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CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

REPORT

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COUNTRY	USSR	DATE DISTR.	28 May 1948
SUBJECT	Railroads	NO. OF PAGES	5
PLACE ACQUIRED	USSR	NO. OF ENCLS. (LISTED BELOW)	
DATE OF INFORMATION	1947	SUPPLEMENT TO REPORT NO.	

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THIS IS UNEVALUATED INFORMATION FOR THE RESEARCH USE OF TRAINED INTELLIGENCE ANALYSTS

SOURCE Russian Periodical, Zheleznodorozhnyy Transport, No 10, 1947. (FDB Per Abs 10031 -- Translation specifically requested.)

BETTER UTILIZATION OF EQUIPMENT IN TRANSPORT ENTERPRISES

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Transport enterprises, both plants and depots, are fitted with very costly equipment. Better utilization is an important prerequisite in increasing the tempo of locomotive and car repair. To do this, it is necessary to emphasize not the mean arithmetical norms of utilizing machinery and multiple-purpose machines, but rather those mean arithmetical norms which reflect stakhanovite work methods and better improvement of new techniques.

How is this equipment being utilized in transport plants at the present time? First of all, one must assert that here is a case of large-scale improper utilization of reserves.

An analysis showed, for example, that at the Krasnoyarsk, Konotop, Vologda, Izyum and Tashkent plants, the annual production of one metal-cutting machine amounted to 45,000 to 60,000 rubles, whereas at other plants having similar equipment, such as the Dnepropetrovsk, Rostov, Shevchenko, Kharkov, and Ufa plants, production was half as much. It is apparent from this that at those plants which fall behind in the utilization of equipment, there is corresponding difficulty in the over-all plan of production and work efficiency, which is readily seen in the comparatively lower production output attained by one worker and by one machine in 1946.

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Plants	Production per Month for One Worker (in Rubles)	Gross Production for One Machine per Year (in Thousands of Rubles)
Konotop	425	62.5
Krasnoyarsk	438	61.2
Vologda	453	50.4
Poltava	431	43.8
Ufa	367	37.6
Dnepropetrovsk	357	27.8
Rostov	376	22.3
Shevchenko	302	21.8

The Shevchenko and Konotop plants are equipped to the same degree, whereas the equipment at the former plant is of a more modern type. However, as a result of better loading at the Konotop plant, the work efficiency of all workers (machine-tool workers and others) at this plant was one and one-half times greater that at the Shevchenko plant. The plant was thus able to produce twice as much as the Shevchenko plant in 1946, even though its total increase in manpower was only 30 percent. Some chiefs of plants (Yaroslav, Dnepropetrovsk, Ufa and others) are prone to excuse nonfulfillment of the production plan on the grounds of lack of manpower, even though this is the result of improper utilization of the equipment on hand at the various plants.

As a result of disrepair of equipment, there is a significant proportion of stoppages which reaches 15 percent of the general reserve of the machine's work in some plants. The Alatyr Locomotive Repair Plant, for example, lost 54,000 machine hours in 1946 through breakdown of equipment, which constitues more than 10 percent in the time balance of the plant's work. In the Chkalov Locomotive Repair Plant, the Kanash Railroad Car Repair Plant, and other plants, this stoppage amounts to 5 percent.

Thus, merely keeping equipment in good working order can raise its productivity 5 or 10 percent.

As in the past, sufficient attention is not being given the following: capital repair of the basic plant facilities during the first quarter of 1947 was fulfilled 67 percent in the Privolga Okrug, 58 percent in the Donets Okrug, and 52 percent in the Central Okrug. Chief mechanics of administrations and plants must remember that fulfilling governmental decisions through the adoption of mean progressive norms entails for them serious obligations in keeping the plants' equipment in good repair.

The struggle for mastery of mean progressive norms in the utilization of equipment is at the same time a struggle for leading all production through a strictly regulated technological process, encompassing and coordinating all operations necessary for output of finished products. Without this severe work regimen, production output will result in bottlenecks.

The work of several railroad car-wheel works and shops, which basically possess uniform, highly productive, powerful wheel equipment, is characteristic of this condition. At present, the plan for repair of pairs of railroad car wheels by exchange of component parts is not being carried out, and this makes the improvement of rolling stock difficult. The number of railroad car wheels needing repair continuously grows, while, at the same time, the wheel shops do not utilize their productive capacity effectively. This unnatural condition is explained by the fact that the majority of wheel sets awaiting plant repair demand replacements of their hubs and bandings. In turn, these two operations, the production of hubs and bandings, is effected

on turning and boring lathes, the ineffectual use of which hinders the improvement of rolling stock. These shops possess, of course, all necessary means for increasing the productivity of their turning and boring lathes.

Notwithstanding the fact that all these shops have uniform turning and boring lathes, the production of hubs and bandings is carried out by different methods. The production plan is also diverse. If a single technological process in the production of wheel sets were to be introduced, then these differences in the utilization of similar turning and boring lathes could be reduced to a minimum, the average machine production could be raised to its mean progressive norm, and the serious problem of improving rolling stock could be settled. Since this single technological process has not appeared, disparity may be seen in the utilization of wheel equipment, observed from the data in the following table:

Railroad Car-Wheel Works	Planned Average Daily Production of Bandings per Turning and Boring Lathe for 1946		Planned Average Daily Production of Wheels and Hubs per Turning and Boring Lathe for 1946		Percentage of Fulfillment of Plan for Repair of Railroad Car Wheel Sets by Replacement of Component Parts
	Maximum Monthly Output	Annual Output	Maximum Monthly Output	Annual Output	
Moskva III	14.0	10.6			45
Tula	7.2	5.2	7.2		45
Lyangasovo	24.0	13.0	24.0	13.0	81
Dolgintsevo	18.0	6.5	18.0	6.5	116
Batraki	8.9	5.1	3.6	0.7	33
Alma-Ata	8.6	5.4	8.6	5.4	35
Magnitogorsk	26.0	11.2	26.0	19.6	70
Sverdlovsk	22.8	22.8	33.0	20.4	90
Tayga	13.0	11.0	26.0	10.0	70
Chelyabinsk	16.5	9.0	16.5	9.0	46

It is clear from the table that the Lyangasovo, Sverdlovsk, and Dolgintsevo works had the highest percentage of plan fulfillment. These same works also show the highest norms in utilization of turning and boring lathe equipment. Those works which failed to guarantee correct utilization of equipment did not fulfill the plan. These included the Tula, Batraki, Alma-Ata, Chelyabinsk, and others.

The average daily production of turning and boring lathes as regards the turning of bandings amounted to seven bandings in railroad wheel shops and in railroad car repair plants, while the average production was from 13 to 23 bandings in separate enterprises, and the maximum daily figure in such leading enterprises as Lyangasovo and Magnitogorsk was 24 or 26.

A very similar picture is observed in the production of hubs and wheels. The average daily quota for a machine tool throughout the railroad network amounts to 6.4 railroad wheels, whereas the maximum figure in various shops is 26, and in some cases even 33. From this, it is evident that leveling mean arithmetic norms seriously harms railroad-car economy.

In the field of repair those technical norms which regulate the efficiency of special machine tools are of great importance. The technical norms of these machines must correspond to the complete utilization of efficiency marked on their rating plates and of the reserve of their working time.

In order to insure industrial repair methods, mobile machines for grinding pedestal jaws, portable machines for grinding cylinder and hood bushings, boring machines for crossheads and slide bearings, grinding machines for armatures, etc., are of especial importance. These machines are highly productive, reducing markedly the amount of hand labor and consequently reducing the idleness of rolling stock while undergoing repair.

An order from the Minister of Transportation to plants and railroads has posed the task of obtaining maximum utilization of metal-cutting equipment and of mastering the mean progressive norms of the work of these machines.

The calendar reserve of a machine's work time during two shifts amounts to 384 hours per month. Naturally a machine's effective work, which is what we call machine time, cannot equal this calendar reserve, since in these enterprises there are unavoidable stoppages of machines due to removing or setting up operating parts, changing instruments, taking measurements, etc. The extent of these unavoidable stoppages depends on the organization of the work and the working area, as well as on whether the machines are working on piece or unit orders. In order that the amount of time expended in readying the machine impinge less on the machine's idle time, it is necessary that the volume of unit parts which can be prepared without interrupting a production order be as large as possible.

The prewar work experience of our large plants shows that this problem can be completely solved and that it pays for itself economically, since apart from bettering the utilization of equipment, a reduction in the idleness of rolling stock while it is undergoing repair is also achieved.

In order to guarantee current requirements, a small number of machines must be manufactured. The remaining machines must work on the principle of serial production for the central warehouse and on orders for the railroad. The Kaunas Spare Parts Plant is distinguished by a rich assortment of machine-founding equipment, suitable for serial production. This plant received an order for spare parts from railroads of the Western Okrug in accordance with the plan for the first quarter of 1947. This order consisted of 164 items, of which 50 percent consisted of only two or three pieces. This is a typical occurrence for a significant number of our repair plants.

The requirement submitted to our plants concerning the speedy increase in the utilization of machines and equipment obligates us to deal with the inclusion of unit orders for spare parts on a basis of internal and external cooperation among plants. These questions must be studied by the plant administrations together with okrug administrations concerned with spare parts. Unless the important questions of plant cooperation are solved, the problem of effective utilization of equipment cannot be solved.

A considerable quantity of axle bearings, crossheads, superheated-steam compartments, and other labor-consuming spare parts are required by the transportation system. In spite of this, locomotive repair plants produce only 50 percent of these items for the railroads in finished form, the remaining 50 percent leaving the plants in a semifinished state and having to be sent to distant industrial plants for processing. The preparation of these parts on universal lathes without special attachments requires a considerable amount of time spent in auxiliary operations (setting up, planning), which leads to a low coefficient of utilization of the machine's time reserve.

At the present time, technical, industrial, and financial plans for plants are being worked out. Mean progressive norms for the utilization of equipment, guarantees of the effectiveness of introducing new technical norms, and increases of these norms in practice must be reflected in these plans. The technical plan for each plant's production must encompass the following basic problems: a plan for mechanizing labor-consuming processes, the introduction of new techniques and adaptations for production, and the repair of basic equipment.

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A mastery of mean progressive norms in the utilization of equipment will increase output of production in transportation plants.

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