~~S-E-C-R-E-T~~

INTELLIGENCE MEMORANDUM 11

SIGNIFICANCE OF RECENT ANNOUNCEMENTS CONCERNING THE SOVIET RAILROAD TRANSPORTATION SYSTEM

CIA/RR IM-404

12 November 1954

~~WARNING~~

~~THIS MATERIAL CONTAINS INFORMATION AFFECTING THE NATIONAL DEFENSE OF THE UNITED STATES WITHIN THE MEANING OF THE ESPIONAGE LAWS, TITLE 18, USC, SECS. 793 AND 794, THE TRANSMISSION OR REVELATION OF WHICH IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED BY LAW.~~

CENTRAL INTELLIGENCE AGENCY

Office of Research and Reports

~~S-E-C-R-E-T~~

Copy Sent 00/C
16 Dec

BLANK PAGE

FOREWORD

In April and May 1954, meetings were held in Moscow to discuss the Soviet railroad transportation plans for 1954 and the following years and to review the accomplishments and failings of 1953. Two important speeches were made by Kaganovich, First Deputy Chairman of the Council of Ministers of the USSR, and two by Beshchev, Minister of Transportation. Study of these speeches, and of others by subordinate railroad officials, has given very useful material for the computation of past performance and for an assessment of the likelihood that future plans will be fulfilled. The speeches give little basic statistical material directly, but by comparing one speech with another and by mathematical analysis it has been possible to build up quite a revealing picture of 1953 rail statistics and to gather useful data on plans for the period 1954-60.

It is believed that the figures contained in the speeches are reliable and were not released for the benefit of Western intelligence organizations. The facts given are those which railroad workers need to know to advance the government's plans, and their disclosure seems motivated by the necessity to denounce unsatisfactory features of 1953 operations in order to goad workers to greater efforts. Furthermore, certain facts can be checked by independent Western observation of Soviet rail operations. Other facts are consistent with information in Russian technical books issued for the instruction of Soviet railroad men. Finally, the figures derived from the speeches seem internally consistent, and it has been possible to obtain certain key figures in two or more independent ways.

This memorandum by no means exhausts the basic material available. Much additional information can eventually be derived from these speeches and from fragmentary older data, including actual traffic on some key individual Soviet lines, but the research required is laborious and will not permit a full study to be completed for some time. In its preliminary form, however, analysis of the speeches has already filled several important intelligence gaps. The memorandum is therefore being issued at this time so that the methodology and results obtained to date may be commented on by others and the conclusions employed in evaluating Soviet attainments, capabilities, and intentions.

BLANK PAGE

PAGE IV BLANK
PAGE V MISSING

Appendix

Table

CIA/RR IM-404

~~S-E-C-R-E-T~~

SIGNIFICANCE OF RECENT ANNOUNCEMENTS CONCERNING THE SOVIET RAILROAD TRANSPORTATION SYSTEM*

Summary

In 1953 the Soviet railroads were operating under strain and close to present capacity, with an intensity of utilization per mile of track and per car about three times the US level. Nevertheless, they handled 84.5 percent of total Soviet traffic, and carried 1,121 million metric tons,** of goods. With an average haul of 748 kilometers, this meant a total work performance of nearly 840 billion ton-kilometers. Both tons originated and ton-kilometers were the highest in Soviet history and were about 5 percent above previous CIA estimates.

Study of the speeches of Kaganovich and Beshchev shows that record movements of bulk commodities produced at least moderate shortages of gondola and hopper cars in 1953, while complaints were also made of inadequate supplies of refrigerator cars and cattle cars as well as shortages of containers to move less than carload quantities of consumer goods freight. Locomotive supply was adequate, but it was evident to the Soviet authorities that more powerful types must be built to haul the heavier trains now being run, and prototypes of such locomotives were constructed in 1953. It seems clear that a policy of forcing higher performance out of locomotives was relentlessly pushed during the year and that such a policy did not have the approval of some leading technical men, who feared eventual deterioration of equipment.

The year showed some retrenchment in plans for construction of new lines, but nevertheless there were significant additions to the rail net in the South Siberia-Turkestan area. Emphasis was put on

* The estimates and conclusions contained in this report represent the best judgment of the responsible analyst as of 1 November 1954.

** Tonnages are given in metric tons throughout this memorandum.

improving present trackage in key areas, with the laying of better ballast and heavier rails, so that train speeds might be increased in the future. Moderate additions were made to the electrified line, which is slated for further expansion.

The campaign for haulage of heavier freight trains was strongly pushed, and it is calculated that in 1953, the average Soviet freight train hauled about 1,100 tons of goods, or only a little less than did the average US train. This figure is a notable increase over the freight tonnages hauled a few years ago. Turnaround time was reduced only moderately during the year in spite of a strong campaign for its reduction, but nearly attained the planned figure.

The total intensity of utilization of the railroads in the USSR was far greater per mile of track and per freight car in operation than was the case in the US. Much less spare capacity was therefore available for handling any emergency movement of goods. Average train speed, although good compared with previous Soviet performance, was not up to US standards, being hindered by poorer tracks, less traffic-control equipment, poor brakes on the older cars, and smaller locomotives.

Considerable progress was made in turning the active car fleet into a 4-axle one, with freight cars comparable to those of the US. Plans were in force for scrapping 2-axle cars as they wore out and for making new construction of 4-axle cars of an advanced type. Removal of old-style 2-axle cars from main routes can at some future time greatly increase traffic efficiency.

The following tabulation gives the more important figures derived from the speeches for 1953 Soviet railroad performance:

1. Ton-kilometers: 840 billion, which is the highest total in Soviet railroad history. (The previous CIA estimate was 799 billion ton-kilometers.)
2. Tons originated: 1,121 million, which is also a record figure. Of this, coal was 28 percent.
3. Average length of haul: 748 kilometers. (The previous CIA estimate was 750 kilometers.)
4. Average length of freight car movement from one loading to the next: 1,020 kilometers. This distance includes empty haul.
5. Average turnaround time for freight cars: 6.67 days (160 hours), a decrease of 5 hours under 1952 and 23 hours under

1950, but about the same as in 1940. (The previous CIA estimate was 6.1 days for 1954. No estimate had been made for 1953.)

6. Breakdown of turnaround time: 10 percent at stations en route, 10.5 percent at distributing railheads, 28.8 percent at classification yards, 30.3 percent at stations where loading or unloading work is carried out, and 20.4 percent actual time in motion.

7. Average technical speed (speed of trains between stops): 31.3 kilometers per hour.

8. Average commercial speed (speed including stops en route): 19.8 kilometers per hour.

9. Average daily carloading: 137,000 cars (in 2-axle units). (This figure is up 7 percent over 1952.)

10. Station-to-station mileage of Russian-gauge lines, excluding sidings and the like: 120,000 kilometers. This mileage excludes lines under construction. (The previous CIA estimate was 120,000 kilometers.)

11. Average freight density: 7 million tons of freight over the average kilometer of line per year. This is 19,180 tons per day, and at a calculated average trainload of 1,100 tons, this is equal to 17.4 trains per day. The lines with the greatest traffic density are computed to have about 90 trains per day (both directions, and double track) past any given point, assuming 1,500 tons of freight per average train on such routes. These figures seem to agree with actual observation.

12. Number of cars (in 2-axle units) in actual use at any one time: 913,000.

13. Estimated total freight car park (in use, laid up for repairs, and laid up in reserve): approximately 806,000 physical units, made up of about 403,000 4-axle units and 403,000 2-axle units. In 2-axle equivalents, this works out to a total park of 1,209,000 cars. These figures rest on the assumption that there is little laid-up reserve of 4-axle freight cars, considering Soviet traffic needs, but that there is a large reserve of 2-axle cars. (The previous CIA estimate was 911,950 physical units.)

14. Proportion of actual carrying capacity in 4-axle units in 1953: 82 percent. On the basis of actual Western traffic observation, plus computation from data in the speeches, about 67 percent of the cars running seem to be 4-axle and only 33 percent 2-axle. The carrying capacity of the 4-axle car is a little over twice as great as that of the 2-axle car, and therefore in essentials Soviet railroads are now almost on a 4-axle basis.

15. Division of 1953 traffic (ton-kilometers) between various media of transport: rail traffic 84.5 percent of total; river 6.3 percent; sea 5.1 percent; other (truck, pipeline, air) 4.1 percent.

I. Soviet Plans for 1954 through 1960.

Very considerable increases in carloadings, in tons originated, and in ton-kilometers took place in 1951, 1952, and 1953, but the increases were at a decreasing rate from each year to the next. A projection of the rate trend tends to confirm a planned increase in carloadings of only 4.9 percent over 1953 as the Soviet goal for 1954, which has been derived from Beshchev's speeches.

Plans were made for a decrease of an unspecified amount in the average length of haul for 1954 and for a sharp upsurge in the number of heavy trains. Delivery of new-type equipment consisting of heavier gondola cars and more powerful locomotives was also to begin this year. Further improvement of track and of automatic signalling equipment was to be made, and the electrification of key lines pushed. Train speeds were to be increased and weight norms raised.

Goals for later years were much more ambitious. A 50- to 60-percent increase in the level of freight handling by 1960 was contemplated by Kaganovich, who also spoke of deliveries of new and more powerful locomotives in the 1955-60 period amounting to 6,000 steam locomotives, 2,000 electrics, and 2,000 diesels, plus large unspecified numbers of gondola cars (up to 100 tons capacity), and refrigerator cars.

The rationalization of hauling by the elimination of cross-hauls and the building of factories and flour mills in regions which produce raw material and which also use the finished product, in order to decrease the need for moving as much material as possible, were also stressed. Heavier trains, faster schedules, better roadbeds, and better traffic-control devices, as well as a reduction in time spent in yards and terminals, seem to be the contemplated answers to the need for perhaps a 50-percent increase in tons to be carried.

II. Probable Performance in 1954 and Later Years.

Analysis made of Soviet traffic figures released for the first half of 1954 indicates that railway traffic in 1954 will probably be about 5 percent above 1953 in tons originated and in ton-kilometers. It is estimated that 1955 should show about the same growth over 1954. Thereafter, growth may be at a higher rate. Although there is an ample number of tank and boxcars, a shortage of heavy gondola, hopper, and refrigerator cars presently limits traffic increases in such key items as coal, ore, building materials, timber, and perishable food products, and the program for expanding output of such cars above present levels is not likely to show major results until 1955. More powerful locomotives are also needed, although there is a good supply of those of ordinary type. Prototypes of the new locomotives were delivered in 1953 and the first part of 1954, but quantity production is probably many months in the future.

Plans were made for a considerable increase in the number of heavy trains in 1954. It is reported that, for the first half year, 40 percent of the trains were heavy ones. The significance of this is not yet clear, however, because the total number of trains in comparison with the corresponding period of 1953 is not given, the norms for train weight are not generally available, and the degree to which some trains might have been underloaded to furnish tonnage for heavy trains and thus allow paper compliance with the plan is not yet known. Nevertheless, it is likely that average train weight is still increasing, although now at a smaller rate than Soviet propaganda would have the world believe.

The 1954 goals for the reduction of turnaround time and for the increase in train speed are not being met and will probably not be met, although a little progress will be made. No appreciable decrease in average length of haul seems likely until 1955 or 1956.

For the longer term, the USSR desires an increase in traffic volume of 50 to 60 percent as compared with 1953. This goal will probably be met although at the cost of much effort.

Attention is called to the fact that much electrification of main line track is scheduled for the area from the Volga to Western Siberia in the 1955-60 period. This will increase traffic capacity, but also vulnerability, thus giving peacetime strength and wartime weakness.

III. Derivation of 1953 Statistics.

The basic procedure for deriving the 1953 statistics was to find in the key speeches those figures and relationships that could be used in obtaining such statistics, and to cross check conclusions for consistency wherever possible, in order to minimize errors in interpreting the data furnished or in the manipulation thereof. Cross comparison has also been made with available Soviet transportation texts, recent articles in Gudok (the Soviet railroad newspaper), and information in the hands of commodity specialists.

1. Ton-Kilometers.

Kaganovich in his 26 April speech says, "We have railroad routes on which the freight intensity reaches from 30 to 50 million tons per kilometer with an average of 7 million tons." The context makes it plain that the average referred to is that for the USSR and not for some particular route and that it is for 1953. But he elsewhere states that the station-to-station length of line for the USSR is 120,000 kilometers. Since Soviet statistical texts show that average freight intensity is obtained by dividing total ton-kilometers by total kilometrage of line (station to station), total ton-kilometers can be obtained by multiplying kilometers of line by average freight intensity. This procedure gives 840 billion ton-kilometers for 1953. Agreement with a prior CIA estimate of 799,400 million ton-kilometers is good, the derived total being about 5 percent larger. Part of this difference is attributable to a reported increase of about 1 percent in average Soviet length of haul for 1953, when it might have been expected that a slight decrease would have taken place. In spite of the use of 2 rounded figures in deriving the total, the result is believed to be accurate to within 2 percent. A greater margin of error would probably be reflected in differences in tons originated figures derived by different methods, but, as shown below, the differences are minor.

2. Tons Originated.

The Kaganovich speech of 26 April states, in summary, as follows: "There are at any one time 11.5 million tons of goods on the railroads. The value of these goods is 26 billion rubles. There is an average delay in delivering a ton, as compared with schedule, of 0.36 days. Eliminating this delay would save 2.5 billion rubles tied up in the value of goods in transit." It follows that we may

derive from these figures the average time for goods in transit, the formula being $\frac{26}{2.5} \times 0.36$ day. The result is an average of 3.744 days in transit.

This time (which excludes loading and unloading, empty haul of car, and time in technical stations for the empty car), divided into the 11.5 million tons of goods in transit, yields 3,072,000 tons originated per day, or 1,121,280,000 tons for the year 1953.

A cross check on this figure is possible, since the 840 billion ton-kilometers already derived can be divided by 748 kilometers, given by Kaganovich as the average length of haul. This furnishes a figure of 1,122,995,000 tons, or less than two-tenths of 1 percent more than by the first method. The probabilities are that the first method is slightly more accurate, since fewer rounded figures are used in its derivation.

A third general check as to order of magnitude is possible from Beshchev's speech, in which he states that increasing the average load per car by 1 percent would yield an increase of over 10 million tons more hauled per year. That is, he implies that the tons originated figure is "over" 1 billion tons.

A fourth check of considerable validity has also been possible by using Kaganovich's 26 April remark that for 1953, 28 percent of the freight carried was coal. Twenty-eight percent of 1,121,280,000 tons is 313,880,000 tons. Consultation with CIA coal specialists revealed that they had a figure for the 1953 Soviet coal production from a Malenkov speech. The specialists made allowance for coal used at the mines or loaded directly on ship and never sent on the railroads. transportation specialists made a corresponding subtraction from the 313,880,000 tons moved, for Polish and Chinese coal imported into the USSR and hauled on the railroads but of course not counted as a part of Soviet coal production. Further reduction was made for coal possibly double-counted in transit through use of rail-water-rail hauls or through picking up for on-carriage of coal previously hauled to a stockpile. The figures were then compared. The figure derived by subtracting mine consumption from reported production was approximately 3 percent less than the roughly corrected rail transport total. In view of the tentative character of the corrections made, the agreement is excellent. Unless very consistent falsehood is being uttered by

various Soviet officials at various times, these general cross checks serve to validate each other and to give credence to the figures derived.

3. Average Length of Haul.

The Kaganovich speech of 26 April specifically says that average length of haul in 1953 was 748 kilometers. The figure appeared in connection with a lengthy denunciation of cross-hauling and unnecessary movements of raw materials to factories distant from regions where the finished products are consumed. Examples are also given of major commodities for which average length of haul has increased notably in recent years. Data given are consistent with what is already known and with Soviet statistics for periods in which less secrecy was practiced. The figure is thought to be accurate.

The context of the quotation does not definitely show whether the figure is tariff or operating kilometers, but the tentative conclusion is that operating kilometers are meant. This conclusion would be consistent with quotations for average speed given in the same and other speeches, which clearly must be operating figures on the actual tracks used, irrespective of the shortest theoretical distance.

4. Average Length of Freight Car Movement from One Loading to the Next.

It is evident from the nature of Soviet rail shipments that much hauling of empty cars must take place, even though there is continual effort to reduce it. Tank cars necessarily run empty a good part of the time when returning to the oilfield or refinery after delivering oil. Coal, ore, timber, sand and gravel, and similar bulk commodities also often involve empty hauls, as do movements of refrigerator and cattle cars. Seasonal traffic flows also generate empty movements, for a sudden demand for cars to move grain, for instance, may require far more boxcars to come into a region than can be filled with commodities which at that time require transport to the place of grain production. In general, then, an unbalanced flow of goods, or movement of equipment adapted only for carriage of special commodities, causes empty car movements and results in a need for more cars than would otherwise be the case. The ratio of empty-car movement to loaded movement is therefore of importance.

For the USSR this figure can be derived directly, and checked indirectly. As is shown in the discussion on turnaround time, Kaganovich gives data which imply a freight car turnaround time of 160 hours for 1953 and furnishes information from which it may be calculated that 20.4 percent of the 160 hours was the time a car was actually in motion. Actual running time, therefore, must have been about 32.64 hours. As will subsequently appear, however, average technical speed (speed between stations and excluding time for stops) has been found to be of the order of 31.25 kilometers per hour. It follows that the average car ran about 1,020 kilometers from one loading to the next, and that since the average loaded movement was 748 kilometers, the average empty movement was about 272 kilometers. The average empty movement is therefore 36.4 percent of the average loaded movement.

Pavlov, in Gudok for 11 February 1951, states that "empty car movement is now 37 percent of loaded movement." 1/* This is certainly consonant with a computed figure of 36.4 percent for 1953.

Beshchev, in his speech reported for 5 May 1954, states that "out of every 10 cars on return runs, there are 3 to 4 empties. This percentage has not changed for fifteen years." This remark tells nothing directly about average length of freight car movement but is nevertheless useful as a starting point for statistical approximation.

First, it is to be noted that a large part of the empty movement must be return of coal, oil, timber, and similar cars from point of delivery of merchandise to a mine, refinery, or mill to pick up another load. That is, the return run ought to approximate the outward run in kilometers. Interchange of cars at unloading points does not change the ratio of empty run to loaded, as long as the commodity flow pattern is stable. Empty runs of boxcars, however, should be decidedly shorter than loaded runs, since boxcars carry varied freight in triangular movements, and run to the nearest point of demand as different commodity movements dictate, rather than operate in a shuttle service between a few fixed areas of production and a relatively few main consuming points. Offsetting this, on the other hand, runs of oil, timber, and some other bulk freights are much longer than the average. In summation, it seems probable that shorter empty runs for boxcars and longer empty runs for tank cars, gondolas, hoppers, and other special cars will tend to offset each other and that an empty haul will be similar in length to the average loaded one.

* Footnote references in arabic numerals are to sources listed in the Appendix.

With this assumption in mind, an approximation of average length of freight car movement from one loading to the next can now be derived from the Beshchev data. For every 10 cars moving loaded to a destination, 6 or 7 will be reloaded there without empty run. These will then have moved the average loaded distance of 748 kilometers from one loading to the next. But 3 or 4 cars (assume 3.5) will have to move an additional 748 kilometers each as empties to another station before being loaded again, making the average distance for these cars 1,496 kilometers from loading to loading. For the 10 cars a total loaded movement of 7,480 kilometers and an empty movement of 2,618 kilometers results, for a combined figure of 10,098 kilometers. This is 1,010 kilometers per car. Agreement with the 1,020 derived from calculations based on the Kaganovich speech is excellent.

5. Average Freight Car Turnaround Time.

Turnaround time is the total period that elapses from one loading of a car to the next loading, including time spent in loading and unloading, time in classification yards, and time in movement. Kaganovich, in his speech of 24 May 1954, places major emphasis on speeding up the turnaround time for freight cars as a means of handling the increased tonnages scheduled to move on the rail system in the 1955-60 period. He enumerates conditions that resulted in idling of cars at points of loading and unloading during 1953, or that caused a slowdown of movement of such cars en route, and demands that great improvement be made. He states that "the turnaround of a car can be speeded up through the utilization of all the above-mentioned reserves (meaning points where time can be saved), by about 40 hours or 25 percent, and not by 10 percent as proposed by the Ministry of Railways." He recognizes, however, that this is a difficult task and one which will take "several years" for realization.

If 40 hours is 25 percent of 1953 turnaround time, then the turnaround time must have been 160 hours, or 6.67 days, and Kaganovich must plan to reduce it eventually to 5 days.

Cross check is possible, for Kaganovich states in an earlier part of the same speech that "each car spends 62.7 hours idling at technical stations during the turnaround period." Technical stations are classification yards and distributing railheads. But Kaganovich also gives at another point a percentage breakdown of the total

turnaround time, from which we learn that the average freight car spends its time as follows: 10 percent at stations en route, 10.5 percent at distributing railheads, 28.8 percent at classification yards, and 30.3 percent at stations where loading or unloading work is carried out. By difference, actual time in motion must be 20.4 percent of the total.

It follows that if the 62.7 hours at technical stations is 39.3 percent (28.8 percent plus 10.5 percent) of turnaround time, then the latter is 159.54 hours, which is practically identical with the 160 hours previously obtained.

Further indirect check is possible through the computations for technical speed that will be found in the following paragraphs. Comparisons with data for earlier years found in Soviet technical works, and reported improvements in turnaround time from these earlier years to 1953 mentioned in various Gudok articles, also give a 1953 turnaround time almost identical with that above. From such comparisons and articles, CIA had estimated prior to receipt of the Kaganovich speech that a turnaround time of 6 days would be likely to be attained in the period 1954-59.

Beshchev, in his speech reported for 23 April 1954, indicates that turnaround time in 1953 was about 5 hours less than in 1952, and about 23 hours less than in 1950. A release dated 8 July 1954 from the USSR Central Statistical Administration covering the first 6 months of 1954, states that turnaround time was reduced slightly during the period, but that it did not meet the plan. This is a good indication that the 25 percent reduction called for by Kaganovich may be hard to attain, and that the 10 percent reduction called for by the railroad experts may be more realistic.

6. Average Technical Speed and Average Commercial Speed.

In his speech of 24 May 1954, Kaganovich deplores the fact that in past years technical speed (average train speed excluding stops) has not risen, and he blames this on over-generous norms established by the railroad lines and the Ministry of Transportation. He states that these authorities "when determining the time the train will run between stations, have allocated unnecessary margins in calculating running times." He states that for 1953, these margins comprise 3.2 percent and that their elimination will result in raising technical speed by 1 kilometer per hour. Then, by simple proportion,

technical speed should be 31.25 kilometers per hour, but this figure seems a little low, and it must be borne in mind that a slight rounding in Kaganovich's statistics can introduce a variation of as much as 10 percent in the derived technical speed. Dr. Holland Hunter of Haverford College, who has made extensive study of Soviet rail transport, calculates that the technical speed for 1950 was 33.8 kilometers per hour. 2/

Having in mind Kaganovich's statement that during recent years technical speed has not risen, a possible upper limit of about 35 kilometers per hour might be set. Data on hand do not allow a definite choice between a 31-kilometer speed and a 35-kilometer speed, since one cross check agrees best with the slower speed and a second with the higher figure.

In the chapter dealing with average length of freight car movement, distance travelled from one loading to the next is derived by using the 31.25-kilometer-per-hour speed. This is compared with a direct figure from a Soviet transportation expert and with a figure indirectly obtained by an approximation method, from certain data given by Beshchev. All agree very closely, but the agreement is destroyed if the 31.25-kilometer-per-hour figure is increased more than a few percent.

On the other hand, commercial speed (that is, speed including time spent at stations en route), is given by Kaganovich as 11.5 kilometers per hour less than technical speed. On the basis of a technical speed of 31.25 kilometers per hour, commercial speed should be about 19.75 kilometers per hour. Agreement with calculation is only approximate, however, and cannot be considered very satisfactory. The time spent at stations en route is given by Kaganovich as 10 percent of total time and the time actually spent in movement (derived as a residual by subtraction), is 20.4 percent of total time, making a combined figure of 30.4 percent of total time as applicable to commercial speed. Multiplying the 160-hour turnaround time total by this percentage, a combined figure of 48.64 hours results. This figure divided into 1,020 kilometers, which has already been calculated as the approximate average length of freight car movement, ought to give commercial speed. This calculation, however, makes such speed 20.97 kilometers per hour instead of 19.75 kilometers. The difference is only 6 percent, but it is hard to account for. Kaganovich can hardly be in serious error in his statement that the difference in technical and commercial speeds is 11.5 kilometers per hour. But failing such

error, the figure requires a technical speed of about 35 kilometers an hour in order that 11.5 truly represent the difference between technical and commercial speeds if the relative percentages shown for time in motion and time in stations are accurate. But a higher average speed for an identical time in movement implies a greater distance moved. Since loaded distance is fixed (being given by Kaganovich), the increase must be in empty haul. Using a technical speed of 35 kilometers per hour, the total distance traveled works out to 1,143 kilometers, while loaded haul is given directly by Kaganovich as 748 kilometers, making empty movement 395 kilometers, or 53 percent of loaded haul. This directly contradicts percentages of empty to loaded haul derived from Pavlov and Beshchev and gives total length of unproductive freight car movement of such magnitude that it certainly would have called for major denunciation in the speeches, if real. No such denunciation took place.

Tentatively, then, it may be assumed that there is some rounding error in percentages given or derived, and that true technical speed is perhaps a little greater than the 31.25 kilometers computed, but decidedly less than 35 kilometers. Calculation might also have been thrown off by some difference between Soviet definition of technical and commercial speeds as given in Russian texts and methods of compiling figures actually used by the Ministry of Transportation. Pending receipt of further data, the discrepancies cannot be resolved, and the figure of 31.25 kilometers per hour will be kept for technical speed for lack of a better.

7. Average Daily Carloading.

In the 24 May speech, Kaganovich discusses the underloading of cars and states that "a decrease of loading by 1 ton per car produces a transportation loss of more than 50 million tons annually." This means, of course, that more than 50 million cars are loaded per year. Soviet statistics on carloadings are kept in conventional 2-axle units irrespective of the real size of the cars actually handled. Therefore, it can be calculated that more than 137,000 2-axle units are loaded per day. The actual figure is probably slightly higher but is unlikely to be above 140,000 units, since otherwise the average load per car becomes a little low, and a rounded figure for annual loadings would not be 50 million but 51 million cars. A rough check is possible by use of Beshchev's statement that a 7-kilometer increase in average haul in 1953 decreased daily carloadings about 900 cars. Then, by proportion, 137,000 is to 900 as 160 hours turnaround time is to hours

ost, which makes the time loss 1.05 hours. Calculation of time taken or the 7-kilometer extra loaded haul, plus pro rata allowance for mpty haul and for added time in technical stations, gives a 1.1-hour oss from the greater distance. The agreement shows the 137,000 arloading figure cannot be far in error.

8. Station-to-Station Mileage.

Kaganovich, in the 24 May speech, says "our railway conveyor as spread over 120,000 kilometers." Context makes it virtually ertain that he is talking of total station-to-station distance, gnoring number of tracks and ignoring sidings. The figure is lentical with previous CIA estimates.

9. Average Freight Density.

In Kaganovich's 26 April speech, he says "we have railway outes on which the freight density reaches from 30 to 50 million ons per kilometer with an average of 7 million tons." Context akes it clear that the average refers to all lines combined. reight density, as here used, means the combined total tons of reight passing a point in both directions in a year and shows pproximately what percentage line utilization bears to line apacity.

A yearly average of 7 million tons is equal to 19,180 ons of freight per day. The average train carried in 1953 about ,100 tons of freight, thus an average of 17.4 freight trains must ave passed a given point in 24 hours. This would be roughly 9 reight trains in each direction per day.

The lines of maximum freight density are known from Soviet tatements to be lines in the Donets area and the western part of he Trans-Siberian line. For the latter, train counts exist, from hich it is possible to infer average train loads of about 1,500 ons of freight. Using this figure, and a frequency of approxi-ately 90 trains (both directions combined) per day also obtained rom observation, a freight density of 49,250,000 tons would be rived per year. Agreement with Kaganovich's figure of 50 million ons is excellent.

10. Number and Composition of Cars per Train and Average Gross and Net Weight of a Train.

Computations in this field rest partly on direct observations of Soviet trains, 3/ partly on data in Soviet publications, and partly on matter in the speeches under analysis. Kaganovich says in his 26 April speech that "We must have heavy trains and these need powerful engines -- these engines must pull trains weighing 3,500 to 4,000 tons instead of 1,800 tons as at present."

Three interpretations seem possible in regard to the last part of the remark. Kaganovich could mean that a present "heavy" train is 1,800 tons, but this is contrary to much evidence that trains of 3,000 or more tons often move on some coal lines and is also much below "norms" for freight carriage prescribed for trains on various lines as published in Gudok. He could mean that present engines are unable to pull trains weighing more than 1,800 tons, but this is contrary to numerous reports in Gudok of single engines hauling much more than this and also disagrees with "norms" seen for carriage on certain lines. Finally, he could mean that the average train now weighs 1,800 tons exclusive of engine and tender (which would not be counted in Soviet practice). This last interpretation seems plausible and will be used here as a basis for calculation.

Train counts by several observers in the Moscow region and on field trips have been roughly tabulated, and seem to show that an average freight train is made up of about 45 cars, 60 to 70 percent of which are 4-axle and 30 to 40 percent, 2-axle units. 4/ It seems reasonable to assume that trains on minor lines not seen by observers may average somewhat smaller, so for this computation an average train has been taken as 40 cars. It will first be assumed that such a train has 70 percent 4-axle cars, and that it is accordingly composed of twenty-eight 4-axle and twelve 2-axle units. Empty car travel is about one-third that of loaded travel in kilometers. On the average train, three-fourths of the cars would then be loaded and one-fourth would be empties moving to a loading station. We then have 21 loaded large cars and 9 loaded small ones, equal to 51 loaded 2-axle units per train. But an average load of 22 tons per loaded 2-axle unit is computable from the Kaganovich speech (50 million 2-axle units loaded per year and 1,121 million tons carried). The average

40-car train would then have a load of 1,122 tons of goods. If the ratio of 4-axle to 2-axle cars is only 60 to 40 instead of 70 to 30, the average load would still work out to be 1,056 tons of goods by analogous computation.

Assuming that 70 percent of the cars are 4-axle, twenty-eight 4-axle cars with an average empty weight of about 20.5 tons each, and twelve 2-axle cars each averaging 11 tons will have a combined car weight per train of 708 tons. Subtracting this from Kaganovich's 1,800-ton train weight figure, we get a freight load of 1,092 tons which is only 30 tons less than that derived from average load. Using a 60-40 car ratio, we get a load of 1,132 tons, or 76 tons more than that derived from load factors. The close agreement makes it seem likely that Kaganovich was in fact talking about the gross weight of the average train, and an estimate of 1,100 tons of freight per train seems therefore to be fairly reasonable, even though this is a marked advance over the probable average weights of a few years ago. Incidentally, the computations make a 4-axle to 2-axle car ratio of about 67 to 33 for 1953 seem plausible for the USSR, since this ratio gives minimum difference between the load derived from average weight per car and the load derived by subtracting empty car weights from the 1,800-ton train weight given by Kaganovich.

Some general considerations are also pertinent to this train weight problem. First, it seems clear from the speeches and from Gudok items of the last year or two, that increasing the number of cars in a train and the load per car -- that is, the total freight tonnage per train -- has been a major goal of the Soviet government for some time. It is unlikely that no progress should have been made in a field marked out for special attention. Progress up to 1953 was undoubtedly less than planned, however, for much of the furor over "above-norm trains" must have been merely paper compliance. Kaganovich implies as much. It was only in 1953 that the USSR apparently realized that it had been ordering that heavier trains be run while simultaneously paying yard men by the number of trains sent out, rather than by their weight. Obviously, sending 2 heavy trains rather than 3 light ones meant less pay for the yard men, and paper compliance with an order for a certain number of heavy trains merely meant that some trains were made heavier than norm, while others were correspondingly underloaded. The change in method of remuneration effective 1 July 1953 may have had appreciable result on the weight of trains dispatched last year.

Another factor bearing on the operation of heavy trains has been the growth in the number of 4-axle cars. Inadequate siding lengths and restricted yard trackage are limitations on the size of trains that can be handled on many Soviet lines and are factors commented on in some recent minor speeches. Two 2-axle cars take up about 15 percent more track length than does a 4-axle car of equivalent carrying capacity, according to Soviet technical works. It follows that as larger cars take the place of the small ones, trains can carry more without lengthening yards and siding trackage, and it is known that the percentage of 4-axle cars has grown.

It seems a reasonable inference from the Kaganovich speech that the USSR now loads almost as much freight into an average train as does the US.* The comparison is a little misleading, however, since US railroads handle much greater percentages of light-loading manufactures and less-than-carload freight, move much produce by refrigerator car, and also indulge in a far greater proportion of hauling of empty cars, in line with the different US idea of true economic efficiency. Since Kaganovich is now demanding a great increase in Soviet consumer goods traffic, including increased refrigerator car movement, this may in the future cancel out to some degree the emphasis being placed on heavy trains. But Soviet railroads are at the present time still essentially haulers of bulk freight and may therefore surpass average US train loadings in the near future. This will not mean that they have surpassed US lines in efficiency, but that they serve a more primitive economy.

Before leaving the subject of trains, it may be well to point out that the constant barrage of propaganda in the Soviet press about so many thousands of heavy trains dispatched and about surpassing the "norm" for freight carriage is often quite misleading. In the first place, "norms" differ for each line, and probably for various types of bulk commodities moved, and surpassing a "norm" therefore means almost nothing concrete, especially since they can be raised or lowered without public notice at will. Where we know a "norm," the information is useful, and data have been collected from Russian newspapers and broadcasts indicating some specific ones, varying from a definite 1,300 tons of freight per train for a line in the Moscow area to a suspected norm of 3,000 tons of freight per train for coal trains on the Pechora railroad and one of about 1,000 tons for certain Baltic area lines. Beshchev said on 5 May 1954 that weight norms have been substantially increased for 1954.

* The US average was 1,176 metric tons of freight per train in 1952.

Furthermore, there is strong evidence that much of the "above-norm" transport has hitherto been accompained by a drop in tonnage lifted by other trains on the same lines, so that a statement that 30 percent of the trains were "above-norm" on some particular railway does not mean that on the average the norm for haulage per train was exceeded. The general context of an article may convey an impression that the reported attainment was real or that it was merely traffic juggling to evade penalties for noncompliance, but in most cases the articles do not give enough facts to form a complete and honest picture. The statistics cited may be the truth -- they usually are -- but they are not the whole truth.

Pravda gives a case in point. 5/ The stationmaster of the Sverdlovsk Routing Yards is quoted as saying that in his yard heavy-load trains carried 400,000 tons of freight above the plan during the first quarter of 1954 but underloaded trains failed to meet their norms by 600,000 tons, and that as a result the station failed to fulfill its plan for the quarter.

11. Number of Cars in Actual Use.

By Soviet statistical definition, the number of cars in actual use at any given moment is derived by multiplying average carloadings per day by average turnaround time in days. Average carloadings for 1953 were over 137,000 (in 2-axle units) and a turn-around time of 6.67 days has been found. It follows that about 913,000 conventional 2-axle units were in use on the Soviet Russian-gauge railways at any given time in 1953. The figure excludes cars on narrow-gauge lines belonging to the Timber and other ministeries and not under the Transportation Ministry and also excludes a relatively small number of Russian-gauge cars owned by industrial enterprises and not at the time on the general railway net, as well as cars used for some railway operations. Error through such exclusion is not likely to exceed 2 to 4 percent. No correction for this has been made, because the Soviet statistics under analysis exclude these items, and inclusion here would destry consistency between the various figures.

In reducing the 913,000 total to actual cars, assumptions must be made as to the relative proportions between 4-axle and 2-axle cars employed. We have Beshchev's statement that "half of the total car park is now 4-axle units," but the total park obviously includes cars laid up for repairs or laid up in reserve, as well as

the fleet actually in use, and the 4-axle cars are on the average much newer and in greater demand than are 2-axle ones. Another Soviet announcement of 2 October 1952 says that "more than half the freight cars in use -- are 4-axle." 6/ One remark applies to total park in 1954, and the other to fleet in use in 1952. Consideration must also be given to the fact that freight cars built in the latter part of 1952 and 1953 will have been 4-axle units, while retirements will have been essentially 2-axle ones, so that the fleet now in use will be much more a 4-axle one than it was in 1952 when Gudok commented. Direct observation of Soviet trains in 1953 and 1954 indicates that as of recent months about 60 to 70 percent of the active fleet consists of 4-axle cars, and, for reasons already given, an average of 67 percent for 4-axle cars seems reasonable for 1953.

Assuming 67 percent of the active fleet to be 4-axle units, totals of 366,000 4-axle cars and 181,000 2-axle cars in operation at any given moment are derived, or a combined total in physical units of 547,000 cars in use.

It is of interest to note that the figure for cars in use at any one time has increased at a much smaller rate than has the figure for tons of cargo originated. Decreased turnaround time -- increasing the tonnage carried per car per year -- accounts for most of the difference, but the increased percentage of 4-axle cars is also significant, since the 4-axle car actually carries more than 2 average 2-axle ones. Heavier loading per car is also a factor.

12. Estimated Total Freight Car Park.

The speeches contain little data useful for deriving the total freight car park, even though much material on cars is presented. Nevertheless, it seems possible to give rough approximations. When Beshchev says that half the park is now 4-axle units, he probably means some figure in the 50 to 55 percent range. A figure of 50 percent will be here assumed. He also stated that there are delays in effecting repairs, and this may imply larger than average layup of cars.

Assuming an equal number of 4-axle and 2-axle cars in the total park, and assuming a 5-percent addition to the number of 4-axle cars in the operating fleet to allow for cars laid up for repairs, and another 5 percent for a small inactive reserve, a total 4-axle park may be derived as follows:

4-axle cars in operation	366,000
4-axle cars laid up for repairs or in reserve	37,000
Total 4-axle cars	403,000

On the assumption based on Beshchev's speech that there is an equal number of 2-axle units, there must also be 403,000 2-axle cars in existence. If the figure of 181,000 2-axle cars, which has already been obtained for the active fleet, is subtracted from 403,000, a total is derived giving 222,000 2-axle cars laid up for repair or for an emergency reserve, with most of the total probably in the reserve category. It can be seen that the emergency reserve consists in all probability mostly of 2-axle cars, and this conclusion is not affected by any reasonable increase in 4-axle cars assumed laid up in such reserve status, since in order to preserve the 50 to 50 ratio in total car numbers, one must assume an addition of equal numbers of 2-axle cars to counter similar numbers of 4-axle ones so allocated.

Expressed in conventional 2-axle units, the total Soviet freight car park may be of the order of 1,209,000 cars, made up of an active fleet of 913,000 cars and an inactive one of 296,000 cars. It is unlikely that the park exceeds 1,359,000 units, since this would imply an inactive fleet of 87,000 4-axle cars and 272,000 2-axle cars, or a total of 446,000 2-axle units. This would give about one-third the total car park as laid up for repairs or as a reserve, and by Western standards this would be excessive. However, it is known that some sort of reserve of cars in good condition does exist.

If the ratio of 4-axle to 2-axle cars in the total park is 55 to 45 percent, the minimum number of cars may possibly be as low as 1,136,000 2-axle units.

The above figures imply a total freight car park that might be up to 10 percent smaller than was given by a previous CIA computation of 1,370,000 2-axle units. These figures also imply a rather low rate of growth in the last 2 or 3 years. This is not inconsistent with recent increases in tons carried and merely means that additions of new 4-axle cars may have been almost balanced by the scrapping of worn-out 2-axle cars formerly carried on the inventory but of doubtful value. It is known that as of 1947

the car inventory was inflated with much laid-up stock that had suffered war damage, and much of this may have been scrapped rather than repaired.

In connection with the computation of the Soviet freight car park and its allocation as between active and reserve fleets, attention is called to the fact that it is not known whether Beshchev was considering the total Soviet Russian-gauge figure or only the cars owned by the Soviet railroads when he was discussing car supply. Some Russian-gauge cars are owned by the steel and other industries. Part of the total listed as "inactive" in the above tabulation, therefore, really might be cars in use around steel mills or mines, but not moving on the tracks under railroad jurisdiction. Since by its derivation the "active" figure definitely excludes cars not under railroad jurisdiction and the total figure derived from consideration of percentages may be for the entire USSR and not for the railroads alone, a subtraction of "active" from "total" may not give railroad-owned inactive, but a mixed residual. The error cannot, however, be large.

13. Relative Importance of Rail Transport Compared with Other Methods of Transport.

For many years Soviet rail traffic has produced about 85 percent of the annual total ton-kilometers, as compared with about 11 percent furnished by water transport. Plans have been made repeatedly to shift part of the movement of bulk commodities to river or sea transport, but the plans never seem to materialize. Kaganovich again proposes to induce greater use of combination rail-water movements, but at the same time Beshchev and others promoting combination movements furnish data which show that for much of Soviet industry the rate advantages obtainable are minor, while the delays in getting goods may be great. It is not thought that the campaign to shift a larger percentage of traffic to the waterways will succeed unless rate savings are made more attractive, and penalties for delayed industrial output are reduced.

Particular attention is given in the speeches to cotton movement, which was once taken by the Caspian and Volga and now is essentially all-rail, and to timber hauling on railroads paralleling the Volga.

No mention whatever is made of pipeline transport in the speeches, and truck transport receives only moderate attention. It is, however, stated that truck movement is scheduled for increase, and that trucks now are idle an undesirable proportion of the time.

The Kaganovich speech shows that in 1953, traffic in ton-kilometers was divided between various media as follows: rail, 84.5 percent; river, 6.3 percent; sea, 5.1 percent; other (truck, pipeline, air), 4.1 percent.

14. Container Traffic.

In 1953, less than carload freight increased 30 percent according to Beshchev, and he implies that the major growth is still to come. Kaganovich lays great stress on promoting larger movements of consumer goods and in discussing the future says, "It is necessary that we should have not 130,000 containers as at present, but 1 million or 1.5 million containers." Containers are very commonly used to carry less than carload freight.

Obviously a great expansion or movement of small manufactured items is planned, much of which will be consumer goods. Along with this go plans for increasing the supply of refrigerator cars and for speeding their turnaround, so that the Soviet public may get more meat, fresh fish, butter, fruits, and vegetables.

Quite clearly, an increase in the Soviet standard of living is intended, or at least promised, and this may indicate both a need or desirability to conciliate the public and show results from Communism, and a lack of plans for major aggression in the next few years. It is emphasized, however, that consumer goods must not move at the expense of basic raw materials. Kaganovich states that preferential categories in goods movement have been abolished and that all commodities will in future be treated alike as equally entitled to transport. Then, after devoting much time to showing how movement of consumer goods will in the future be fostered, he warns the railroad men that if they do not move the coal, iron, and other key items at the expense of lesser items, there will be trouble. In other words, the categories of preferred and secondary items are abolished in name and maintained in fact.

15. Norms.

A study of Soviet press items indicates that norms for weight of individual trains operated vary from region to region, and that they are also changed from time to time -- of course, usually upward.

For example, it is stated that the Baltic Railroad System's 1953 carloading plan was completed by 25 December; that 23,000 above-norm-weight trains were operated, hauling nearly 6 million tons of freight above the norm, and that to haul this above-norm freight an additional 6,300 trains would (otherwise) have been needed. 7/

This works out to a norm for freight of about 950 tons per train and indicates that the above-norm trains of this railroad averaged 1,210 tons of freight in 1953. Norms for the Baltic area could be expected to be lower than the Soviet average, since mining and heavy industry are not prominent.

Another article, dated 13 January 1954, again reviewing 1953 rail operations for the Baltic Railroad, stated that to haul the freight (of unspecified amount) carried above norm, an additional 5,670 trains of normal weight would have had to be dispatched. 8/ Allowing for probable carriage from 26 through 31 December, this would indicate a norm for freight per train of about 1,075 tons. Between these two dates, the norm for the Baltic Railroad was probably raised, since Beshchev stated that norms for Soviet trains had been raised for 1954.

It might be reasonable to assume that someone writing the news stories asked "how many normal trains would the above-norm weight freight have required," and that in December the figure was worked out using the then-current norm, while in January the new one was used, without realization that it would have been inapplicable to past performance. An alternative theory that a recomputation of 1953 performance, adding in another 6 days, gave a much smaller total as carried by above-norm trains, seems less likely. Such an interpretation is partly borne out by the fact that the saving through operation of above-norm trains is quoted as "nearly 2 million rubles" in both articles, which might imply that the tonnage carried above norm was about the same in both computations. To get a 10-percent reduced train number with the same norm for carriage, the tons

carried would have had to be reduced 10 percent on adding in carriage for the additional days and recomputing. But this would have changed the saving made, so that a different figure for this could have been expected.

The third alternative -- that the figures are mere fiction -- seems unlikely in view of cross checks that have been made on other Soviet railroad data. These checks seem to show that information published is usually accurate, although it may not be complete.

IV. General Comments on 1953 Operations.

1. Locomotive Performance.

The speeches under analysis give much data on locomotives, but it has not been possible as yet to get present locomotive numbers or average daily runs therefrom. It seems clear, however, that in spite of campaigns to get more work out of engines and to haul larger trains with fewer locomotive numbers, the engine supply is basically adequate and the average age of equipment low. Kaganovich states that 82 percent of the work is being done by locomotives built since 1935. Blazhenov states that the daily productivity of US locomotives is only 70 percent of those of the USSR. 9/ Beshchev says that "at the present time, the locomotive park is significantly larger than pre-war." Comments on the plan for building more powerful locomotives to handle heavy trains have already been given.

2. Miscellaneous Data.

Fuel consumption and operating cost data are found, but in forms a little too ambiguous to admit of useful calculation. Some items follow:

a. "Increasing the weight of the train by only 5 percent increases the capacity of a section by 9 percent and decreases by approximately the same amount the demand upon the locomotive park, and reduces fuel expenditure by not less than 2 percent." 10/

b. "Should the weight of freight trains be raised by only 1 percent all over the country, the annual exploitation expenses of the railroads would be reduced by about 90 million rubles. Should the run of every locomotive increase by only 5 kilometers per day, the annual economy would amount to 100 million rubles. Heavier

trains mean also an economy of fuel. An increase in the weight of train loads by 10 percent would mean a corresponding increase of fuel consumption of only 6 percent." 11/

c. "Although the average daily freight locomotive run in 1953 increased as compared with 1952, the 1953 plan was not completed. Fuel consumption per ton-kilometer was decreased 3 percent as compared with 1952." 12/

The average length of haul by commodities for 1953 was reported to have been as follows: timber, 1,193 kilometers; grain, 949 kilometers; ferrous metals, 1,101 kilometers; cotton, 2,375 kilometers; and mineral building materials, 328 kilometers. All of these are items for which length of haul is cited as having increased to an excessive degree. Statistics are not given for coal and petroleum, so it may be inferred that they either met or only slightly exceeded planned lengths of haul. Nevertheless, for coal, complaint is made by Kaganovich that cross hauls or those of undesirable length amounted to 13 million tons and cost 350 million rubles. Thirty percent of all coal was hauled over 1,800 kilometers and 7.1 percent over 2,600 kilometers. Kuznetsk coal went as far as Moscow.

The cost of shipping petroleum products over the Trans-Siberian Railroad to the Far East was more than 1 billion rubles in 1953. From rate data at hand, this would imply shipment of about 2.3 million tons of petroleum products. Some data on movements of crude oil and fuel oil in the Volga region are given by Kaganovich, and it may be possible in the future to work out freight flows therefrom.

In 1950, 76 percent of freight cars had automatic brakes. Beshchev states that now 81.4 percent are so equipped. Automatic couplings were on 52.5 percent of the freight cars in 1950. Beshchev shows that the figure is now 66.5 percent. Failure of car couplings while trains are moving are apparently still frequent, however, to judge from a remark of Kaganovich.

It has been stated that "as a result of the operations of above-norm-weight trains, the average weight of a freight train has grown in 1953 by 20 percent in comparison with 1940." 13/ The same source says that in 1953 only 22 percent of all freight trains were above-norm weight; the others were of normal weight or below. 14/

Material on railroad finances and on labor is given by Kaganovich and Beshchev, but is a little too general for useful statistical analysis. It is, however, clear that the railroads were profitable in 1953 and that the efficiency of labor is increasing. A higher proportion of the labor force seems to be employed in rail transport in the USSR than would correspond to US practice. Much is made of housing developments for railroad employees, but inspection of the claims shows that, even if true, they represent almost nothing per worker.

It is planned that capital investment for 1954 will be 11.6 billion rubles for the railroads, 3.6 billion rubles for river and sea navigation, and 2.5 billion rubles for truck transport. No mention was made of air transport or pipeline plans. These figures are higher than for 1953 and represent a relative increase in allocations to waterborne movement, in line with Kaganovich's renewed demand for shifting some of the burden of bulk freight movement from rail to water-rail hauls.

Electrification is scheduled for 13,000 kilometers of line by 1960, centering mainly in the Volga-Urals-West Siberia area.

The general tone of the speeches, the information furnished, and the inferences which it has been possible to draw, combine to give the impression that 1953 Soviet railroad performance was on the whole satisfactory, although operations were at a level which somewhat strained the system. "Bolshevik self-criticism" was much in evidence in the speeches, but seemed to be the normal Communist nagging and slave-driving by higher officials, without any overtones of real dissatisfaction with past performance. It is clear, however, that the April-May meetings were considered more important than those in other recent years. The inference seems reasonable that the meetings were not so much to jack up a failing industry as to serve notice that drastic changes in freight volume and character would soon take place, and that these would require heavier and faster trains running on tighter schedules, and with reduced time in yards and terminals. The railroads were warned about this, and means for meeting the problem were pointed out. An undertone of basic confidence that the problem could be solved is discernible. It is believed that although the planned railroad traffic expansion will seriously tax Soviet ability over the next few years, the problem will be successfully met.

V. Approximate Tonnage and Value of Goods Transported, by Commodity Categories.

In the Kaganovich speech of 26 April 1954, certain statistics are given about the total value of Soviet production, plus some information on tonnages of the important bulk commodities handled by the railroads.

Kaganovich says "the lowering of industrial production cost by only 0.1 percent produces a saving of more than 500 million rubles." This implies an industrial production cost of over 500 billion rubles.

He also states that "expenditures incurred by ministries on goods transport in 1953 amounted to about 75 billion rubles, of which 41.3 billion was for rail transport."

There is also the additional statement that "at any given moment there are actually 11.5 million tons of important goods valued at about 26 billion rubles traveling on the railroads ..." A figure of 1,121 million tons of goods shipped per year has already been derived from the statement, and a value of 2,261 rubles per ton is easily found. The total value of Soviet rail shipments for 1953 must then be 2,535,214 million rubles, which is about 5 times the reported cost of industrial production. Some explanation seems necessary.

Obviously, there must be great duplication, through carriage and counting of the same manufactured items or their component parts several times. This duplication is a major factor. Also, part of the difference, of course, can be accounted for by the value of raw materials and foodstuffs hauled. As will be later seen, however, this value is not really large. Another, and perhaps more important factor, may be the Soviet write-up of manufactured goods costs to include a generous profit margin before sale. That is, the comparison made here is between a reported cost of manufactures and a value of items moved on the railways.

One means of clarifying the problem is to list the principal bulk commodities that were not likely to have been reshipped to any large degree; to give what can be found about total tons probably moved, unit value, and total value; and to subtract total tons and total value from figures for all commodities combined that are listed above, and then to study the residuals.

The following table* gives the present best estimates of the tonnages and values of the major bulk commodities moved in 1953. It will be noted that, by this computation, the bulk commodities are nearly 76 percent of the total tonnage moved on the Soviet railroads. Industrial bulk commodities are about 70 percent, and bulk agricultural items about 6 percent of the movement. For industrial raw materials, a check is possible, since Krivornelko states that bulk industrial commodities make up 70 percent of the total railway movement. 15/ For agricultural items, an article states that the proportion that agricultural products bear to the total rail traffic has decreased since 1913 but is now still over 10 percent, and that the actual volume of agricultural items shipped has risen 10 percent since 1940. 16/ Agricultural items as defined in this article include flour, meats, vegetables, and other items that are tabulated in the Table as part of the "manufactures" class. The calculation, therefore, that the enumerated agricultural bulk commodities make up only 6 percent of the traffic is quite consistent with the fact that all agricultural items combined were 10 percent of the 1953 total.

VI. Total Freight Revenue for 1953 and Average Freight Revenue per Ton-Kilometer.

Kaganovich states in his 26 April speech that "expenditure incurred by ministries on goods transport in 1953 amounted to about 75 billion rubles of which 41.3 billion was for rail transport." Railroad freight revenue from other than government traffic should be small since it will probably consist mainly of minor movements of private effects, some shipment by cooperatives, and that part of the overland trade between China and the European Satellites that may be carried direct, without Soviet intervention as middleman.

As a rough approximation, railroad freight revenue might be about 42 billion rubles. Then, since freight carriage amounted to 840 billion ton-kilometers, the average revenue per ton-kilometer might have amounted to a minimum of about 5 kopecks.

In view of the incomplete nature of the data now on hand, a definite finding cannot at this time be made as to the significance of this 5 kopeck figure. However, N.G. Vinnichenko gives the percentages of railroad revenue planned to be contributed in 1950 by all the important bulk commodities. From this it is found that "other" items (mainly

* The table follows on p. 29.

Estimated Volume and Value of Bulk Commodities
Originated on Soviet Railroads a/*
1953

Commodity	Amount (Metric Tons)	Value per Ton (Rubles)	Total Value (Rubles)
	313,900,000	78.8	24,735,000,000
?it Props, Crossties, etc.)	85,600,000	110.0	9,416,000,000
:r	23,400,000	202.0	4,727,000,000
ı)	56,000,000	50.0	2,800,000,000
:r)	8,000,000	237.5	1,900,000,000
laterials			
:avel, Stone, Flux, Brick)			
ıctured	25,000,000	200.0	5,000,000,000
Gravel, etc.	125,000,000	20.0	2,500,000,000
	13,300,000	49.7	661,000,000
	44,800,000	50.0	22,400,000,000
	59,500,000	49.0	2,915,000,000
	6,000,000	150.0	900,000,000
	3,000,000	400.0	1,200,000,000
ap	10,000,000	200.0	2,000,000,000
	48,000,000	95.0	4,560,000,000
ts	9,000,000	30.0	270,000,000

otnote for the Table follows on p. 30.

Estimated Volume and Value of Bulk Commodities
Originated on Soviet Railroads a/
1953
(Continued)

Commodity	Amount (Metric Tons)	Value per Ton (Rubles)	Total Value (Rubles)
Sugar	3,000,000	300.0	900,000,000
Cotton			
Raw	1,600,000	3,000.0	4,800,000,000
Ginned	1,000,000	10,000.0	10,000,000,000
Potatoes	4,000,000	120.0	480,000,000
Mineral Fertilizers	6,000,000	350.0	2,100,000,000
Salt	5,500,000	50.0	275,000,000
Total Bulk Commodities	851,600,000		104,539,000,000
Average Value per Ton			123
Other Commodities (Manufactures and Processed Foodstuffs)	269,400,000		2,430,675,000,000
Average Value per Ton			9,023
Total Commodities	1,121,000,000		2,535,214,000,000

a. Coal and timber estimates are derived from data given by Kaganovich. Estimates of other other commodities are those of CIA commodity analysts.

manufactures) at that time were scheduled to yield 39.3 percent of the revenue total. It is also found that average freight revenue was planned to be 5.40 kopecks. But two major rate reductions took place between 1950 and 1953, cutting freight rates by a total of about 20 percent, so that if the composition of freight traffic was the same for 1953 as it was planned to be for 1950, the average rate for 1953 ought to have been about 4.32 kopecks per ton-kilometer. It is thought that there was on an average only a very slight differential reduction in favor of low-rate bulk commodities, so it appears that the composition of freight traffic has changed and that manufactured items and processed foodstuffs may now make up over 50 percent of the railroad revenue total. That is, the railroad revenues give evidence -- even if at present only tentatively -- that the value of the output of manufactured items in the USSR has increased at a much greater rate in the last 3 years than has that of crude materials, even though the latter has grown very substantially. It also seems likely, from the average value of manufactures per ton shown in the preceding table, that the manufactures now moving are of rather highly processed types. These findings tend to bear out Soviet claims regarding the growth of industry.

Verification of the basic reliability of at least some Soviet statistics and economic claims is one of the more important products of this memorandum.

BLANK PAGE

APPENDIX

SOURCES

Most of the information in this memorandum is based on speeches by Lazar Kaganovich and B.P. Beshchev (see Foreword). All references in the text to these speeches are documented as follows:

Lazar Kaganovich, "Speech before the Supreme Soviet," Soviet Home Service Broadcast, 26 Apr 1954 (FBIS Daily Report No. 82, 28 Apr 1954. U.)

Lazar Kaganovich, "Speech before the Railroad Workers," Soviet Home Service Broadcast, 24 May 1954 (FBIS Daily Report No. 104, 25 May 1954. U.)

B.P. Beshchev, "Speech," reported in Gudok, 23 Apr 1954, and another reported in Gudok, 5 May 1954. U.

Because of the numerous references to these speeches in this memorandum, individual source citations for each reference to them will not be given. Documentation of all other sources will be given in this appendix.

Evaluations, following the classification entry and designated "Eval.," have the following significance:

Source of Information	Information
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

Evaluations not otherwise designated are those appearing on the ted document; those designated "RR" are by the author of this port. No "RR" evaluation is given when the author agrees with the aluation on the cited document.

---

1. Gudok, 11 Feb 1954. U. Eval. RR 2.
2. H. Hunter, Soviet Transportation Policy, Haverford College. U. Eval. RR 2.
3.
4.
5. Pravda, 5 May 1954. U. Eval. RR 3.
6. Gudok, 2 Oct 1952. U. Eval. RR 2.
7. Sovetskaya Latviya, 26 Dec 1953. U. Eval. RR 2.
8. Ibid., 13 Jan 1954.
9. Blazhenov, "Speech," FBIS Daily Report No. 79, 23 Apr 1954. U. Eval. RR 2.
10. Gudok, 7 May 1954. U. Eval. RR 3.
11. Blazhenov, op. cit.
12. Pravda, 31 Jan 1954. U. Eval. RR 3.
13. Gudok, 6 May 1954. U. Eval. RR 2.
14. Ibid., 8 May 1954.
15. Krivornelko, Organization of Railroad Car Management, 1950. U. Eval. RR 2.
16. Voprosy Ekonomiki, No. 1, 1954. U. Eval. RR 2.