalculations in our work have on development of the economic system.

The following was recorded in the basic economic and social development trends approved by the congress: "The basic tasks of transport are the timely, qualitative and complete satisfaction of the shipping demands of the national economy and the public and an improvement in the economic efficiency of its operation."

The question concerns a fundamentally new approach to the entire operation of transportation and an assessment of its efficiency and the serious reorganization of the economic mechanism and management methods.

At the present time railway transportation has a powerful productive and personnel potential at its disposal. The main thing is to use it more efficiently.

Managing the decisions of the congress, critically assessing the positive work results during the last 3 years and the first quarter of 1986, and knowing the shortcomings and reserves of the industry, the minister emphasized, we can project higher gains than planned for the year and the entire five-year plan.

In 1986 it's not too much for us to provide for the shipment of 4.2 billion tons of national economic freight, and 4.4 billion tons in 1990. By the end of the five-year plan it's possible to exceed the passenger turnover quota by 8-10 billion passenger-kilometers.

At the time of determining the prospects for the five-year plan, the task was set to raise average train weight by 500 tons, i. e. by 1990 to bring it to 3,500 tons. Right now, when a number of bold experiments that are productive in their results were performed on the Moscow, Tselin and South Urals Railroads and when a program was developed for increasing average train weight on 49 network routes, it's important to think about increasing the earlier projected gain in terms of this indicator too.

In no way does it establish the present and projected level for increasing section speed. The situation that has taken shape with this indicator is obviously unsatisfactory. With an average authorized tracking speed on the order of 75-80 kilometers per hour for freight trains according to the condition of the track and the rolling stock, section speed is a total of 32 kilometers per hour. Such a substantial gap is evidence not only of the large load of our railways and the comparatively low specific weight of two-track lines, but also of the stagnation in developing train traffic schedules and implementing their accepted standards. The task is to raise section speed by 5-7 kilometers per hour by 1990. This will be a revolutionary step forward in improving operational work.

During the past year, beginning on 1 April 1985, an additional 88 million tons of products were loaded--without increasing rolling stock--due to the assimilation of advanced accepted standards for loading railcars. The economic impact was 75 million rubles. If we were to raise the static load by 1-2 tons more during the five-year plan, then it will be possible to additionally dispatch many millions of tons of freight and to obtain a substantial economic impact. And this is an attainable task, if it's undertaken properly everywhere.

The situation that has taken shape with railcar turn-around time doesn't conform to a course for the vigorous intensification of production. Obviously during some period insufficient consideration was begun to be given to this most important indicator. And this immediately turned into a slowing down in operation of the loading conveyor and large losses, it had an unfavorable effect on the country's economic system, and the shortage of railcar rolling stock began to have a sharper effect. The campaign for better use of railcars and for acceleration of their turn-around time must be among the most important, priority tasks. We can't tolerate the fact that a railcar is moving only one-third of the time, and the remaining time it's standing idle.

We're faced with substantially improving the use of locomotives. During the past five-year plan their average daily run even fell by 9 kilometers and it was a total of 416 kilometers. To bring the average daily run of locomotives to 500 kilometers per day and to raise their productivity by 15-18 percent--such is the task being set today! To solve it then is to find an additional nearly 1,000 machines for operational needs. It's possible to obtain 200-300 more electric and diesel locomotives as a result of improving their technical condition and reducing layover in repair.

These are the quantitative and qualitative gains that we are faced with undertaking during the current year and the five-year plan as a whole in order to intensify the loading process not in words, but in deed. And it's very important to project specific gains that are feasible to the maximum extent possible

according to basic indicators at each railroad, department and enterprise and to bring them to each work place.

Acceleration and intensification will have a beneficial effect on the most important economic indicators of transportation and on the efficiency of its operation. A radical improvement in management forms and methods and in the organization of production and labor must be aimed toward this. As was indicated at the congress, such is the orientation--setting up cost accounting, providing for profitability and self-support, extensively using economic incentives, and assimilating new methods of management.

The main economic indicator is an increase in labor productivity. During the past five-year plan, although the planned rate of increase for this indicator wasn't even reached, we succeeded in assimilating the entire increase in shipping volume by increasing labor productivity without an increase in the number of workers. Now we're faced with not only securing what has been achieved, but it's necessary to move forward at accelerated rates. Railway workers set a very difficult and responsible task before them: to sharply accelerate the rate of increase in labor productivity, to raise it by 18-20 percent instead of the 10-12 percent that was projected in the basic trends of the economic and social development of the USSR. A doubling like this will make it possible to take a decisive step toward achieving the highest level in the world in terms of this indicator and to release approximately 200,000 people for work in other sectors of the national economy. This is a high honor--to be the first among all sectors of the national economy to achieve the highest labor productivity.

The experience of the Belorussian Railroad is a striking example of a creative approach to uncovering reserves for an increase in labor productivity. The collective of this main line displayed initiative of great national importance. During a short time frame in the course of an experiment at the railroad, a lot was done to increase production efficiency, improve the management of shipments, improve the extent of organization, and strengthen discipline and order.

As was noted at the meeting of the collegium, the experiment was met with understanding and found active support in the labor collectives. It became the personal matter of each worker, engineer, employee and enterprise manager. During the course of 2 years labor productivity at the railroad grew by 16.1 percent, shipping cost was reduced by 3 percent, an above-plan profit was obtained, and volume and quality operating indicators were improved. Personnel turnover and the number of unauthorized absences from work were reduced. The railroad completely provided itself with the necessary means for raising tariff rates and pay rates for 85,000 workers. The raise in wages was 9.9 percent. On the average each of the main line's workers received a wage increase of 43 rubles during the first quarter of the current year.

Having successfully completed work in 1985 under the conditions of an economic experiment, the main line's collective continues to assimilate and improve the provisions of this experiment in order to achieve new gains.

The experience of the Belorussian Railroad was approved by the CPSU Central Committee and the USSR Council of Ministers, and it received a high appraisal in the CPSU Central Committee's political report of the 27th Party Congress.

Right now an experiment like this is being conducted already at nine railroads that are different in terms of operating conditions, availability of labor resources, extent of technical equipment, and provision of personnel. During the year it's proposed to release nearly 95,000 people here. This will make it possible to raise labor productivity by 8.5 percent with a wage increase of 7.6 percent. The first positive results were achieved already during the past quarter.

Right now the collectives of such major main lines as the Moscow and the October are strenuously preparing for the experiment.

The Belorussian experiment is the right way toward assimilating increasing shipments with the least staff, improving shipping efficiency, and consolidating personnel in transportation.

At the party congress the necessity was emphasized to develop effective anti-spending incentives that will induce people to achieve the highest final results with minimum expenditures. It's important to change the direction of the economic mechanism and to aim it toward improving the quality and efficiency of work, accelerating scientific and technical progress, and reinforcing the role of the human factor.

In transportation during the current year the Dnepr and Southwestern Railroads, their departments and enterprises converted first to new methods of management. The reorganization encompasses all aspects of the railway workers' activities and is aimed at shipping all products being presented for transporting in a timely manner. Stable freight shipment indicators for each year of the five-year plan, and not only as a whole but also in accordance with the basic established products list, are assumed as the basis for operating in a new way. The entire mechanism is aimed at accomplishing the largest volume of shipments with minimum costs. The new methods of management must promote development of the creative initiative of labor collectives and increase their personal interest in and responsibility for labor efficiency. Cost accounting is being reinforced, the rights of subunits [podrazdeleniye] and enterprises in planning and in managing the economy are being expanded, and their responsibility for labor results is being increased simultaneously.

Serious grievances concerning managers and specialists of the ministry's main administration were expressed at the meeting. Obviously they aren't giving sufficient consideration to the new management mechanism, which in the very near future must be taken on everywhere.

The capital-output ratio is one of the indicators of economic efficiency. It went down during the 11th Five-Year Plan. It's impossible to explain this just by an increase in the unit cost of facilities and projects, especially in the eastern regions of the country, and by the arrival of expensive specialized and refrigerated rolling stock. The process of fixed capital replacement will continue, and besides, at more rapid rates--without this the acceleration of scientific and technical progress is impossible. And the task of improving the use of fixed capital, first of all of its active portion--locomotives and railcars, is especially urgent. This is one of the most important reserves for increasing the economic working efficiency of transportation.

The 27th CPSU Congress set the task of consistently strengthening the policy of thrift and activating this important factor of production efficiency. The extent of using all kinds of resources is characterized by a generalized economic indicator, production cost and--in transportation--shipping cost. At railroads just a 1 percent reduction in cost provides a savings of more than 145 million rubles per year. And attention to this indicator must be special. Last year shipping cost was overstated by 0.6 percent as compared to the plan. As a result, 57.5 million rubles in operating capital were overspent, including 31 million rubles in nonproductive costs that were caused by unplanned repair of locomotives, manpower standing idle, rejects, breakdowns and accidents. These losses aren't being reduced over the period of a number of years.

Right now it's especially necessary to thoroughly examine the economic system and foster economy, thrift and a thrifty attitude toward things. Managers at all levels--from ministry to line enterprise--must develop economic thinking among themselves and their subordinates with regards to today's demands, more fully assimilate economic methods of management, and use them extensively in their activities.

While organizing train traffic on a section, a dispatcher must think in economic terms. Any miscalculation of his costs a lot. It is incumbent upon each railway engineer to know how to assess train traffic conditions from the point of view of power-generating fuel expenditures. And it's necessary for railway engineers to accurately represent what an economic loss a warning about a reduction in speed turns into. In general, each one in his own position must be an economist. Only under these conditions will the gigantic shipping conveyor operate really efficiently.

The reorganization of management methods must be combined with an improvement in operating style and methods and the very structure of management. Events and management practice require us to substantially amend current structures for managing the industry. The current structure is cumbersome, sluggish and expensive, generates duplication and legitimatizes bureaucratism; in short, it doesn't meet today's requirements.

As the reporting speaker noted, it's advisable to retain basically the three-link and the two-link structure: ministry--railroad--department, ministry--plant, ministry--subway, ministry--railroad--trust, ministry-VUZ, etc., while in this case making substantial changes in the internal structures. An association of a number of independent administrations and departments in administrations, the abolishment of a number of administrations within the main administrations, and a reduction in the number of staff members with the use of a wage fund that has been released for increasing pay rates for the remaining specialists are provided for in the ministry right along with a redistribution of duties between the minister and his deputy.

For purposes of speeding up the automation of basic production processes it was decided to create the "Soyuzzheldoravtomatizatsiya" scientific production association. Appropriate scientific research, industrial design, project survey institutes and electrical engineering plants will be included in it.

For a long time the question wasn't resolved on creating a single center for managing all the processes that are associated with passenger service. Fragmentation and duplication generated numerous confusions and discrepancies. Now a center like this is being organized. The Main Passenger Administration, which will include all subunits of railcar resources that are earmarked for passenger service, is being placed under its authority. In addition, the newly created Main Administration for Providing Passenger Meals in Railway Transportation and the Main Administration of Subways are transferring to its management. An appropriate reorganization will be done at railroads and departments. The concentration of passenger service management must make it possible to take a considerable step forward in solving those problems that have fairly well accumulated here.

A number of measures are specified as well that are directed toward improving the working efficiency and operativeness of the main administrations and the ministry as a whole. The work of the collegium will be substantially reorganized.

During the first stage of reorganization, it's proposed to retain all 32 of the railroads that are operating now. As regards the departments, they're faced with a substantial reorganization. They showed a good example at the Central Asian Railroad where they boldly abolished four departments. The work of the Moscow Railroad didn't deteriorate from the fact that the Novomoskovsk department was eliminated. The very same thing can be said too about the elimination of the Kotovsk department at the Odessa Railroad. But at a majority of the railroads they're trying in every way possible to avoid changes like these, although, by way of illustration, the necessity of combining the Semipalatinsk and Zashchitinsk departments on the Alma-Ata Railroad and the Popasnaya and Voroshilovgrad departments on the Donetsk Railroad matured long ago. It's hardly advisable to have departments in places where railroad administrations are located. Transferring a number of functions of "metropolitan" departments to railroad services and expanding the boundaries of peripheral departments will reduce the number of junctions and give full range for train traffic. And then conditions will be created for better use of locomotives and railcars.

We're faced with doing a lot to put the management structure in order in other subunits of transportation. The MPS central commission for improving the structure must complete in the near term the development of a general model for managing railway transportation.

The acceleration of scientific and technical progress is a fundamental question of the party's economic strategy. It's important to concentrate personnel and equipment in key directions. In railway transportation this is first and foremost the development and assimilation of up-to-date equipment and intensive processing methods in the shipping process, mechanization and automation of production. Specific special programs, both comprehensive and for each sector of the economy, were developed for these purposes. At the expanded meeting of the collegium an important discussion took place concerning how to put them in practice in a consistent manner, how best to use capital investments, and how to train personnel.

As was emphasized at the congress, the swift development of science and technology requires a continuous and increasing replenishment of the arsenal of scientific ideas and developments. Railway transportation has considerable scientific potential at its disposal for this. Four scientific research institutes and 15 transportation VUZ's are conducting research in the industry. Eight design bureaus and 2 experimental plants are engaged in engineering design developments and the manufacture of prototypes of new technology and industrial equipment. A total of 13,500 researchers, process engineers and designers--including 370 doctors of sciences and 4,700 candidates of sciences--are working here. Nearly 40 million rubles are being spent annually on scientific research and experimental design operations.

Transportation scientists, N. S. Konarev noted, can be proud of their contribution to the development of domestic science. We call the names of many prominent scientific railway workers with great pride. And now, while continuing the glorious traditions, transportation scientists are making a heavy contribution to development of the industry. And, nevertheless, today the contribution of scientists must be much greater. Substantial reorganization is necessary, and it's very important that it be determined strategically. The VNIIZht [All-Union Scientific Research Institute of Railway Transportation] was and remains the head center of industrial science. It also heads up the development and preparation for assimilation of proposals on all basic trends of transportation science. While not losing their independence, the departments and laboratories of scientific institutes must take into consideration and supplement the efforts of VNIIZht. All MPS main administrations, railroads, subways and plants and other enterprises are called upon to work in support of VNIIZht.

It's necessary for transportation scientists to thoroughly and critically analyze their own activities and determine specific ways for improving the effectiveness of scientific research.

New requirements sharply set the task to free our leaders and specialists from a great number of unnecessary restrictions of rights, to give full range to initiative, and to increase independence. Can one really consider it normal when today a station chief, having fulfilled the plan, doesn't have the right to authorize the loading of even one additional railcar? Is it really acceptable that chiefs of depots, stations and other enterprises don't have the right to use the assets of the production development fund and the sociocultural measures and housing construction fund for expenditures of a capital nature, the demand for which occurs during the course of fulfilling the plan? Can one really count on increasing production effectiveness if the activities of line enterprises are fettered by standards and regulations that long ago became obsolete?

The reporting speaker cited a typical example. The experiment at the Belorussian Railroad required the revision of 32,000 norms; without this it was simply impossible to operate in a new way. And in our country how many directives and orders of any kind are there that restrain production? It's necessary to revise them. It's clear to every sensible person that the thing that provides income to an enterprise and to the state must be provided with an incentive and not restrained. In many cases the reverse occurs in our country!

During all stages of socialist construction our party attached special importance to the selection, indoctrination and placement of personnel. This was heard with exceptional force in the CPSU Central Committee political report of the 27th Congress: "Personnel who are devoted to matters of the party and who are proceeding in the vanguard of the struggle to put its political line into practice are our most precious and main property."

Railway transportation personnel, the minister noted, deserved the great trust of the party and the respect of the Soviet people. They always were and will be the reliable support of the party and the government in solving the most crucial tasks. Many leaders who are notable for high party spirit, competency and businesslike efficiency are working in transportation. They're modern type managers. We have thousands and thousands of leading production workers and innovators who glorify the motherland with their inquisitive mind, alert eye, and tireless and selfless labor.

At the same time, there are examples of an opposite nature too. There are leaders who are invested with great trust, who aren't working at full capacity, and who show irresponsibility and unconcern. Not knowing how to conduct business and noncritically assessing their own activities, they, while ruining the plans, try to justify themselves with objective reasons or shift the blame on subordinates.

At the meeting of the collegium, serious grievances were brought against managers of the Gorkiy, Volga, Kuybyshev, Northern, West Siberian and several other railroads for the low level of organizing operations, for large losses, and for inattention to people's needs and their everyday life and working conditions. The managers of a number of the industry's plants--and especially the Voronezh Diesel Locomotive Repair Plant, the Ordzhonikidze Railcar Repair Plant, the Oktyabrsk Electric Railcar Repair Plant and several others--were subjected to sharp criticism. Quite a number of reproaches were expressed about the managers of a number of MPS main administrations, and first and foremost the Lines Main Administration, the Railcar Main Administration and the Technical Main Administration.

Personnel policy is a whole complex of measures of the psychological, organizational and social plan. The present style and methods of this operation are frequently beneath criticism. This applies to both ministry workers and comrades who conduct personnel policy at railroads and enterprises. Sometimes they reduce their function to performing purely formal duties, forgetting that a key person is first and foremost a party worker.

It's necessary to approach the personnel staffing of a leading link with special attention: to select modern type managers, to place them in the industry's key positions in time, and to support in the entire leading one a guarantee of successful reorganization and a guarantee of accomplishing the responsible tasks that were set before railway transportation by the 27th CPSU Congress.

At the expanded meeting of the collegium, great attention was given to improving the safety of train traffic. A whole complex of questions associated with this was examined in the report and in speeches. It was discussed in detail what

specifically it's necessary to do in all sectors of the transportation economy in order to sharply improve the reliability of technical facilities, nullify their failures and create conditions for efficient and continuous operation. The speakers spoke about the necessity of developing state-of-the-art devices that guarantee traffic safety. A sharp, impartial conversation went on about strengthening indoctrinational work that is aimed at reinforcing discipline, the state of being well organized, and order at all links of the shipping conveyor.

By right the Soviet people called the 27th Party Congress a lesson in truth. The party showed an example of courage; it showed how it's necessary to assess a situation in a sober manner, to see it such as it is and to speak frankly about negative phenomena in our life. People who treat the public interests scornfully--bunglers, loafers, self-seekers, bribe takers and misappropriators of material valuables--can't live in freedom in a socialist society.

Unfortunately, these negative phenomena didn't pass transportation workers by either. And, in fact, the country entrusts valuables of many millions to railway workers. The situation with freight safety is alarming as before. However unpleasant this is to state, 40 percent of the workers of transportation itself are among misappropriators of freight. Last year, quite a number of railway workers were involved in criminal responsibility. A number of railway transportation workers, including managers of enterprises and organizations, were convicted for malfeasance.

A persistent and consistent struggle with drunkenness and alcoholism and for a sober way of life has spread in the country. A task of great social importance has been set. But for the time being in transportation there's nothing especially to boast about in solving it. Last year even 5 percent more railway workers than in 1984 were arrested in an intoxicated state by police organs. Railway workers too were made to answer for misappropriations of wine and vodka on trains, and a number of passenger train conductors were prosecuted for profiteering with vodka.

Railway transportation is correctly called an increased danger zone. But don't its workers themselves sometimes increase this danger tenfold? How is it possible to justify a railway worker's appearing at his work place in an intoxicated state? What can be more scandalous than an intoxicated engineer in the cabin of a locomotive? Such a thing is rare though, but unfortunately it happens too. And the speakers cited similar cases.

In transportation strong discipline and order in everything are a pledge of efficient, continuous work. Strengthening discipline and putting things in order are a vast field of activities for economic managers, party, trade union and Komsomol organizations of transportation and for labor collectives.

Concern for the person and the public welfare was always the party's center of attention. Any inattention to people's needs and any infringement of their legal interests are intolerable.

The development of housing construction is of particular importance. Today this is the most acute social problem in transportation. Over 400,000 families of

railway workers are in need of improvement in housing conditions. There are people who have been registered for more than 20 years. If construction is done at those rates as before, then years and years will be required to solve the housing problem. There's one way out--to look for and use all resources for accelerating the solution of this most important social problem. During the five-year plan it's stipulated by a program outlined by the ministry to construct no less than 200,000 apartments, including 160,000 by virtue of centralized financing sources, 20,000 by means of implementing the housing cooperative construction plan, and 22,000 in individual houses.

Experience shows that, having shown initiative, a lot can be achieved too in this most important matter. The example of the Kurgan department is a typical one. If they were to build housing everywhere through a method of operations using their own resources as they did at Kurgan, then during the five-year plan it would be possible to put into service more than 7 million additional square meters in transportation. And really isn't the Kurgan experience of involving young people in the construction of housing instructive?

In the 12th Five-Year Plan it's planned to solve other social problems too through accelerated rates. Capital investments in projects for social and domestic use will be increased. Far more schools, kindergartens and children's nurseries, hospitals, dispensaries and polyclinics will be built than during the 11th Five-Year Plan. Capital investments in the construction of clubs, palaces of culture, sports facilities and other projects for cultural use are being increased. As was emphasized at the meeting of the collegium, implementation of the social program must constantly be the focus of attention for economic managers of all ranks and for party and trade union organizations of transportation.

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CSO: 1829/171

RAIL SYSTEMS

MINISTRY RESTRUCTURES PASSENGER OPERATIONS MANAGEMENT

Moscow GUDOK in Russian 2 Jul 86 p 2

[Unsigned report under the heading "Official Department": "Restructuring of Passenger Operations Management"]

[Text] The Minister of Railways has issued Order No 25Ts concerning the improvement of passenger operations management.

The management of all phases of Railways Ministry passenger operations (passenger services in stations and on trains, car repair and maintenance, food services) is to be concentrated in the hands of the deputy minister for passenger operations. At the railroad level, these functions will be handled by the deputy railroad chief for passenger operations, and at the division level by the deputy division chief for passenger operations. In those railroads and divisions which have no such posts, these duties will be entrusted to the first deputy chiefs. The position of chief engineer will be introduced in each railroad passenger service

The Ministry of Railways Passenger Main Administration and the railroad passenger services are being given the responsibility for organizing passenger operations on long-distance, local and suburban routes, for quality technical servicing, repair and maintenance of passenger cars, for developing passenger car repair and maintenance facilities, for maintaining high-quality, courteous passenger services both on trains and in stations, for setting up and controlling passenger train schedules, for establishing and abolishing passenger train routes, for improving ticket sales, and for managing the work and rest of conductors. The Passenger Main Administration also has responsibility for creating and introducing new types of passenger rolling stock, and for modernizing existing stock.

The Passenger Main Administration's immediate task is organizing the conduct of summer [peak] passenger operations. Attention is to be paid above all to the development and implementation of a series of measures involving the reconstruction, technical re-equipping and development of passenger facilities, thereby ensuring a high standard of service in stations and on trains, and efficiency in operations.

The order prescribes that the basic passenger production subdivisions are to be the passenger car depots, the railcar sections, the self-financing passenger stations and terminals, the passenger service administrations [direktsii], and the

International and Tourist Transfers Administration [Direktsiya mezhdunarodnykh i turistsskikh perevozok]. All terminals now using simple book-keeping procedures, the line seat reservation bureaus, the line passenger service offices, the car conductor personnel pools, as well as the laundry and other subdivisions comprising the railcar sector, will be subordinate to the passenger service administrations.

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RAIL SYSTEMS

CONSTRUCTION OF PERMANENT SEVEROMUYSK TUNNEL BYPASS

[Editorial Report] Moscow GUDOK in Russian 1 July 1986 carries on page 2 a brief A. Krivoy report on the beginning of work on a "permanent Severomuysk Tunnel bypass." By the end of 1989, the Bamtonnelstroy Administration is to drive three new single-track tunnels with a total length of 6 kilometers. The construction of this bypass is economically justified by the special factors of operations on this "most complex segment" of the BAM. The bypass will ensure "safe rail traffic long before completion of the Severomuysk Tunnel, work on which has experienced difficulties." To meet the deadline for completing the bypass, workers plan to drive at least 180 meters of tunnel per month.

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MARITIME AND RIVER FLEETS

MINISTER ON MERCHANT MARINE PERFORMANCE, TASKS

Moscow VODNIY TRANSPORT in Russian 8 Apr 86 pp 1-2.

[Article by T.B. Guzhenko, minister of maritime fleet: "Heading for Intensification"]

[Excerpts] Development of the material and technical base of the merchant marine has been further developed. During the 11th Five-Year Plan period, capital assets grew by almost 7 billion rubles and by the end of the period surpassed the level of 20 billion rubles. Two-hundred-thirty-two vessels with total deadweight of 4 million tons were added to the fleet, and its total tonnage achieved the peak of 20 million tons. New modern types of vessels were included in the fleet composition.

Construction efforts worth 1121 million rubles in total were directed towards the development of the shoreside material and technical base, while 74,600 square meters of production areas of ship repair plants and 1,700 linear meters of repair wharfs were put into operation. Replacement of old equipment and reconstruction of existing production shops and enterprises for technical servicing of the fleet continued. There was further development of the material and technical base of the educational institutions which prepare cadre for the industry.

However, the use of the allocated state funds should not be considered satisfactory: during the 11th Five-Year Plan period, 294 million rubles intended for putting capital assets into operation were not utilized, the quota of capital investments for development of shore facilities was underused by 130 million rubles, and the actual construction was 12 million rubles short.

Year after year, a number of shipping companies chronically underutilize the allocated capital funds: The Caspian (Comrades Gashumov, General Manager, and Guseynaliyev, Assistant Manager for Construction), which never during the 5-year period fulfilled the plan of capital investments; the Far-Eastern (Comrades Volmer and Petkov), Kamchatka (Comrades Tereshin and Pavlinenko), Primorsk (Comrades (Chernysh and Shipilov), and Azov Companies (Comrades Shunin and Strakhov).

While the total traffic grew by 20.7 percent in five years, cargo transporting in containers increased by 48.3 percent and reached 9,064,000 tons in 1985,

including 2,651,000 tons in coastal trade and 6,412,000 tons in export trade. Special emphasis is placed upon containerization of cargoes intended for the regions of the Far North, the Eastern sector of the Arctic, and also for Chukotka, Magadan, Petropavlovsk-Kamchatskiy.

At the same time, it is necessary to mention that the methods of managing the commercial operation of the fleet employed by the GlavFlot Main Administration (Comrades Zbarashchenko and Vislykh) and the All-Union Association "Morkonteyner" (Comrade Kurbatov) rely primarily on administrative orders. Firstly, the available personnel of Moscow institutions cannot handle such high volume of work and provide the required quality. Secondly, it weakens discipline and reduces responsibility of the managers of shipping companies. Thirdly, under these conditions the center either does not fulfill the functions of analysis and integration or performs them poorly. Fourthly, nowadays this style does not agree with the course of introduction of economic methods into management that has been set by the party.

Particular attention should be given to full utilization of the capabilities of the special fleet. However, its efficiency in liner trading has diminished during the last 2 years. The operational results of "Ro-Ro" type vessels have become especially bad.

First of all, this is a result of inadequate attention to the special fleet by the shipping companies. But Glavflot and "Morkonteyner" are mainly to blame for that because they are responsible for the organization of this work in the industry.

It is worth mentioning that we have just started utilizing the advantages of coordinating the activities of suppliers. And in order to actually feel the effect of coordination, we have to arrange this activity on the ministerial level. It will allow us to pay serious attention to the following subjects: legal support of operation of transportation junctions, improvement and operational cost reduction in the cargo handling system at transportation terminals, development of a single institution for forwarding services of cargoes, further introduction and improvement of continuous plan-schedule of the work of transportation junctions.

The planned transition from the system of fleet operation currently based on a 4-year service and repair cycle to a system of repair and servicing depending on actual "condition" based upon the use of diagnostics and nondisruptive monitoring was initiated. Despite continued aging of the fleet, this work allowed the total fleet operational time to increase by 4 days.

Year after year, the constantly growing rate of accidents with fleet equipment and machinery is discussed. However, the decisions based on the annual operational results always look the same. The annual directives aimed at correction of the shortcomings are filled with such standard expressions, as "take active measures," "continue the efforts," "strengthen monitoring," etc.

The supportive repairs of the sea-going tug-boat "Orsha," which belongs to the port of Poti, was scheduled for April, 1982, at the Taganrog ship repair yard. The vessel actually arrived at the yard in May, but was accepted for repairs only in November, 7 months later! The repairs were carried out so "actively" that in 3 years, R140,000 were spent, but in 1985 it was discovered that, during the period of repairs, the vessel so deteriorated that the Mortekhsudoremprom applied to the minister for a permission to write it off! And despite our hunger for a small port fleet, neither the shipping companies (Comrades Chigvariya and Dzhorbenadze) nor the Mortekhsudoremprom (Comrades Pervov, Shtonda, and Babiy) questioned how the tug-boat repair was proceeding, why it was occupying production facilities so long, and why it was rusting at the plant for years?

Literally 2 days before the ministry collegium meeting, a letter from the officers of the "Parizhskaya Kommuna" ChMP motor-ship of the Black Sea Shipping Company was received; it was addressed to the Leningrad Obkom and to the ministry. They wrote with pain that, for 10 months, their vessel was idling because of a lack of spare parts which had been ordered in March, 1982, but were not supplied by the Leningrad Kirovskiy Plant until today. Such an irresponsible attitude of those liable for organization of the fleet servicing cannot be tolerated.

Intensification of transport operations is widely discussed today. However, the heads of the shipping companies are still underestimating the impact of the port auxiliary fleet on the improvement of efficiency of cargo vessels. The harbor service vessels are frequently long delayed at repair facilities, which is absolutely impermissible, in view of their shortage in many ports. For instance, repairs of tug-boats at the shipyards of the Black Sea Shipping Company last 6 months and even longer, and repairs of bunker vessels--7 to 8 months.

Those are the areas of our substantial productivity reserves.

And also, I would like to draw the attention of all managers to one area of our activity: the introduction of research and development projects into operation.

Those who happened to pay a visit to Comrade Nunuparov's experimental production facilities would know that people with "gold hands and hot hearts" are working there, which allows them to create useful and fascinating equipment and devices intended for mechanization of many particularly labor-consuming operations in shipyards and in ports. However, years pass from the time that the pilot unit is fabricated until it is put into operation.

The industry is extremely concerned with accelerating the process of introduction of those useful developments into operation, with enforcing integration of research and production. However, neither NTU [Research and Engineering Administration], nor Mortekhsudoremprom, nor Glavflot have sufficiently realized the importance of the efforts of ChTsPKB [Black Sea Central Planning and Design Bureau]; everybody considers that to be somebody else's business.

During the last 5-year plan period, a new general scheme of the maritime industry management had been introduced which set the transition to the two-step system of management: from the ministry to the shipping companies and enterprises: the intermediate step GKHO [Main Regional Association]-- has been eliminated. At the same time, the analysis reveals that the results of the industry activities could have been better if the plans were more accurate and balanced, and the monitoring of their fulfillment primarily by the central apparatus, its main administrations, associations and collegium was more efficient.

The present-day plans still poorly reflect the impact of scientific and technical progress on the ultimate goals and indicators. Scientific and technical progress [NTP] has not turned into an active basis of the plan. And this is a result of shortcomings in the performance of the PVFU [Planning and Finance Administration] NTU, Glavflot, the All-Union Association, and Morstroyzaganpostavka. The economic effect which is being set by the NTU as a target for the shipping companies does not have a sufficient coordination with the plan and actually exists apart from the plan. There still exists the practice of planning certain targets for fleet, ports, and shipyards based on the achieved results. There are still cases where the plan is corrected, which promotes a passive attitude in the personnel and, especially, the executives towards their responsibilities, and which does not encourage active search and utilization of numerous hidden reserves available at every enterprise. It diminishes the significance of the plan as a means of actively managing factory operations for the achievement of better final results.

There are numerous questions that arise in the course of routine annual activities which should have been solved while the plan was developed and approved, for instance, distribution and transfer of the fleet, allocation of certain types of equipment and other material resources; it could prevent excessive paper flow, which reflects lack of discipline and competence of some staff members of the shipping companies and the central departments of the ministries.

The Black Sea, Baltic and Latvian Shipping Companies have been operating under the new economic conditions. It is too early today to come to conclusions as to whether these new conditions are good or not (this was the topic for discussion at the collegium on January 28, 1986); nevertheless, it is obvious now that some departments of the ministry are violating the approved regulatory documents.

The petty patronage of the shipping companies by the Glavflot still continues. Thus, on December 11, 1985, the Glavflot issued a decree depriving the shipping companies of their right to sign direct contracts with the foreign trade associations without Glavflot's approval.

As an exception, centralization should certainly be retained in the case of basic decisions. However, there is no need, for instance, for the Latvian Shipping Company to have Glavflot's approval every time it signs a direct contract with the Baltic Shipping Company for transporting petroleum products, because this is its prime line of duties.

One complicated and very important task in terms of its social significance is the step-by-step transition of industry production personnel to the new labor rates and salaries, increased by 20-30 percent on average; it should be done in the 12th Five-Year Plan period as a result of introduction in all ports and shipyards of a collective contract system which actually provides an economic incentive for everybody to reduce wastage of working time, to develop interchangeability and integration of professions, to widen the servicing areas. In the long run, it could release about 4,000 workers and save R15 million.

A few practical steps towards fulfillment of the above tasks have been made already. The planned transition of the transport vessels to operating with reduced crews averaging 25 persons began in January 1986.

Another big step towards further development of the management structures in ports was the transition of ports of the I, II and III groups to operating without subdivision by regions, which reveals significant sources for increase of port efficiency and acceleration of vessel and railroad car handling.

This year the total shipment of all types of water transportation should grow by 6.1 percent, compared to the 1985 results. The shipment in large-tonnage containers should grow by 5.3 percent. The productivity of the dry cargo carrier fleet should rise by no less than 2.8 percent, and the tanker fleet by 4 percent.

There were R1,897,000,000 allocated in 1986 for industry development, including R1,851,000,000 of capital assets to be put into operation.

We do not think there are real grounds for dramatizing the situation while making steps towards the fulfillment of the new more complicated tasks set up by the 27th Congress of the CPSU. At the same time, there are no reasons for excessive self-assurance and complacency, because the correlation between the tasks and the availability of resources needed for their fulfillment makes it necessary to create new approaches toward the development of socialist entrepreneurship and resourcefulness in international trade.

It is necessary to perfect management structures, to broaden the rights and self-sufficiency of the shipping companies and other enterprises, to prepare and carry out the transition of the entire industry to the new economic system effective January 1, 1987.

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MARITIME AND RIVER FLEETS

CHIEF ON VOLGA-DON SHIPPING COMPANY PROBLEMS

Moscow VODNYI TRANSPORT in Russian 5 Apr 86 p 2

[Interview with I. Mostov, chief of the Volga-Don River Shipping Line, by correspondent V. Zhivotkov: "Let Us Check Readiness for Navigation. An Inspection of the Volga-Don Shipping Line. Off to a Good Start"]

[Excerpts] Last year was not a successful one for the river workers of the Volga-Don Shipping Line. For various reasons, including the poorly organized winter maintenance work and weak preparations for the first trips, the annual targets were not met.

Have they learned the lessons of last year's failures in all the subdivisions and organizations of the shipping line?

During the first 10 days of March the first trips had already taken place on the Lower Don. Our correspondent V. Zhivotkov talked with chief of the Volga-Don River Shipping Line I. Mostov about the tasks and problems of upcoming navigational season.

[Question] In past years attempts at early navigation on the Don in the ice have sometimes threatened the safety of materiel. Was it advisable to start this year's navigation so early?

[Answer] The headquarters of the shipping line, Ivan Fedoseyevich said, carefully examined all the "pros" and "cons" of sailing under icy conditions. The firm conclusion was reached: we must! The calculations showed that even though they will not be highly efficient, the first trips will be, as they say, "fat ones."

Moreover, the interests of the national economy were also taken into account. During the winter many of the construction organizations had "spent everything" and were literally begging the the river workers to begin deliveries of sand more quickly. Cargoes from the seaports are also awaited with impatience.

If the example of earlier years is anything to go by we must also start shipments of grading slag from the Zhdanov Azovstal Plant. For two winters now the headquarters for the ice pilotage of the Azov Maritime Shipping Line has banned the exit of river ships from Zhdanov unless they have an icebreaker escort.

The need to place a shallow-draft icebreaker at the disposal of the Volga-Don Shipping Line has been mentioned repeatedly. However, the RSFSR Ministry of the River Fleet is dragging its heels. Meanwhile, on the Lower Don and in the Taganrogskiy Zaliv there is a real possibility for year-round freight shipments. The chief of the planning-and-economic section, Tatyana Lvovna Vasilyeva, has calculated that because of the ban on shipments of grading slag during the winter our shipping line loses up to R700,000 to R800,000. But if there is an icebreaker the shipment of slag will bring in more than R1 million. How can we now throw away such sums!

And how can we forget that in the Basic Directions confirmed by the party congress, river transport was told in no uncertain terms: "Extend the period of guaranteed navigation on the major rivers." This we must fulfill.

[Question] You, Ivan Fedoseyevich, are a new man in the Don Basin. Perhaps it will seem awkward to talk about the lessons of past navigation. Nevertheless, you can look at things with the fresh view of a new manager.

[Answer] Perhaps some of my evaluations and conclusions will seem severe and subjective, but, check for yourself, they are candid. Because of poor organization in deliveries to the fleet in the spring of last year the shipping line collective failed to meet its targets for the year and for the 11th Five-Year Plan.

In my view, many managers at enterprises and in the public organizations and ships' crews and longshoremen have failed to profit from the lessons of last year. Even today we still see cases of casual and sometimes irresponsible attitudes toward the assignments set. Let me cite just one example: by the beginning of March it was planned to have repaired and handed over 110 ships, but the actual number was 101.

[Question] And here is the most unpleasant question of all: what is the situation with personnel for ships' crews?

[Answer] We are very alarmed by the fact that some crews are still shorthanded and there are shortages of commanders in the middle-echelon element of the shore subdivisions. One of the main reasons for this is that the economic managers and public organizations have dealt only poorly with questions of social development and enhancing the prestige of the profession of river worker. It is not surprising that in the Rostov and Ust-Donetsk repair and operations bases, by the end of the navigation season half of the young specialists who had just newly arrived for work had left.

As before the urgent task is not to permit a single case of delay in the dispatch of a ship on its first trip because of personnel shortages. It is difficult to do this, the more so since we must rely only on our own resources.

MARITIME AND RIVER FLEETS .

RIVER TRANSPORT ROLE IN WEST SIBERIAN OIL, GAS COMPLEXES

Moscow RECHNOY TRANSPORT in Russian No 2, Feb 86 pp 2-3

[Unattributed article under the rubric "Party Decisions--Implement Them!":
"For Developing the Oil and Gas Complex"]

[Text] River transport workers greet the 27th Soviet Union Communist Party Congress in an atmosphere of great political and labor enthusiasm. Unanimously approving the pre-Congress documents, workers of the navigable waterways [golubyye magistrali] are full of determination to make a worthy contribution to implementation of the task set by the party to accelerate the country's economic and social development.

Having begun working under the new management conditions, all labor collectives are diligently carrying out a search for the reserves to increase work efficiency and quality for further improvement of transport service to the national economy and the population. Special attention is being devoted in the process to intensifying the transport system [konveyer] in the country's eastern basins, and in Western Siberia first of all, in order to satisfy more fully the needs of the oil and gas complex for movements of goods by the waterways.

Thanks to the creative efforts and selfless labor of geologists, builders, and workers of the oil, gas, machine building and metallurgical industries as well as of transport, and to the extensive organizing and political work being done by party, soviet, management, labor union, and Komsomol [Leninist Communist Youth League] organizations, the largest oil and gas complex has been created in Western Siberia. The Ob-Irtysh United and West Siberian Shipping Company collectives, and the Irtysh and Ob Basin Waterway Administrations made definite contributions to its development. In solving the problems of transport service to the oil and gas complex, river transport workers constructed ports in Tobolsk, Surgut, and Nizhnevartovsk, significantly strengthened the shipbuilding and ship repair base, augmented and renovated the transport fleet, and constructed much housing. This made it possible to deliver 87 million metric tons of various goods to the oil and gas regions during the 11th 5-Year Plan.

In the final year of the last 5-year plan, river transport workers carried over 1.3 million metric tons of cargoes above the established quota to the oil and gas workers, and also delivered about 1.4 million metric tons of cargoes for placing the Yamburg gas-condensate field under construction.

The volumes of large-diameter pipe shipments from Western Europe by the new transport technology scheme, with transfer onto river vessels in Gulf of Ob roadsteads, have especially increased. Ob-Irtysh United Shipping Company river transport workers provided transshipment and delivery of such pipes for the builders of Tyumen Arctic [tyumenskoye Zapolyarye] in the amount of 390,000 metric tons.

Capacities to extract the sand and gravel mixture of the Katrovozh deposit have been increased significantly for full support of the oil and gas complex.

In 1985, river transport workers accomplished, for the first time, the towing of module pontoons (of assembled electric power plants) from Tyumen to Yamburg, which significantly reduced the construction time for the gas-condensate field's facilities.

However, river transport capabilities in this region still are not being utilized in full measure. For example, the direct delivery [tranzitnyy] fleet's above-plan demurrages in cargo operations exceeded 8 million tonnage-days in 1985.

Further development of the oil and gas industry in Western Siberia depends to a significant extent upon the fullest satisfaction of requirements for the shipping of goods by waterways.

The Ministry of the River Fleet has worked out specific measures, the implementation of which will permit significantly improving transport service to the oil and gas complex during the 12th 5-Year Plan on the basis of intensification and technical re-equipment of production.

It is planned, in particular, to augment the transport fleets of the Ob-Irtysh United and West Siberian Shipping Companies with new ships in order to bring the overall volume of cargo shipments to the oil and gas regions of Western Siberia up to 20 million tons in the last year of the 12th 5-Year Plan.

The TsNIIIEVT [Central Scientific Research Institute for Water Transport Economics and Operation], the Sibgipromrechtrans [Siberian State Institute for Planning in River Transport], the NIIVT [Scientific Research Institute for Water Transport], the Ministry's Economic Planning Administration, and the Ob-Irtysh United and West Siberian Shipping Companies have been charged with working out a program for the transport development of the minor rivers of Western Siberia.

A system has been established for effective control over ahead-of-schedule activation of the Yamburg Industrial Port's 180-meter-long mechanized quays and completion of the construction by the Mingazprom SSSR [USSR Ministry of the Gas Industry] and the Mintransstroy SSSR [USSR Ministry of Transport Construction] of its first increment. River transport workers have resolved to give the builders effective assistance in this: In the period prior to 1 July 1986, the Podvodrechstroy [RSFSR Ministry of the River Fleet's Moscow Administration for Underwater Engineering and Construction Work] will provide for the installation of four gantry cranes here, and the Irtysh Basin Waterway Administration will complete the development of the waterway approach channel to the port.

Crucial tasks have been assigned to the Ministry's Main Administration for Capital Construction and the Ob-Irtysh United Shipping Company. Together with the USSR Ministry of Transport Construction, they must complete the construction and ensure the activation of the mechanized quays for common-use supply bases in the settlements of Sergino (in 1986) and Urengoy (1988), and in the cities of Labytnangi (1988) and Nadym (1989). In addition, it is planned to construct the third increment of 300-meter-long mechanized quays in the city of Labytnangi during the 12th 5-Year Plan for transshipping nonmetallic construction materials. In order to expedite the construction of these quays, the Siberian State Institute for Planning in River Transport is charged with developing technical and economic estimates and the design and working drawings as early as 1986. The USSR Ministry of the Gas Industry is allocating the capital investment funds for this.

Along with this, the Siberian State Institute for Planning in River Transport must make technical and economic estimates for the planning and construction of a transshipment port in Tashara to handle cargo traffic in grading slags (from Novokuznetsk enterprises) and crushed rock (from the Kammerechensk quarry in Novosibirsk Oblast) with an overall volume of up to 4 million metric tons, as well as technical and economic surveys for developing the shipping of muds in direct water communication from Pavlodar to the oil and gas regions of Western Siberia.

A great deal of work must be done by the Ob, Irtysh, Volga and Kama Basin Waterway Administration collectives. They must carry out all orders of USSR Ministry of Construction of Petroleum and Gas Industry Enterprises organizations for the development of underwater trenches in navigable sectors of the Ob, Irtysh, Kyzym, Volga, Nadym, Kama, and Belaya Rivers for laying the gas pipelines being built on the route between Western Siberia and the country's central regions.

Their being supplied with nonmetallic construction materials has great significance for oil and gas complex enterprises and organizations. A decisive role in carrying out this task belongs to collectives of the West Siberian and Ob-Irtysh United Shipping Companies and the Ob and Irtysh Basin Waterway Administrations. In the 12th 5-Year Plan, they must ensure the extraction of a sand and gravel mixture at the Tomsk and Katrovozh deposits in quantities of 12 and 3 million cubic meters respectively. In order to reach these goals, it is necessary to work out plans immediately for developing the deposits. Such a task has been assigned to the collectives of the Siberian State Institute for Planning in Water Transport and the Giprorechtrans [State Institute for Planning in Water Transport].

It is planned to implement other measures as well. In particular, it is planned to study the possibility of using the river fleet for developing the northern deposits on Gydanskiy and Yamal Peninsulas; to look into the matter of setting up a specialized point at Surgut for repairing the oil-tanker fleet in connection with the change in the petroleum-products shipping scheme; to provide for depth increases in bar [shoal] areas of the rivers emptying into

the Gulfs of Ob and Taz [Gulf of Ob and the Taz Estuary]; to organize un-
failing communication between ports and ships in the Salekhard-Yamburg-Urengoy sec-
tor, and to augment the cargo-transfer equipment pool of the Salekhard Port
for the processing of nonmetallic construction materials.

Special attention has been paid to improving the social and living conditions
for river transport personnel working in West Siberian oil and gas complex re-
gions. Over 200,000 square meters of living area are to be constructed in
Tyumen and Tomsk Oblasts, a number of facilities for social purposes is to be
built, and the organization of merchandising services considerably improved.

It is the duty of river transport workers to implement what is planned, and to
make a weighty contribution to the carrying out of the country's fuel and en-
ergy program.

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MARITIME AND RIVER FLEETS

STEPS NEEDED TO IMPROVE RIVER TRANSPORT IN FAR NORTH

Moscow RECHNOY TRANSPORT in Russian No 3, Mar 86 p 13

[Article by Candidate of Technical Sciences V. Zachesov, Novosibirsk Water Transport Engineering Institute, under the "Fleet and Ports Economics and Operation" rubric: "Carriage Development Tasks in the Far North"]

[Text] The river fleet holds the leading position in the transport system of Siberia and the Far East. The length of the waterways in operation in this region is 4 times as great as the length of the railroads, and 11 times as great as that of the motor-vehicle roads.

Increasing freight-carriage growth rates on the rivers of Siberia and the Far East, and on the small [minor] rivers, is called for by the Basic Directions of USSR Economic and Social Development for the Years 1986-1990 and the Period to the Year 2000.

The railroad network here is limited. Support by motor-vehicle roads remains unsatisfactory. Freight carriages by the Northern Sea Route are not yet receiving extensive development. Air transport has a specific assignment, and its capabilities are limited. The bulk of the freight carrying is being effected, and will be effected in the future, by river transport.

River routes encompass about 8 million square kilometers of Siberian territory. Over a third of Siberian river-basin area is located in the Arctic. River transport accounts for 65 percent of the overall volume of carriages by water transport in Siberia, and 92 percent to points of the Far North. Of the volume of freight being delivered by all forms of transport, 85 percent to Yakutsk ASSR, about 60 percent to the West Siberian Oil and Gas Complex, 70 percent to the Norilsk Mining and Metallurgy Combine, and over 90 percent to points of the Northeast and the Taz, Pur, and Nadym River basins is delivered by the river fleet.

The river fleet's leading position will be retained in these regions in the near future as well. For the river transport workers of the eastern basins, delivering freight to the Far North remains one of the chief tasks. The volume of carriages for the West Siberian Oil and Gas Complex is growing steadily. By 1990 it will have increased more than twofold by comparison with 1980. In the north of Krasnoyarsk Kray, and in regions of the northeast coast of the Arctic, there are no railroads, and the main volume of carriages is accounted for by river transport.

Bearing in mind that the share of transport expenses amounts to 25-50 percent of the cost of the freight being carried, it is essential to strive to reduce these; not, however, through turning down carriages necessary to the national economy, but by means of selecting the most inexpensive form of transport, expediting freight delivery, and improving the transport process.

According to data of the Complex Transport Problems Institute under the USSR Gosplan [State Planning Committee], the average cost of constructing 1 km of railroad under conditions of the Siberian North exceeds 1 million rubles, and that of constructing 1 km of major motor-vehicle road amounts to 800,000-900,000 rubles. In addition to this, 13,000-15,000 rubles are spent annually on maintenance. The expenditures for developing 1 km of river waterway amount to 8,000 rubles, and 4,000-5,000 rubles annually for maintenance.

To deepen a ship passage from 150 to 180 cm for 1 km of waterway, 1,500 rubles are spent; and to deepen such a passage from 180 to 200 cm--8,000 rubles.

Railroad and highway construction in regions of the Siberian North is rendered difficult because of the severe climatic conditions: a prolonged winter of 220-240 days, heavy snowdrifts, strong winds, and low temperatures. Therefore, it is advisable to use the natural transport routes, which are the rivers.

The small [minor] rivers occupy a special place in the Siberian North's economy. They are the most promising and inexpensive transport routes. Carrying freight on them costs significantly less than on motor-vehicle roads (one-ninth to one-twelfth as much--and one-twentieth to one-twenty-second as much as by air transport). On the average, every fourth ton of freight is transported on minor rivers in the Siberian North.

In the Ob-Irtysh, West Siberian, Yenisey and Lena Basins, minor rivers take up 51 percent of the river waterways' overall length. Of the minor rivers, 40 percent have been mastered for navigation, and only 25 percent have guaranteed depths.

Thus, the potential capabilities of the minor rivers as transport waterways are not yet being fully utilized, although the need to involve them in economic turnover is without doubt.

Minrechflot [Ministry of the River Fleet] shipping companies should develop, jointly with scientific research and planning organizations, a long-range program of conducting surveys on minor rivers of the Far North, having supported it with the necessary organizational and technical measures.

One of the basic reasons for the slow mastering of minor rivers is the lack of a small-tonnage fleet for operation in the restricted navigation conditions, and the absence of transport means capable of carrying freight on rivers with 0.5-0.8-meter depths.

At the present time, the numerical size of the small-tonnage fleet amounts to 7-10 percent of the overall requirement. Freight to the minor rivers is being delivered mainly in large-tonnage vessels unsuited to operation under the conditions of limited ship-passage dimensions. The operating period is limited to snow-melt high water (15-20 days), which disrupts carriage regularity.

It is essential to accelerate construction of small-tonnage vessels capable of operating on minor rivers throughout the shipping season. Prolonging the operating period on the minor rivers will permit increasing the carriage volume to three or four times as much as at present. The matters of expediting fleet processing [cargo operations] on the minor rivers, more rapidly building freight-shipper and freight-receiver docks [wharves, quays or piers], and developing and carrying out up-to-date plans for mechanizing the freight-transfer operations also should be resolved.

At the present stage and in the near future, it will be necessary to take over sections of minor rivers with depths of 60-80 cm and less. Consequently, it is essential to create fundamentally new transport means, capable of operating successfully under these conditions. The availability of such means will broaden minor-river utilization limits significantly (2.5-fold), and bring the transport waterways closer to the freight receivers.

In regions of the West Siberian Oil and Gas Complex, a network of railroads has been intensively developing in recent years. Therefore, it is necessary, even now, to consider the proposition of organizing mixed rail and water carriages, and developing additional transshipment points.

Delivery of freight to Urengoy and Yamburg, the Yamal Peninsula, Igarka, Dudinka, Nizhneyansk, and other points in the Far North is increasing annually. Therefore, further augmentation of eastern basin shipping companies with powerful, shallow-draft river icebreakers, the use of which will permit prolonging the shipping season and stabilizing the fleet work in carriages, is necessary.

The technology in effect at present for constructing industrial facilities in the North calls for the maximum use of ready-made modules supplied by manufacturing plants. River transport is capable of delivering such large-dimension freight, and this kind of carriage should be developed.

At present, general outlines of river transport development to the year 2000 and into the more distant future are being worked out by the industry's scientific research and planning organizations, a theory for designing and steering flexing [izgibayemye] river barge trains in restricted navigation conditions has been created, and there are preliminary designs of vessels using paddle-wheel propulsion for the shallow-water sections of minor rivers.

Scientific developments in off-the-road [bezdorozhnyye] forms of transport are being made successfully. The Siberian Highway Institute in Omsk is working actively in this direction. It is advisable to combine the efforts of scientists and designers in order to create new, highly effective transport means.

Refining the rates for carrying freight on minor rivers is no less important a direction for further developing river carriages. It is essential to reflect in them the actual labor and material-resource expenses of delivering the freight in order to provide an incentive to the transport organizations.

The classification of minor rivers proposed by the NIIVT [Novosibirsk Water Transport Engineering Institute], in which the rivers are divided into four classes, each describing a degree of fleet operation difficulty, may serve as the basis for reviewing this matter. This classification must be considered in substantiating the new rates, which, in our opinion, should be differentiated into two or three rate schedules for each of the related classes.

Accomplishment of the enumerated tasks will enhance the role of river transport, and will further the development of carriages in this region.

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MARITIME AND RIVER FLEETS

TRANSPORT DEVELOPMENT ON SMALL RIVERS OF YENISEY BASIN

Moscow RECHNOY TRANSPORT in Russian No 3, Mar 86 pp 14-15

[Article by M. Munin, Yenisey River Shipping Company, and V. Nikiforov, Novosibirsk Water Transport Engineering Institute, under the "Fleet and Ports Economics and Operation" rubric: "Carriages Small--Expenses Great"]

[Text] Freight carriages on side [minor] rivers for meeting the needs of Krasnoyarsk Kray's population and developing such important national economy sectors as the timber and the mining and metallurgy industries, as well as for geological survey enterprises, take a large part of the Yenisey Shipping Company's operational work. Whereas 217,300 metric tons were delivered to the Bolshoy Pit, Podkamennaya Tunguska, and Nizhnyaya Tunguska Rivers in 1976, and 266,700 in 1980, the volume of these carriages amounted to over 300,000 metric tons by the end of the 11th 5-Year Plan.

Navigation conditions on these rivers are such that carriages are effected only during the spring high-water period. The first vessel convoy departs for the Bolshoy Pit River in mid-May. There usually are more than 100 vessels in its composition: cargo motor ships and tankers of up to 1,300-metric-ton cargo capacity, and dry-cargo and oil barges of 300- to 800-metric-ton cargo capacity. At the very beginning of the shipping season, with high water levels, tugs (pushers) of 588- to 808-kilowatt power are used, and in the carriages' concluding phase, such tugs of 330- to 441-kilowatt power with draft no greater than 1.6 meters. The duration of the shipping season on the Bolshoy Pit River exceeds 15 days.

At the end of May, vessel convoys set out for the Podkamennaya Tunguska and Nizhnyaya Tunguska Rivers. Here the convoy to the Podkamennaya Tunguska usually consists of more than 160 vessels, and that to the Nizhnyaya Tunguska about 100. These are dry-cargo motor ships and tankers of up to 5,000-metric-ton cargo capacity, and dry-cargo and oil barges of up to 3,000-metric-ton cargo capacity. For towing the non-self-propelled fleet and escorting the cargo ships through difficult sections with high current velocities, motor ships of 588- to 1,764-kilowatt power are used.

Over a third of the shipping company's vessels takes part in the carriages on the side rivers. Thus, all of the dry-cargo motor ships and tankers, and over half of the non-self-propelled oil-carrying vessels visit the Podkamennaya Tunguska and Nizhnyaya Tunguska.

The large expenditures of transport funds determine the high production cost of the carriages on the small rivers: It is 3.6 times as high as the average level for the shipping company. The self-propelled cargo fleet's gross productivity amounts to 13 ton-kilometers per tonnage-day on the Bolshoy Pit River, and is about 100 ton-kilometers per tonnage-day, on the average, for the shipping company.

In addition to this, the fleet's delays on the tributaries, as well as its breakdowns and lengthy repairs, have a negative effect on the course of fulfilling the planned carriages in June, and the second quarter as a whole, on the basin's mainline sections.

The Yenisey Shipping Company, with the direct participation of NIIVT [Novosibirsk Water Transport Engineering Institute] scientific staff members, worked out and implemented a number of measures for the purpose of improving the organization of carriages and increasing the fleet's work efficiency on the side rivers. Serious attention was devoted, first of all, to organizing preparatory work. The fleet's composition for effecting the carriages was specified beforehand. The vessel commanders, having received advance information about the forthcoming work on the side rivers, essentially solved the material and technical supply problems, and studied sailing directions for the rivers. In recent years, the shipping company has been controlling more strictly the work of the plants, the REB [operational repair base], and the other basin enterprises in preparing the fleet, the floating cranes, and the general servicing equipment [sredstva kompleksnogo obsluzhibaniya]. The vessels scheduled for work on the side rivers have been returned to operation on a first-priority basis. In the period between shipping seasons, commanders' study has been held to learn the features of organizing the carriages on the side rivers.

Working groups have been created within the shipping company's administration, consisting of a senior shipping company official--the leader, a leading specialist of the fleet carriages and movement service, an engineer of the port equipment service, a teaching captain, and a personnel-department worker, to prepare and provide for the freight delivery to each tributary.

A base port has been assigned to each side river. Its task--to ensure timely freight shipment, and to provide assistance in the fleet's processing at destination points. Visiting landings [vyvezdnyye pristani] have been formed, mainly of base-port workers, and in their composition are dispatchers and commercial workers. A visiting landing's group of workers organizes the carrying out of all freight and commercial operations on the docks assigned to it. The shipping company plans to include additionally, in the visiting groups' composition, an experienced engineer-technologist to provide assistance to the freight-receiver enterprises in organizing freight operations and in better utilization of the shipping company's technical equipment when unloading vessels.

The base ports (Krasnoyarsk and Lesosibirsk) prepare vessel freight lots in advance, and only in exceptional cases do they ship freight to two or three recipients in a single vessel.

Great attention is devoted to ensuring navigation safety. The organizational work in this important matter is headed by leaders of the working groups and teaching captains assigned to specific river sections.

The shipping company's management and its operations organization are taking steps to improve business relations with all parties to the carriages. The shipping company does not have its own docks [wharves, quays or piers] on the side rivers. The stations at Bryanka (Bolshoy Pit River) and Tura, on the Nizhnyaya Tunguska, are the most suitable for carrying out freight operations. There are 11 docks at the former, and 9 at the latter. Heavy freight traffic goes to the Baykit and Vanavara Stations on the Podkamennaya Tunguska.

Thanks to joint efforts of the shipping company and interested organizations, an efficient management structure has been developed for fleet and freight-receiver work. Unloading staffs, into which go one of the rayispolkom [executive committee of the rayon soviet of workers' deputies] executives, the chief of the visiting landing, and representatives of the main freight receivers, are being created at all the stations. Such a staff is working efficiently in the town of Vanavara. Using radio communication with the vessels and docks, it resolves all issues in timely fashion.

Close business contacts with the main freight receivers on the Bolshoy Pit River have been established by the shipping company. The construction of additional docks has been specified by joint measures, and an antenna has been installed at Bryanka Station to provide for radio communication with the crews of vessels en route on the Bolshoy Pit River. The shipping company annually rents the requisite number of floating cranes to the freight receivers. Management of the fleet's operation, and its processing, is effected by a teaching captain and a representative of the Lesosibirsk Base Port (the chief of the visiting landing), and both of them, members of the fleet unloading staff, take an active part in preparing daily work summaries and drawing up a plan for the next period to be considered at a meeting of the staff.

In the 1985 shipping season, the water levels at which fleet operation was possible lasted for nine 24-hour days in all on the Bolshoy Pit River. During this brief period, 77,000 metric tons of freight were delivered. This is one-and-a-half times as much as in the preceding shipping season, and 11 percent more than the average for the previous 4 years of the 5-year plan. The success was achieved because of the efficient coordination of all work, Teaching Captain S.K. Kolov's skillful management of fleet movement, and the effective work of the visiting landing, consisting of Lesosibirsk Port workers, in unloading the vessels. The crews of motor ships Selenga, RT-700, and OTA-915, steamship Stoletov, and others worked well. Despite the difficult navigation conditions--the convoys had to operate at minimum water levels and overcome ice drifts in the Angara and Bolshoy Pit Rivers--not a single accident was allowed to occur.

The shipping season on the Podkamennaya Tunguska and Nizhnyaya Tunguska Rivers took place under difficult conditions caused by the late thawing and rapid

falling in depth of the rivers. Having powerful motor-ship pusher tugs and shallow-draft icebreakers at its disposal, the shipping company did not begin to wait for the Podkamennaya Tunguska's complete clearing of ice. A convoy of vessels behind icebreaker Kapitan Metsayk entered the mouth of the river on the day of its thawing, and the fleet's shipping-season work period was prolonged by two or three 24-hour days thereby. There were more large-tonnage vessels in the convoy's make-up than in past years. Thus, vessels of 2,000-metric-ton cargo capacity were used instead of motor ships of 1,000-metric-ton cargo capacity. This permitted almost doubling labor productivity in the carriages. A record amount of freight was delivered to the stations on the Podkamennaya Tunguska in the 1985 shipping season--126,000 metric tons, and of these, 90,000 metric tons were dry cargo. In this, there was great achievement by all of the crews of vessels participating in the freight carriages, as well as by Teaching Captains V.A. Ivanov, M.P. Los, V.P. Udovich, and N.I. Semenov, who directed the convoy's movement. It is difficult to overestimate the contribution of the crews of the vessels OT-2114 (Captain V.O. Kuzmin), Kapitan Metsayk (V.S. Dekin), and others, which worked at escorting the fleet through the difficult sections.

Over 126,000 metric tons of national economy freight were delivered to remote regions on the Nizhnyaya Tunguska under plan 110. The vessels were well processed by the shipping company's floating cranes at Tura Station.

In all, 329,100 metric tons were carried on the side rivers during the 1985 shipping season, which is 20.7 percent more than in 1984. The technical and economic indices of fleet operation were improved.

Large tasks confront the shipping company in the 12th 5-Year Plan in meeting the requirements for carriages on the side rivers. The shipping company considers raising the quality of operational work and the levels of organization and discipline in all phases of the transport process to be one of the directions in providing for the growing carriages and their efficiency. To plan precisely, cooperate closely with associated organizations, and effectively manage and control--such a task faces all operational workers. However, not everything, by far, depends upon the shipping company.

With each passing year, the matter of augmenting the shipping company's fleet with shallow-draft, but sufficiently powerful, towing vessels for operation on the Bolshoy Pit River and the other tributaries arises more urgently. The point is, that the design 732 steamships are physically worn-out, and the power of the design R-14 and R-45 motor ships is insufficient.

Fleet renovation also is necessary for freight carriages on the Podkamennaya Tunguska and Nizhnyaya Tunguska. However, the matter of augmenting the fleet for the side rivers is not resolved in the general outline of the shipping company's development prepared by the Leningrad State Institute for Planning in River Transport [Leningrad State Institute for Planning in River Transport] and, consequently, the fleet's structure will not be improved in the 12th 5-Year Plan.

The technical equipment of the non-common-use docks on the side rivers is utterly inadequate for the ever-growing level of carriages. For this reason, the shipping company sustains losses exceeding the cost of constructing and equipping the docks. Because of the long waits for processing and the slow unloading rates on the unequipped docks, the losses during 5 years have amounted to about 2.5 million rubles.

The expenditures for fuel resources, repair work, material and technical supply, and ensuring the safety of vessels during their operating time on the small rivers are irrecoverable for the shipping company. For freight turnover amounting, in all, to 2 percent of the overall volume for the shipping company, about 10 percent of the fuel, and up to half of all the expenditures on between-voyage repair for powerful design 428 pusher tugs is required. A way out of the situation that has been created is reimbursement of part of the expenditures by the freight receivers, building up the shipping company's material and technical base, and, in particular, a sharp increase in the rates of dock construction on the side rivers with the shared participation of the Kray's interested organizations.

Working out and implementing the Comprehensive Program for Developing Carriages to the Northern Regions and Autonomous Okrugs [Districts] of Krasnoyarsk Kray must become a main link binding together the resources and interests of the parties to the transport process. The amounts of the capital investments to develop the material and technical base should be specified in it, and the matters of shared participation resolved.

Increasing carriages on the side rivers requires revision of a number of the effective regulations, and adoption of new ones, specifically defining the work of the visiting landings. According to Novosibirsk Water Transport Engineering Institute estimates, the staff of a visiting landing should consist of six or seven persons (the chief of the landing, an engineer-dispatcher, an engineer-technologist, an engineer for commercial work, and receiving and issuing workers [priyemosdatchiki]). The working period of the visiting groups is 1 month, their overall staffing is 30 persons, the expenditures for the visits are over 900 man-days, and the travel-allowance costs are about 10,000 rubles.

The visiting landings must be furnished with accommodations, communications, and the means of moving about (transporting vessels, official motor vehicles); only in such event will their work be effective.

The matter of organizing dispatcher stations with appropriate means of communication on the major docks has come to a head.

In resolving these matters, the shipping company needs the assistance of the ministry, appropriate departments, and the kray organizations. The effect of introducing the indicated measures will not be long in making itself felt. Just through reducing the fleet's nonproductive expenditures by 3 percent, the savings in operating expenses will amount to 50,000 rubles, which will cover all the costs of equipping and operating the dispatcher stations and supporting the visiting landings.

The overall state savings will amount to about 200,000 rubles, inasmuch as the delivery of freight will be accomplished, not by motor transport on snow roads, but by the more economical river transport.

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MARITIME AND RIVER FLEETS

SHIPBUILDING PLANNED FOR EAST SIBERIAN RIVER BASIN

Moscow VODNYI TRANSPORT in Russian 3 Apr 86 p 2

[Article by L. Ryamzin, RSFSR deputy minister of the river fleet: "With a High Sense of Responsibility"]

[Text] The above was the title of an article published in VODNYI TRANSPORT No 136 dated last year.

The problems of developing river transport in the East Siberian basin raised in that article are urgent. Resolution of some of them depends on the RSFSR Ministry of the River Fleet. Since the article was published ways have been outlined for resolving them.

During this time, together with the RSFSR Ministry of the River Fleet, the Ministry of the Shipbuilding Industry has worked out several versions for building passenger ships to service the passenger and railroad lines in the basin, including Lake Baykal. As this was done, the economic aspect of the work was taken into consideration.

In February of this year these two ministries adopted a joint resolution that during the period 1988-1990 the Ministry of the Shipbuilding Industry will build "Barugzin" class air-cushion passenger vehicles.

This vehicle is designed for 150 passengers and travels at a maximum speed of 50 kilometers per hour. Its sea-going qualities make it possible to operate when waves are running at 3 meters and insure safe sailing at lower engine revs.

The RSFSR Ministry of the River Fleet is in agreement with the proposal to increase freight movement on Lake Baykal and has repeatedly raised this matter with the RSFSR Gosplan.

Provision for the construction, reconstruction and retooling of enterprises and projects of the East Siberian Shipping Line has been made in a document issued by the directive organs. The plan envisages the construction of a block of shops at the Irkutsk repair and operations base for the fleet by 1990; the construction of a point for the reception of domestic sewage from ships in 1988; the construction of 23,500 square meters of housing during the

period 1986-1988; and the construction of river port facilities for passengers in Irkutsk, a repair and operations fleet base in Usolye, workshops for fleet repairs in the lower head waters of the Bratsk GES and other projects during the period 1991-1996.

In order to insure rhythmic operations in the Osetrovsk river port and insure guaranteed shipment of freight from it to the regions of the Far North, a resolution has been adopted that envisages solving the problems raised in the above-mentioned article concerning the development of river freight movements into those regions from the Upper Lena.

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MARITIME AND RIVER FLEETS

PROPOSALS FOR IMPROVING SHIP PROCESSING IN RIVER PORTS

Moscow VODNYI TRANSPORT in Russian 8 May 86 p 3

[Article by V. Strakhov, chief of the ports section at the Central Scientific Research Institute of the Economy and Operation of Water Transport [TsNIIEVT], candidate of technical sciences: "Everyone Knows All the 'Secrets'" or "Possibilities for Growth in the Transport Capabilities of the Fleet in the Ministry of the River Fleet"]

[Text] Today we publish an article by candidate of technical sciences V. Strakhov (TsNIIEVT) in which, without making any claims for a complete study, he describes the quite extensive range of problems that are hampering growth in the transport capabilities of the fleet and indicates possible ways of solving them. Of course, not all problems are the same and not all of them can be solved quickly and painlessly. We see from this article that for many of them there are no precise scientific developments or recommendations.

Now, when the sector has switched to the new management methods, the role of scientific work is growing immeasurably. Science must come really close to the needs of production and restructure its activity in the spirit of the decisions of the 27th CPSU Congress.

The editorial office intends to hold extensive discussion on the various problems associated with this subject.

All interesting proposals worthy of attention will be published. The discussion will culminate in a VODNYI TRANSPORT roundtable in which officials from the RSFSR Ministry of the River Fleet and representatives of the sector scientific establishments will participate.

We await your letters!

As was noted at the 27th CPSU Congress, the uniqueness of the 12th Five-Year Plan lies in the fact that the national economy is to be retooled on the foundation of a new scientific and technical base with a simultaneous buildup in the rates of advance. This is the task that also faces river transport. Its resolution is seen in increasing overall productivity in fleet operations. However, as was noted by the ministry's scientific and technical council, prospects for fleet growth during the 12th Five-Year Plan are not in line with requirements. Take, for example, the dry-cargo fleet. It is planned in the coming years to improve the productivity of its operations 2.5 percent for self-propelled ships and 1.8 percent for towed vessels; and this includes improvements made by reducing by 2 percent and 1.8 percent respectively the time that the ships spend at moorings in port. In our view, only one conclusion can be drawn from this: realization of the main reserves in the transport capabilities of the fleet depends entirely on the quality of work in the ports. And what is the essence of this work?

Lifting-and-transport machines make up one of the main components of the production base in the river ports. The up-to-date inventory is made up of universal loading machines, namely overhead traveling cranes, floating cranes, and other kinds of cranes. New-generation equipment (grab-bunker loaders [greyferno-bunkernyye peregruzhateli], bucket-conveyer loaders [noriyno-konveyernyye peregruzhateli], stacker-reclaimers, car-unloaders [vagonorazgruzochnyye mashiny] and so forth) are still in development and the first models will not make a big difference during the 12th Five-Year Plan. Therefore, during the period 1986-1990 we can count only on those port facilities already available today.

Can we, under these conditions, reduce fleet costs in cargo operations? Yes, if all available loading equipment is used at maximum capacity. Let us consider the experience gained in past years.

It is common knowledge that during the period 1975-1980 optimal operating conditions for ships came into extensive practice in the river ports. The basis of this is the concentration of loading facilities and manpower on dealing with each ship in turn. As a result, during the 10th Five-Year Plan the intensity of loading work at the wharves of the ports increased 27.3 percent. Subsequently, however, the optimal conditions became the norm in port operations and... were quietly "buried." What did we get from this? Just that during the 11th Five-Year Plan intensity increased only 7 percent. Why did this happen?

The fact is that today the port workers are responsible only for meeting the normatives for the time taken to turn a ship around. But this provides no incentive for them to accelerate the completion of freight operations. For example, say a ship with a cargo-carrying capacity of 2,000 tons has delivered coal to Moscow's Yuzhniy port. They start to unload it with one crane and the work is completed ahead of schedule. This kind of paradox surprises no one. And it happens because the port workers are not worried about meeting the normative for freight work, which in our example is 11 hours. For now they are responsible only for the normative for overall time, which is 26 hours. That is, as it resolves its specific tasks, the port has no interest in

achieving one of the most important aims in the sector, namely, improving work efficiency in the transport fleet.

The growth in intensity in loading work during the 10th Five-Year Plan through the introduction of the optimal conditions was to have provided or freed up ships for a reserve or to have shipped additional volumes of freight with the same fleet inventory. Whether or not this happened is something that no one has analyzed. Moreover, the ports received neither moral satisfaction nor the reimbursement of material expenditures associated with introducing the optimal conditions. And in the final analysis the important reserve was forgotten.

Let us consider another reserve, namely, the time spent on operations involving the cleaning of a ship. As a rule this amounts to an average of at least 10 to 15 percent of all cargo work. But in a number of cases it climbs to 50 percent. What are the basic reasons for this?

First, the inventory of specialized cleaning machines is less than 50 or 60 percent of the requirement, and as a result much manual labor is involved. According to approximate figures, in 1984 these expenditures exceeded 2.1 million man-hours, which is about 12 percent of the navigation time budget for all dock workers in the Ministry of the River Fleet. Second, the technical conditions for loading ships are systematically violated, and this leads to increased amounts of cleaning. And finally, the use of design 11 or design 576 ships and similar designs for the shipment of bulk cargoes hampers the mechanization of cleaning operations, increases labor intensiveness, and increases the time spent on cleaning operations. During the period 1986-1990 alone the elimination of these shortcomings could reduce fleet costs for ships at moorings during loading operations by 8 to 10 percent.

These kinds of problems are being handled especially poorly by the enterprises in other sectors, namely the owners of the piers themselves. Here, the construction and reconstruction of projects are constantly carried out with violations of schedules. As a result, at the grain piers in Rybinsk, Kalinin, Yaroslavl, Gorkiy and Kuybyshev intensity in fleet operations has remained virtually the same for 30 years! And it is not happenstance that in 1985 intensity at these ports was three times lower than at the piers of the Ministry of the River Fleet. We think that it is high time to make use of these reserves as quickly as possible.

We all know what great importance is attached to technology for loading processes and the organization of port workers' work. In order to optimize these the ports are provided with standard technological processes and technical conditions for ship loading operations, and instructions and provisions on the use of advanced forms and methods of labor and so forth. Formally, everything would appear to be just fine. But what is really happening? A check on many ports conducted by the TsNIIIEVT showed that reserves for reducing the time taken for loading operations are to be found precisely in observing technological discipline. Undermanned crews of port workers, reductions in the planned number of lifting-and-transport machines, violations of technical conditions for ship loading operations and so on all lead to noncompliance with the normatives for fleet loading operations. As they say, comment is superfluous...

Effective measures to accelerate ship handling in the ports include containerization and packetization of cargoes. No one disputes the fact that this is progressive. Neither is this the first year that work has been underway to create a unified container transport system (KTS). Under the aegis of the USSR Gosplan Institute of Complex Transportation Problems, for more than 10 years our institute alone has been involved in developing this system. More than once promising volumes of containerized and packaged cargoes have been established, analyses made of mechanized piers and use of the container inventory, and all kinds of proposals worked out. And what has changed? Speakly candidly, virtually nothing. In the 1986 plan for scientific research work we again have the task of working on these issues. The KTS still does not exist in nature.

The containers and reusable packaging facilities remain the property of the transport departments, which are in no rush to put them into general circulation. No final solution has yet been found for interdepartmental issues concerning organizational, legal and commercial procedures.

One important operational function of a port is comprehensive servicing of the transport fleet (KOF). If we talk of the shortcomings in this matter, the essential point is that today in terms of the quantity and composition of specialized technical facilities, the KOF material-technical base cannot insure the proper quality of maintenance. In the final analysis this means ship idle time. Many examples could be cited.

Within the Rostov water center there is a floating store with a crew; but this wastes much time and they prefer to make use of general-purpose warehouses ashore because there they find things that cannot be found at their own trading point. In the Leningrad combined shipping line ships' crews are provided with products only for half the trip. Ships plying the Moscow-Astrakhan route must bunker two or three times during each trip. In Medvezhye port, the 5 to 7 hours set for ballast-pumping operations for the Volga-Don class ships stretch out to 10 to 12 hours. Overall, because of the lack of necessary facilities for nonstop servicing of ships in transit, in 1985 alone about 6 million tonnage-days were lost because of forced port calls.

According to shipping line figures, last year they had at their disposal only half of the technical facilities needed for comprehensive fleet servicing: coalers and coaling bases, water-transport vessels, ships to collect various kinds of waste, floating stores and so forth. Because of the lack of a maneuverable roadstead fleet the ports are forced to use transport ships for roadstead work. This has led to losses in the transport capabilities of the fleet and overexpenditure of fuel. Moreover, lack of experience among the mariners in this kind of work creates emergency situations.

Fleet expenses on various operations after cargo operations place a heavy burden on the indicators for shipping operations in the ports. In 1985 they amounted to 93 million tonnage-days at the piers of the Ministry of the River Fleet, including 16.7 million on KOF operations for the self-propelled fleet.

The KOF problems also have their social aspect. Under conditions of intensive ship movements and the shorter time that they spend at servicing points it is

essential to take steps to improve and lighten working conditions for ships' crews and free them from the numerous auxiliary operations that can and should be carried out by the shore services. Herein lies the guarantee of people's health and labor safety.

Many of the defects in KOF are also of a purely organizational nature. It happens that the ports have virtually no interest improving KOF. It produces many headaches and what do we get in return? Just trouble. The new indicators for assessing the work of the sector require that money be considered at all levels of management. Why not try charges for KOF services? The more so since there are proposals to do this and the Northwest Shipping Line has almost 10 years of experience in so doing.

The facts cited above indicate that the considerable reserves for for reducing the time that ships of the fleet spend at moorings by improving KOF are not being seriously realized. Unfortunately, the shipbuilding plan for 1986-1990 does not properly take into account KOF as it should. Of course, the possibilities for shipbuilding in the sector are limited. But what if we pull from the nucleus of the transport fleet the ships that are inefficient for transport operations and re-equip them for KOF work? Is that not a solution? We think that reserves must also be sought along this avenue.

When familiarization is gained with the appropriate documents on the servicing of ships in ports of the central and northwest basins, in some case we can see a trend toward increasing the normatives for waiting for loading operations. Thus, for example, during the period 1980-1985 the time normative for waiting in Moscow's Yuzhnyy port (coal) increased 20 percent; other figures include an increase by a factor of 2.3 for the Kazan port (grain), and by a factor of 5! for the Kuybyshev port (timber). This is happening simultaneously with a hardening of the time normative for loading operations. Add to this the uneven flow of ships calling at the ports and this is the result: in 1985 the dry-cargo fleet lost 169.8 million tonnage-days in the ports waiting for loading operations. And here are some more figures: compared with 1980, in 1984 the total cargo-carrying capacity of the fleet in the central and northwest shipping lines increased 8.6 percent while freight turnover increased 7.7 percent.

The question involuntarily arises: so is the fleet on the river too large?

Analysis shows that no significant reduction will be achieved in the time ships spend at moorings waiting for handling that depends on the port until the present relations between the ports and the shipping line with regard to handling and dispatch of ships are changed. Here, the principle should be one in which each is responsible for its own affairs. Today it is virtually the case that whoever creates the "traffic snarls" in the ports bears no kind of responsibility for them. And the endless arguments between the Main Administration for Ports and the Main Administration for the Management of Freight Movements and Fleet Operations in the Ministry of the River Fleet about who is the more blameworthy are of no use to anyone.

Sector science can do much in solving the questions considered above. There are also many serious shortcomings here, and they must be frankly discussed. How can it be considered normal when we "scientifically" substantiate the conclusions and figures suggested beforehand by the clients? This, of course, insures a "satisfactory" submission of scientific work. But this "satisfaction" is paid for by our lack of principle and scientific lack of conscientiousness. And in the final analysis by inefficiency in our work and the lack of any positive influence on sector activity.

While finding solutions for the petty issues and participating in an intraministerial paper chase we deliberately shun the resolution of fundamental and long-term problems or we solve them poorly. But the conscience of science in our sector must be troubled by the fact that up to now there are no sound answers to questions such as the relationship between the self-propelled and towed fleet, between propulsion and tonnage, between the optimal size of the fleet required and its structure. Can we permit the fact that when making the predictions for the sector's development no consideration is given to the mutual effect of individual directions in its activity in the long term? Lack of the necessary economic base in the validation for development promotes further deepening of the disproportions. We owe a debt in all these matters.

It should be noted, however, that the inadequate influence of science on activity in the sector is the consequence not only of our intrashop defects, as they say. There are a number of causes that lie outside the sphere of science.

This applies first and foremost to the existing system by which science is managed. Lack of clear-cut specialization for the scientific subdivisions, the disinterest of the main administrations and the ministry administrations, which give preference to immediate tasks, in solving long-term problems and carrying out basic research, the dissipation of resources allocated for science in the sector, and the "frozen" limits of the main administrations and departments--this is by no means the complete list of the consequences stemming from the science management system. And this in turn leads to duplication in the work of the scientific subdivisions and triviality of subject matter, and in the final analysis to inadequate effectiveness in expenditures for science.

None of this, of course, is new. It is not new but no positive shifts can yet be discerned. Today the tasks facing our science have grown immeasurably. But quality resolution of them when these shortcomings are present is problematical.

An entire set of acute questions have been set and are being set by the new economic conditions for work in the sector, to which it switched in 1986. Responding to these questions is our direct obligation, our civic and party duty, and a matter of professional honor.

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