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HIGHWAY TRANSPORT IN THE USSR

31 January 1952

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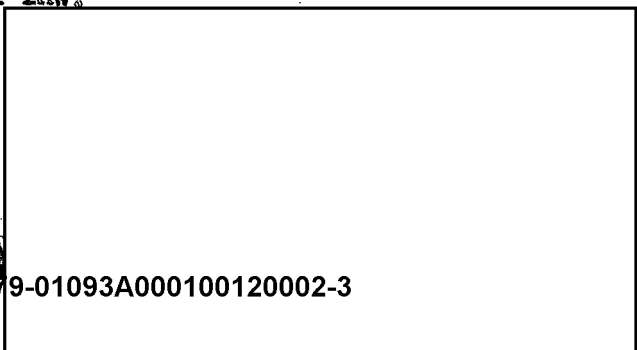
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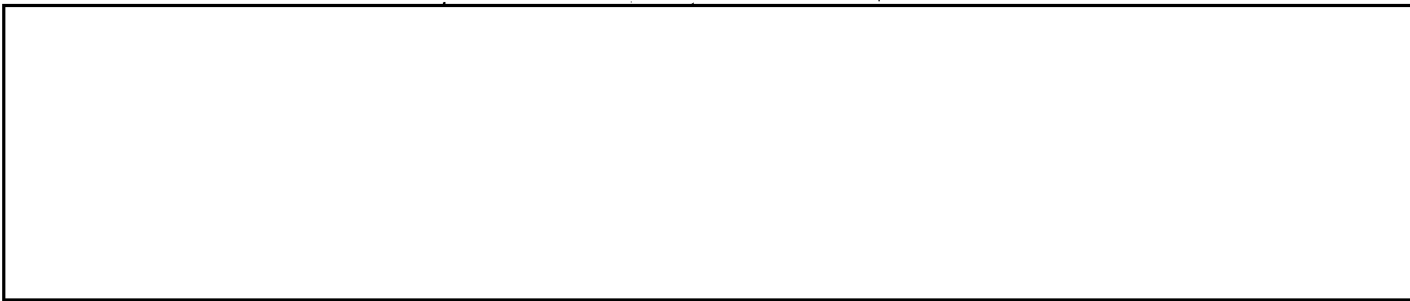
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HIGHWAY TRANSPORT IN THE USSR

Summary

Highway transport in the USSR is a supplementary economic service, the main function of which is the short-haul movement of freight. In performing this function, Soviet highway transport has in recent years handled a larger annual tonnage than the railroads and inland waterways combined, although, because of the short average length of haul, the annual ton-kilometer performance of highway transport has not yet exceeded 3 percent of total inland freight traffic. In the 1950 Plan, highway transport was scheduled to account for 25.4 billion ton-kilometers, or 4.2 percent of the total, but only 20.5 billion ton-kilometers actually were carried.

Since the planned mission of highway transport has never encompassed long-distance movements, the Soviet road network has remained largely undeveloped outside urban areas. The network now includes about 3 million kilometers of roads, of which only 50 percent have foundations and only from 6 to 8 percent are hard-surfaced. The construction of a small number of paved cross-country highways was undertaken after 1945, particularly in the European USSR, but military rather than economic considerations have been paramount in the initiation of these projects. The terrain, climate, and shortages of heavy equipment, stone, road-binding material, and trained highway engineers all have retarded the development of the road network.

Estimates of the size of the Soviet motor vehicle park vary widely, but it is likely that there are now 1.5 million to 2 million motor vehicles in the USSR, about 90 percent of which are trucks. Although the availability of fuel has not been a factor limiting motor transport operations, there has been increasing emphasis recently on the production of vehicles equipped to burn nonliquid fuels. The extent to which animal-drawn vehicles are used in highway transport is unknown, but the quantity of traffic carried in this way, particularly in rural areas, must be substantial.

Motor vehicle production facilities in the USSR have expanded rapidly in recent years. The types of vehicles produced since World War II are well adapted to the operating conditions prevalent in the USSR. Generally inadequate maintenance and repair facilities, shortages of spare parts, and inefficient vehicle operating procedures, however, have prevented utilization of the motor vehicle park at a level equal to its potential capacity. Moreover, military allocations absorb a large proportion of current production, thus affecting unfavorably both the quantity and condition of vehicles available for civilian purposes. Nevertheless, the Soviet motor vehicle park is believed to be adequate in terms of the traffic requirements placed upon it. The extent and condition of the highway net and the traditional dependence of Soviet

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shippers on rail transport are the major factors hindering fuller development and more widespread employment of motor transport.

I. Introduction.

The term "highway transport" as used in this report includes motor and animal, urban and interurban, and freight and passenger transport. The report deals primarily, however, with motor transport.

1. Importance.

The primary function of highway transport in the USSR is the short-haul movement of freight between railroad stations, ports, airports, and industrial installations in cities and the haulage of farm supplies and agricultural produce to and from outlying suburban areas. Except in the suburban areas of the major cities, there are few modern highways suitable for trucking operations, a factor which has restricted the development of long-distance motor transport. On the basis of total tonnage carried, Soviet highway transport in most years since 1937 has handled more freight than the railroads and inland waterways combined. On the more significant basis of ton-kilometers, however, highway transport probably has not accounted for over 3 percent of total inland freight, although under the Fourth Five Year Plan (1946-50) the 1950 goal for highway transport was 25.4 billion ton-kilometers annually, or 4.2 percent of the total inland freight traffic. Only 20.5 billion ton-kilometers, however, actually were carried. Generally speaking, therefore, highway transport in the USSR is a supplementary economic service. 1/ *

2. Historical Development.

The expansion and improvement of highway transport never has had high priority in Soviet planning and practice, although it is being given increasing emphasis. The facilities inherited from Czarist Russia included only a few disconnected sections of good road, which had been built primarily for military operations. No large-scale construction of improved roads was undertaken before 1928, and subsequent construction, while improving radial transport in the vicinity of large towns, has contributed little toward the development of an integrated nation-wide road system. 2/ Motor vehicle production, nonexistent during the first 7 years of the Soviet regime, received strong impetus in 1929 with the signing of a contract with the Ford Motor Company. In 1932 the Gor'kiy Motor Vehicle Plant, built under the terms of this contract, began production on a large scale, and Soviet output increased in that year from 5,000 to more than 20,000 motor vehicles annually. Since then, production facilities have steadily expanded, and output has increased to about 400,000 motor vehicles a year. 25X1

S-E-C-R-E-T3. General Description of Network and Facilities.

Except in the vicinity of the major cities of the European USSR, there are few all-weather highways suitable for motor transport. Most Soviet roads are of primitive construction, and severe weather conditions cause deep ruts and frost heaves which render many of the roads impassable for motor vehicles during much of the year. The accelerated motorization of the Soviet Army in recent years has intensified the need for improved, all-weather highway connections. Although postwar rehabilitation and construction have been directed toward the development of such a network, certain physical handicaps have prevented expansion of the road system at the planned rate. For example, shortages of stone and binding material and the instability of the soil in many areas of the USSR make initial road construction costly and constant maintenance and repair necessary. ^{3/} The inventory of motor transport vehicles has been expanding, but production of replacement parts and construction of motor vehicle repair and servicing facilities have failed to keep pace.

4. Organization.

Construction, heavy repair, and maintenance of national highways are directed by the Main Administration for Highways in the Ministry of Interior (MVD). Responsibility for highway construction probably was given to the MVD because that Ministry has a large labor pool at its disposal, and the USSR has been heavily dependent on manual labor for road construction and maintenance. The acute shortage of road-building equipment has been somewhat alleviated only recently. With the exception of those transport vehicle pools at the disposal of various industrial and government organizations throughout the USSR, the operation of motor vehicles engaged in transport is controlled mainly by the Ministries of Motor Transport of the individual Republics, which also supervise construction and maintenance of highways of Republic importance. Each Ministry directs motor transport operations, such as urban passenger transport and miscellaneous local trucking, within the boundaries of its own Republic. Highway transport statistics are compiled by the individual Republics, except for traffic carried in vehicles of the above-mentioned government organizations. The Central Statistical Office in Moscow maintains statistics on all highway transport traffic.

II. Volume of Traffic.1. Motor Freight.

The limited material available on Soviet motor freight traffic is summarized in the following table covering the period of the first four Five Year Plans:

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Soviet Motor Freight Traffic ~~W~~
 Selected Years from 1929 to 1950

<u>Year</u>	<u>Freight Originated (Million Metric Tons)</u>	<u>Percentage of Total Inland Freight Originated</u>	<u>Average Length of Haul (Kilometers)</u>	<u>Turnover (Billion Ton- kilometers)</u>	<u>Percentage of Total Inland Freight Turnover</u>
1929	18.0	10.0	10.8	0.19	0.1
1933	125.0	29.0	10.8	1.35	0.7
1937	799.6	58.0	10.0	8.00	2.0
1940	855.2	56.0	10.5	8.98	1.9
1941 W	903.0	N.A.	10.4	9.37	N.A.
1945	316.5	43.0	13.8	4.38	1.2
1946	458.9	N.A.	13.8	6.35	N.A.
1950 (Plan)	1,814.0	63.0	14.0	25.39	4.2

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Estimated Soviet Motor Freight Turnover
 1947-50

<u>Year</u>	<u>Billion Ton-kilometers</u>
1947	11.1
1948	13.6
1949	17.4
1950	20.5

Although the trend in motor freight turnover indicates a continued increase in the employment of motor transport, the increase has not been sufficient to produce any substantial change in the general pattern of Soviet

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inland freight movements. No reliable estimates of tonnage originated and average length of haul can be made for the years 1947-50 on the basis of information currently available. However, [redacted] agree that between 50 and 60 percent of all freight transported (tonnage originated) is handled at one time or another by motor transport. 5/ Official Soviet policy regarding motor freight transport has been aimed at the continued development of short-haul trucking as a supplement to railroad transport and at increasing the length of truck hauls. In January 1949, some freight rates were readjusted in order to encourage short-haul movements by truck. Railroad freight rates for distances of from 50 to 150 kilometers were "considerably" raised, while motor freight rates were correspondingly reduced. In January 1950, trucking rates in the RSFSR (Russian Soviet Federated Socialist Republic), the major constituent Republic of the USSR, again were revised, with an additional reduction of 16 percent on movements for distances of less than 50 kilometers and from 20 to 25 percent on movements of more than 50 kilometers. This measure indicates that some difficulty has been encountered in diverting the 50- to 150-kilometer shipments from the railroads to highway transport. 6/ Available evidence reveals that between 70 and 75 percent of total truck freight is hauled distances of from 10 to 20 kilometers, with a very small percentage going farther than 20 kilometers.

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2. Passenger Motor Transport.

Passenger motor transport in the USSR is almost exclusively urban in character. Statistics for passenger traffic are available in terms of percentage increases over some base year or in terms of percentage relationships to planned levels but have not yet been analyzed in detail by CIA.

III. Capabilities.

A. Basic Data.

1. Extent and Condition of the Road Network.

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Considerable divergence of opinion exists regarding the extent of the Soviet road system. [redacted]

[redacted] statistics exist for 1951 only. At that time, [redacted] the over-all length of Soviet highways was 3 million kilometers, including 1.8 million kilometers of secondary roads and tracks, many of which were undefined country lanes without foundations of any kind. Of the remaining 1.2 million kilometers, about 43,000 kilometers were surfaced. 7/ [redacted]

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[redacted] that before World War II the highway network totaled 1,352,400 kilometers, including city streets and unimproved dirt roads. 8/ [redacted]

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The wide variation among these prewar figures, which are claimed to be based on Soviet statistics, is difficult to understand. Since there are numerous definitions of the various types and classes of roads in the USSR, however, it is likely that the various estimates have been made on substantially different bases. Therefore, any exact breakdown of the total network by type should be accepted only with reservations. The figure of 3 million kilometers reported [redacted] as the prewar network appears to be the most all-inclusive. A US estimate prepared in 1947 follows 10/:

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Estimated Extent of the Soviet Road System
Selected Years from 1927 to 1950

Year	Total Roads	Surfaced a/	Kilometers	
			Improved	Natural
1927	1,252,419	31,797	1,208	1,219,414
1932	1,270,773	51,359	116,242	1,103,172
1937	1,355,459	87,584	331,016	936,859
1941 b/	1,545,922	151,179	465,612	929,131
1945 b/	1,522,577	129,927	507,150	885,500
1950 (Plan)	1,596,637	163,737	668,150	764,750

a. Gravel, stone, asphalt, or concrete.

b. As of 1 July. Between 1939 and 1945, 180,000 kilometers were added to the Soviet road net through acquisition of the Baltic States and other territory.

The various Five Year Plans have provided for road construction and repair on a large scale, but the major emphasis has been placed on dirt roads, simply constructed, of poor quality, and generally of only local importance. Planned goals are shown in the following table:

Planned Soviet Road Construction and Improvement
1927-42

Years	New Roads		Improvement of Dirt Roads
	Total	Surfaced a/	
1927-32	360,000	12,000	1,400,000
1932-37	210,000	30,000	N.A.
1937-42	210,000	30,000	N.A.

a. Stone, gravel, or water-bound surface, or any surface on a solid foundation.

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The Fourth Five Year Plan (1946-50) specified simply that "the network of improved roads /presumably surfaced/ under Union and Republic jurisdiction shall be increased by 11,500 kilometers in the 5-year period; and the existing network of arterial roads shall be restored and completely overhauled." The degree of accomplishment achieved with respect to these plans is not known. The total mileage of the Soviet road system probably has not increased since World War II or, for that matter, since 1940. The over-all condition of the roads probably has improved slightly, and it is likely that most of the war damage has been repaired. It is not believed, however, that surfaced roads yet represent more than 12 to 15 percent of the total network. Most surfaced roads, in any case, are within cities and towns.

2. Motor Vehicle Inventory.

As in the case of the road network, estimates on the total size of Soviet motor vehicle park vary considerably. No reliable estimate can be made without an accurate knowledge of Soviet vehicle production, and this information is not available at present. The following table presents estimated inventories for selected years of the prewar period 11/:

Estimated Prewar Soviet Motor Vehicle Inventory
Selected Years from 1913 to 1941

<u>Year</u>	<u>Trucks and Buses</u>	<u>Passenger Cars</u>	<u>Total</u>
1913	1,500	7,400	8,900
1928	7,500	11,200	18,700
1930	18,000	11,800	29,800
1932	54,600	13,800	68,400
1935	201,200	51,400	252,600
1937	474,600	65,069	539,669
1938	635,100	85,400	720,500
1940	890,500	92,800	983,300
1941	879,100	83,700	962,800

Other sources report total Soviet motor vehicle strength in 1937 as 570,000 and in 1940 variously as 1,009,000 (839,000 trucks and 170,000 cars) and 1,000,000 to 1,100,000 vehicles.

Estimates of the size of the postwar Soviet motor vehicle park appear to be particularly uncertain. There is no agreement among sources as to the extent of serviceability within the inventory, estimates ranging from 50 to 70 percent, and little is known about rates of retirement or the number of vehicles allocated exclusively to the military. One estimate has been generally accepted as being accurate, that is, from 22 June 1941 to 20 September 1945 the USSR received 409,526 Lend Lease vehicles from the US. 12/ The

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following table is presented as illustrative of the prevailing confusion on the size of the postwar motor vehicle inventory:

Various Estimates of Postwar Soviet Motor Vehicle Inventory
1945-50

<u>Year</u>	<u>Trucks</u>	<u>Passenger Cars</u>	<u>Total</u>
1945	760,600 <u>13/</u>		
	898,600 <u>14/</u>	88,600 <u>14/</u>	987,200 <u>14/</u>
	1,011,800 <u>15/</u>	55,900 <u>15/</u>	1,067,700 <u>15/</u>
	740,000 <u>16/</u>		
	700,000 <u>17/</u>		
1946	1,038,100 <u>18/</u>		
1947	1,135,500 <u>15/</u>	53,200 <u>15/</u>	1,118,700 <u>15/</u>
	1,000,000 <u>19/</u>		
	1,098,500 <u>20/</u>	52,300 <u>20/</u>	1,150,800 <u>20/</u>
	800,000 <u>21/</u>		
1948	1,233,600 <u>20/</u>	58,600 <u>20/</u>	1,292,200 <u>20/</u>
	1,200,000 <u>22/</u>	120,000 <u>22/</u>	1,320,000 <u>22/</u>
	1,296,100 <u>18/</u>		
1949	1,517,500 <u>18/</u>		
	1,185,380 <u>23/</u>		
	2,250,000 <u>24/</u>		
1950 <u>a/</u>			

a. The Fourth Five Year Plan (1946-50) stated that the total inventory was to be increased to twice that of the prewar level.

The most recent CIA estimate of the size and composition of the Soviet motor vehicle park for the years 1949-52 was made in the fall of 1949. The estimate includes only serviceable civilian vehicles, and the inventory is given for midyear: that is, the average number of vehicles operating throughout the year. Although necessarily based upon an assumed 1945 inventory, an estimated retirement rate, an estimated serviceability factor, and an estimated annual vehicle production, all of which are subject to varying degrees of error, this estimate of the size and composition of the Soviet motor vehicle park nevertheless is believed to be the most practical yet made. It is summarized as follows:

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Estimated Midyear Inventory
of Serviceable Civilian Motor Vehicles in the USSR
1949-52

<u>Type</u>	<u>1 July 1949</u>	<u>1 July 1950</u>	<u>1 July 1951</u>	<u>1 July 1952</u>
Trucks and Buses	498,405	783,405	1,115,655	1,434,405
Passenger Cars	84,500	119,500	159,750	198,500
Total	<u>582,905</u>	<u>902,905</u>	<u>1,275,405</u>	<u>1,632,905</u>

The total number of serviceable vehicles, both civilian and military, is estimated as follows:

Estimated Midyear Inventory
of Serviceable Civilian and Military Vehicles in the USSR
1949-52

<u>Type</u>	<u>1 July 1949</u>	<u>1 July 1950</u>	<u>1 July 1951</u>	<u>1 July 1952</u>
Trucks and Buses	770,500	1,085,500	1,447,750	1,796,500
Passenger Cars	84,500	119,500	159,750	198,500
Total	<u>855,000</u>	<u>1,205,000</u>	<u>1,607,500</u>	<u>1,995,000</u>

Despite the variations among the several estimates, it can be concluded that the total Soviet motor vehicle park is now between 1.5 million and 2 million vehicles and that the large majority of these vehicles, probably at least 90 percent, are trucks. The park is believed to be adequate in terms of the traffic requirements placed upon it.

Two other developments should be mentioned with regard to Soviet motor vehicles. In the first place, although Soviet dependence on foreign design and technical advice has been very great, new postwar models which started coming into production in 1948 and 1949 show purely Soviet modifications based on wartime experience and are characterized by a general additional ruggedness not found in the US-built prototypes. Second, the conversion of gasoline-powered vehicles to the use of gas-generators and compressed natural gas fuels has been steadily increasing. [REDACTED] 25X1
plants indicate that current production of vehicles burning nonliquid fuels may in some instances amount to as much as 20 percent of total output.

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3. Quantity and Quality of Maintenance.

a. Roads.

Examination of published material on Soviet roads indicates that maintenance and repair are constant problems. The rural population is required to devote a specified number of days a year to road work, a practice abandoned as unsatisfactory in the US before 1900. In the past prisoners of war also were extensively used for road work. Road-building machine stations (Mashino-dorozhnaya stantsiya -- MDS), 25/ evidently similar in concept to the well-known machine tractor stations, are being established in increasing numbers, although the number of road-building machine stations now operating is not known. Each installation is allotted mechanized equipment and is responsible for the maintenance and repair of roads in its area. As production of road-building equipment expands, road-building machine stations probably will increasingly replace requisitioned manual labor.

b. Motor Vehicles.

Although the number of basic types of vehicles produced in the USSR is relatively limited in order to facilitate interchangeability of components and parts, standardization has not been fully realized, largely because local modifications of the basic types have been numerous, and no industry-wide program of spare-parts production has been initiated. Most spare parts still are produced by local repair shops as the need arises. Repair facilities are inadequate, and the demands on them are increased by the fact that vehicle life before capital repairs are required has averaged consistently only between 10,000 and 20,000 kilometers. Major factors shortening the life of vehicles are inferior quality of gasoline and lubricants, poor condition of the roads, and haphazard vehicle servicing practices. 26/ Complaints in the Soviet press concerning insufficient quantities of spare parts and the inadequate number of vehicle repair and servicing facilities are numerous. Despite the fact that these conditions are known, their over-all effect apparently has not been published in statistical form, and estimates of the serviceability of the total vehicle park, therefore, continue to vary as much as 20 percent. Most of these estimates are based on the assumption that serviceability has remained unchanged since before World War II.

4. Efficiency of Operations.

Items dealing with the inefficiency of Soviet motor transport are published in the Soviet press with a frequency which suggests that wasteful operating practices are so numerous as to prevent the achievement of planned traffic goals, despite other press claims to the contrary. The following item, published in 1948, is of particular interest, since it concerns the country as a whole:

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"More than 70 percent of all transport expenses in [urban] trade consists of expenses for automobile and horse-drawn transportation. The proportion of such expenses to trade turnover is one and one-half times that of 1940. Increase in such transportation costs is primarily the result of inefficient utilization of vehicles; the fact that too much time is spent waiting at the suppliers; and because hauling is falsely registered as having been performed Trucks in the urban trade system ... are employed in the transport of freight only 25 to 30 percent of their total working time. Most of the trucks make only one, or a maximum of two, trips per day instead of the required three or four. At the same time only 70-80 percent of the load capacity, some times even less, is used. ... The total standing time of trucks exclusive of that spent in loading or unloading, is several times that spent in transit." 27/

A proper estimate of the efficiency of Soviet trucking operations cannot be made without access to actual operating statistics similar to those filed in the US with the Interstate Commerce Commission. Indexes of efficiency based on such statistics have not been published by the USSR since before World War II.

5. Seasonal Factors.

A considerable quantity of information, both German and Soviet, exists on the subject of the effect of the Soviet climate on motor vehicle operations. These studies indicate that weather is a major factor governing the condition of the roads and that it curtails motor transport in the USSR for a substantial part of each year. 28/ Spring thaws and summer rains render the numerous dirt roads impassable to motor vehicles in entire regions for as many as 150 days a year. 29/ Although snow immobilizes motor transport in some areas during much of the winter, a fairly effective technique of cold-weather vehicle operation has been developed by the Soviets, and the winter season, when the ground and waterways are frozen, is the period when vehicular mobility reaches its maximum throughout the USSR.

6. Animal-drawn Transport.

Animal-drawn carts and sleds are known to be used extensively in the USSR, although no quantitative information on either equipment utilized or tonnage hauled is available.

B. Present Capacity.

Road traffic capacity and the capacity of the present Soviet motor vehicle park to carry traffic cannot be estimated in any detail from available information. Certain broad limits only can be established.

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C. Potential Capacity.

1. Diversification of Traffic to Other Means.

a. Peacetime.

Animal-drawn transport is the only medium to which Soviet motor vehicle transport might reasonably be diverted in peacetime, since a fundamental purpose of highway transport in the USSR is to relieve the railroads of a substantial share of their short-haul traffic burden. Such diversion is unlikely, however, because of the relative slowness of animal-drawn transport. The inland waterways, for the most part, are not so located as to permit their use as an alternative form of transport.

According to published Soviet statistics, 12.56 million draft animals were available in the USSR at the end of 1950. There were 13.7 million horses, including those held by the Soviet Army, but not more than 8 million of this total are estimated to be used for draft purposes. This estimate is based on projection of a known prewar ratio. The other 4.56 million draft animals reported are oxen. No figures are available on the number of reindeer, camels, mules, and donkeys, nor is the USSR known to have published statistics permitting an estimate to be made of the number of wagons and carts in the Soviet Union. On the basis of horsepower equivalents used in Soviet sources, it may be calculated that the 12.56 million draft animals equal approximately 120,000 trucks (1 horse equals $3/4$ horsepower; 1 ox equals $2/3$ horse; average horsepower per truck equals 75). In addition, there are an estimated 427,000 tractors with an average power rating of 28 horsepower each currently in use in agriculture. In an emergency, these tractors also could be used for transport purposes.

b. Wartime.

In wartime, it is conceivable that Soviet military demands for trucks might become so great that the railroads again would take responsibility for short-haul movements. At the same time, the utilization of animal and water transport probably would be increased to the maximum. It is strongly suspected that during World War II only the receipt of US Lend Lease vehicles by the USSR prevented a complete collapse of the Soviet motor transport system.

2. New Construction.

Road-construction projects undertaken in the USSR during the period of the Fourth Five Year Plan (1946-50) were designed to provide the more intensively developed areas of the country with high-capacity roads equal to those of Western European standards and to extend and improve the local networks of secondary roads. These projects were concentrated in the European USSR, and several hundred thousand prisoners of war were employed on the work during the first 4 years of the period. These prisoners of war worked almost exclusively on roads of all-USSR importance. Increasing efforts to extend the use

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of mechanized equipment were made toward the end of the period, when many of the prisoners of war were repatriated. Strenuous efforts were made to complete in 1948 the main highways Moscow-Minsk, Moscow-Sevastopol, Moscow-Ryazan-Kuybyshev, Kharkov-Rostov, and Rostov-Sukhumi-Tbilisi. All of these roads, however, were under construction through 1948, and most of them have been reported as being incomplete through 1949. In 1949, work also was reported as being in progress on the Kharkov-Kiev, Moscow-Yaroslavl-Vologda, and Moscow-Leningrad-Reval highways.

The slow progress indicated by these reports apparently cannot be attributed entirely to a shortage of mechanical road-building equipment, since the Ministry responsible for the construction of such equipment claimed overfulfillment of Plan goals in both 1948 and 1949. It is probable, however, that much of this road-building machinery was allocated to the construction of the much-publicized hydroelectric installations and canals, which apparently had higher priority. It is also likely that the lack of progress on road construction resulted in large measure from a scarcity of road-binding material in the European USSR, the difficulties encountered in building satisfactory road foundations on the unstable soil of the area, and a shortage of experienced road designers and technically qualified supervisory personnel, which was accentuated by the repatriation of the German prisoners of war. These shortcomings also lowered the quality of the work completed, thereby increasing requirements for maintenance and repair.

Information regarding current road construction in the Soviet Far East is sparse. [REDACTED]

[REDACTED] Some of these reports indicate that the purpose of the construction program may be to facilitate the movement of railroad construction materials. If this is true, the roads may be abandoned as rail connections are extended.

3. Expansion of Motor Vehicle Park.

No estimate can be made with respect to expansion of the Soviet motor vehicle park, because figures on actual postwar motor vehicle production in the USSR are not available. Since the termination of Lend Lease shipments, Soviet acquisitions of motor vehicles from external sources have not been numerous. Soviet interest in and dependence upon foreign design and technical developments is likely to persist, however, and attempts to import small quantities of foreign-made vehicles for experimentation and possible copying probably will continue. The number of vehicles shipped clandestinely into the Bloc area from Western Europe and the Far East is difficult to determine. Vehicle production in the Satellites is not yet sufficiently large to permit sizable shipments to the USSR. It is known that Soviet shipments of vehicles to the Satellite countries, on the other hand, have been increasing.

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4. Effect of Damage by Western Attack.

It is not possible to estimate quantitatively the potential effect on Soviet motor transport capacity of war damage that would be inflicted in the event of Western attack. Generally speaking, Soviet roads are relatively invulnerable to attack, other than attack resulting in actual occupation.

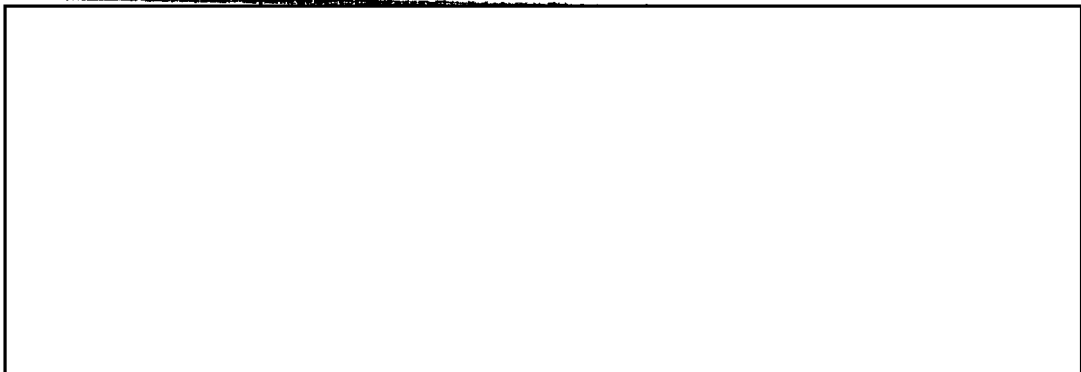
IV. Materials and Manpower Requirements.

The following estimates, made in September 1949, are believed to be the best estimates available on Soviet requirements of materials and manpower for motor transport.

Principal Raw Materials
Required by Soviet Motor Transport
1949-52

Year	Metric Tons		
	Steel a/	Aluminum b/	Petroleum Products c/
1949	793,800	4,423	4,364,352
1950	1,987,800	6,078	6,813,872
1951	1,381,800	7,734	8,698,438
1952	1,381,800	7,734	12,423,286

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Soviet requirements for new vehicles can be estimated only if the retirement rate, current strength and serviceability of the park, and over-all level of traffic are known, which is not the case. Requirements for repair parts are believed to be large, 31/ but no specific estimate of parts requirements can be made without firmer knowledge of the number, present mileage, and annual mileage increment of the vehicles comprising the total Soviet inventory. Road construction materials and equipment

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are in short supply. Specific requirements for these items depend on the extent and nature of construction projects and the degree of importance attached by the USSR to mechanizing road construction, neither of which is known.

Approximately 4.3 million persons were employed in transportation in 1950 in the USSR, of which about 2 million were employed in forms of transportation other than rail and water. Of the latter number, 140,000 were engineers and specialists. The number engaged in Soviet highway transport alone is a matter of conjecture, but one driver per vehicle would account for nearly 2 million employees, with no allowance being made for other workers such as mechanics, servicemen, and dispatchers. These figures are not entirely consistent with others reported by the Soviet press and radio. In general, available information suggests that a shortage of professionally trained highway construction engineers and vehicle designers remains a serious problem in the USSR, but the numerical extent of that shortage and its precise effect are unknown.

V. Capabilities, Intentions, and Possible Counteractions.

1. Capabilities.

There is little information available to indicate in specific quantitative terms the amount of traffic which could be moved by motor transport in a given period of time between any two points in the USSR. It is difficult, therefore, to estimate the capability of Soviet motor transport to support various courses of action. In connection with Soviet military planning, the fact that the highway network of much of Europe is relatively well-developed may influence the USSR to make more extensive plans concerning the future size and use of its motor vehicle park than would be justified on the basis of its own undeveloped road system.

In general terms, it is known that the Soviet Union has about 1.2 million to 1.5 million serviceable trucks, which could, under pressure, carry traffic at the rate of from 20 billion to 30 billion ton-kilometers a year. The USSR is estimated to be producing about 300,000 to 400,000 trucks a year, and the supply of fuel probably is sufficient to permit near-capacity operation of the vehicle park. Although the road network is underdeveloped, and sustained, year-round motor transport operations between most cities and towns of the USSR still are a physical impossibility, postwar information indicates that motor transport has improved remarkably since 1945. Prewar levels of operation and output apparently have been surpassed. The removal of existing limitations on highway transport capability, however, will depend largely upon the priority which Soviet planners assign to further highway and motor vehicle developments.

2. Intentions.

At present, there are no indications that the USSR intends to develop highway transport as an independent form of transportation. Postwar trends

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suggest that motor transport is to remain an auxiliary service, supplementing water and rail transport through the carriage of short-haul traffic.

Broader Soviet policies outside the transportation field are not likely to be revealed in the scanty information on civilian highway transport developments which is now available. Changes in the allocation of vehicles to the armed forces and in military requirements for vehicles, if known exactly, might indicate broader Soviet intentions, as would the stockpiling of vehicles, fuel, and portable bridging equipment or the sudden removal of substantial quantities of these items from storage. Widespread confiscation of civilian vehicles likewise would be an indicator. Conversely, the known absence of any of these developments might indicate a lack of immediate intent to commence hostilities and would provide a check on other evidence.

3. Possible Counteractions.

The most obvious peacetime measure which can be taken by the West to limit the capability of Soviet motor transport is the rigid enforcement of comprehensive export controls and the sealing-off of all non-Bloc sources of motor transport equipment. Although the effectiveness of this measure would not be as far-reaching today as it would have been several years ago, Soviet dependence on foreign design and technical developments probably is still great, and delivery of any vehicles, components, or parts to the Bloc would increase Soviet capabilities both directly and indirectly. Possible effects of Western action in wartime are sharply limited. As previously indicated, the Soviet motor transport system probably would prove to be a relatively unrewarding strategic target. Tactical operations against Soviet motor transport, however, might be considerably more effective, particularly in conjunction with attacks on other Soviet transport media.

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