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ECONOMIC INTELLIGENCE REPORT

DEVELOPMENTS IN TRANSPORTATION  
IN NORTH KOREA  
1946-59



CIA/RR 59-49  
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CENTRAL INTELLIGENCE AGENCY  
OFFICE OF RESEARCH AND REPORTS

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FOREWORD

The adequacy of the transportation system of North Korea to support industrial growth is of particular interest because North Korea has launched a program of rapid industrial development similar to that of Communist China. This report assesses the adequacy of modern transportation in North Korea, incorporating new information that permits a more accurate appraisal than previously has been possible.

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DEVELOPMENTS IN TRANSPORTATION IN NORTH KOREA\*  
1946-59

Summary

The modern transportation system\*\* of North Korea has shown remarkable growth since the Korean War. In 1958 the performance of this system amounted to about 6.6 billion ton-kilometers (tkm),\*\*\* nearly double that in 1949, and tons originated increased even more rapidly, rising from about 18.6 million in 1949 to about 47.5 million in 1958. The transportation system apparently has been meeting the demands placed on it by the current program of industrial expansion and can be expected to continue its growth during the next few years. Past increases in performance have been due mainly to improvements in the road and railroad networks and in operating efficiency. Future increases probably will be due to growth in inventories of equipment.

The railroads of North Korea, which were fairly well developed during the Japanese occupation, have accounted for more than 94 percent of total ton-kilometer performance of the modern transportation system each year since 1946. Tons originated in motor truck transport, however, increased from about 8 percent of the total in 1949 to 37 percent in 1958. This trend is expected to continue during the next few years, and some development of inland and coastal water transport also is expected. More than three times as many passengers were carried by the transportation system in 1957 as in 1949, but passenger-kilometers increased only about 25 percent, because larger numbers were carried for short distances by motor bus.

The relatively high ton-kilometer performance of the railroads of North Korea is accounted for partly by the comparatively great average length of haul, which was half that of Communist China in

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\* The estimates and conclusions in this report represent the best judgment of this Office as of 1 November 1959.

\*\* As defined for the purposes of this report, the terms transportation and transportation system refer exclusively to the modern transportation system of North Korea. The types of transportation included in this category are railroad, motor truck and bus, and inland and coastal water transport, excluding junks and other native craft.

\*\*\* Tonnages are given in metric tons throughout this report.

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1958. In addition, however, the operating efficiency of the railroads has increased, the turnaround time of freight cars declining from 6.7 days in 1949 to 3.7 days in 1958. The daily running distance of locomotives increased 20 percent during the same period. Performance is likely to be increased further with the growth in inventories of locomotives and rolling stock. Domestic production of freight cars began in 1958, production of passenger cars and locomotives was planned for 1959, and imports of railroad equipment and rolling stock are likely to continue. Investment in transportation facilities received priority during 1954-56, making possible the rapid reconstruction and expansion of railroad facilities. The rate of investment since 1957, however, may not be sufficient to sustain this rapid growth. Major construction efforts are being concentrated on the electrification of rail lines and the automation and mechanization of operations.

Since the Korean War, North Korea has expanded and improved its road network, but hard surface roads still are limited to the areas near the two largest cities. Trucks are being used as feeders for other types of transportation. In addition to increases in inventory from imports, performance has been increased by the use of trailers pulled behind conventional trucks and by the use of trucks for more than one shift per day. Series production of 2.5-ton trucks in North Korea probably began in 1959.

Inland and coastal water transport was described by a North Korean official in 1958 as "backward." The 1957-61 plan, calling for water transport to expand faster than other types of transportation, apparently is being accomplished. Increases in performance already made, however, do not change significantly the small share of total performance attributed to water transport.

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## I. Introduction

The modern transportation system of North Korea has shown remarkable growth since the Korean War. In 1949, the last year before the Korean War began and the year often used by the North Korean government as a base for postwar comparison, the transportation system performed about 3.5 billion tkm and originated 18.6 million tons, about five times as much as in 1946. Performance in 1958 was about 6.6 billion tkm, nearly double that in 1949, and tons originated increased even faster during the same period, reaching 47.5 million tons in 1958. The performance of the transportation system of North Korea, after regaining its prewar level in 1955, has continued to grow at an increasing rate, achieving in 1956-58 an average annual increase of about

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18 percent in terms of ton-kilometers and 22 percent in terms of tons originated. The ton-kilometer performance of the transportation system of North Korea during 1946-58 is shown in Table 1,\* and the volume of freight originated during the same years is shown in Table 2.\*\* If the rate of increase announced for transportation for the first half of 1959 1/\*\* was maintained for the whole year (as it was during 1958), the transportation system originated about 71 million tons during 1959, about 30 percent above the original goal for 1961.

The transportation system of North Korea, according to the newly released statistics, also carried about 139 million persons in 1957 for an average distance of 21.3 kilometers (km) and a total of nearly 3 billion passenger-kilometers. The number of passengers carried in 1957 was three times the 1949 level, but passenger-kilometers increased only 25 percent. The increase in the number of passengers carried is impressive in view of the estimated decrease in population from 9.1 million in 1949 to 8.3 million in 1958. The passenger-kilometer performance of the transportation system of North Korea, by type of transportation, is shown in Table 3,\*\*\* and the number of passengers carried is shown in Table 4.†

In 1958 the ton-kilometer performance of the transportation system of North Korea was about equal to that of Bulgaria but was less than that of any other country of the Sino-Soviet Bloc except Albania and North Vietnam. Although the transportation system of North Korea is poorly developed by Western standards, it has been given priority in the economic reconstruction of the country since 1953 and has received a fairly high percentage of total capital investment as well as assistance in the form of labor and equipment from other Bloc countries.

## II. Railroads

### A. Performance

The railroad system, which was fairly well developed during the Japanese occupation of Korea, is the predominant means of transportation in North Korea. In each year since 1946 railroads accounted for more than 94 percent of the ton-kilometer performance (see Table 1\*) and more than half of the tons originated (see Table 2\*\*) by the transportation system. In 1958, according to North Korean official announcements, the performance of the railroads of the country was 6.3 billion tkm, an

\* Appendix A, p. 14, below.

\*\* Appendix A, p. 15, below.

\*\*\* Appendix A, p. 16, below.

† Appendix A, p. 17, below.

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increase of 85 percent above the 1949 level of 3.4 billion tkm. Since 1955, when railroad performance regained its 1949 level (in spite of track conditions, which remained inferior to those in 1949), ton-kilometer performance in each year has surpassed that in the preceding year at an increasing rate -- 13 percent in 1956, 18 percent in 1957, and 24 percent in 1958. The 28.0 million tons originated by the railroads in 1958 represented an increase of 72 percent above the 1949 level of 16.3 million tons. Tons originated also regained the 1949 level in 1955 and then increased by 9 percent in 1956, by 17 percent in 1957, and by 31 percent in 1958. According to the mid-1959 report of the North Korean Central Statistical Bureau, railroad freight traffic in terms of both ton-kilometers and tons originated increased 41 percent in the first half of 1959 above the corresponding period in 1958. 2/ On the assumption that the increase during the whole of 1959 was about 40 percent, railroad freight traffic can be estimated to be 8.8 billion tkm and 39.2 million tons originated in that year. These levels of achievement are within reason, considering improvements in the railroad system and in operating efficiency, intensive use of railroad facilities, and apparent increases in rolling stock. Railroad performance during 1958 in terms of both ton-kilometers and tons originated represented an increase of less than 70 percent above the 1955 level compared with an increase of about 100 percent in railroad performance in Communist China during the same period. The 1959 estimates for North Korea show increases comparable with the 37-percent increase in tons originated planned in China.

The average length of haul of goods on the North Korean railroads is comparatively great, accounting in part for the high ton-kilometer performance. In 1958 the average length of haul, which had increased (except for the Korean War years) from about 200 km in 1946 to a high of 236 km in 1957, decreased to 224 km. Although the average length of haul, a little less than half that of Communist China, seems long for a country as small as North Korea, the North Koreans apparently do not plan to reduce it soon, for the goals of the original 1961 plan would have resulted in an average haul of 228 km. 3/ The railroad network in North Korea is 12 percent as long as that of Communist China, 3,720 km compared with 31,193 km at the end of 1958. The average density of traffic on the North Korean railroads in 1958 was 1.7 million tkm per route-kilometer compared with nearly 6 million tkm in Communist China.

Coal, with an average length of haul about equal to the average for all traffic, accounted for nearly 26 percent of the railroad performance of North Korea in 1957 in terms of tons originated and ton-kilometers. More than 95 percent of the coal imported and produced in North Korea moved by rail. Metals are hauled farther on the average than any other commodity, timber is moved the next longest distance,

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and brick and tile are moved the shortest distance. Construction materials hold second position in percent of total tons originated and have been increasing in importance. The commodity composition of railroad traffic in selected years and the average length of haul, by commodity, in 1957 are shown in Table 5.\*

The number of passengers carried by the railroads in 1957 increased only 17 percent and passenger-kilometers only 5 percent in comparison with the 1949 level. Although the performance of railroads continued at 80 percent of the total passenger-kilometers in 1957 compared with 95 percent in 1949, the railroads carried only 31 percent of the passengers compared with 82 percent in 1949. This decline in the proportion of passenger traffic carried by rail probably was occasioned by the restriction of railroad travel to military and official passengers, whereas motor bus transport has become more available to the general public.

B. Operational Statistics

Improvement in railroad performance in North Korea before 1958, particularly in 1956 and 1957, is believed to have come mainly from increased operating efficiency rather than from significant increases in the inventory of rolling stock. Further improvements in operating efficiency probably will come more slowly, but the inventory of freight cars can be expected to increase rapidly from imports and domestic production. North Korea is estimated to have had 300 standard-gauge steam locomotives in 1957. The inventory of electric locomotives is not known, but 11 were in operation before the Korean War, and it is assumed that the number has increased with the increase in electrification of lines. Since the Korean War the railroad system has been reequipped with imported locomotives from Communist China, the USSR, Czechoslovakia, Hungary, and Poland. Most of those that have remained in operation since 1949 were made in Japan. The reliance on imports from a variety of sources and the difficult task of reconstructing all major repair facilities in the system had left the North Korean railroads with a severe problem in maintenance of equipment. The program for reconstructing repair shops, however, resulted in four major shops now operating with imported machine tools and numerous other shops of varying sizes repairing locomotives and/or cars. 4/ The operating performance of the locomotive park in 1958 showed considerable improvement above the 1949 level: the daily running distance of locomotives increased 20 percent, from 208 km per day to 249 km; the average technical speed\*\* of the trains increased

\* Appendix A, p. 18, below.

\*\* Average speed during running time only, excluding stops.

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5.4 km per hour; and the average speed of the trains, including stops, increased from 17.1 km per hour to 20.3 km per hour. Operating statistics for 1946, 1949, and 1953-58 are shown in Table 6.\*

North Korea had an average of about 9,500 freight cars in operation during 1958.\*\* Although domestic production of freight cars, which began during 1958, was reported by the North Korean Central News Agency to be 540 freight cars, 6/ some cars probably were mining and industrial freight cars that did not represent additions to the mainline freight car park. Production in 1959 may have reached 700 freight cars,\*\*\* including some 60-ton cars. In 1957 the commonly used 2-axle cars had rated capacities of 22, 26, and 30 tons; 2-axle or 4-axle cars with rated capacities of 30 or 40 tons were also in wide use; and cars with rated capacities of 45 tons were used to a lesser extent. The North Korean Minister of Transportation reported that 300 freight cars were converted from the 30-ton class to between 37 tons and 40 tons during 1958, and efforts were being made to convert all cars in 1959. 7/ To alleviate the shortage of freight cars during and after the Korean War, Chinese Communist rolling stock was used in North Korea and probably will be used again in case of necessity. At present, however, the Chinese Communists, because of their own shortage of transport capacity, undoubtedly are reluctant to let their equipment be used extensively in North Korea.

Increasingly intensive use of the freight car park is indicated by the decrease in turnaround time\*\*\*\* from 6.7 days in 1949 to 3.7 days in 1958.† Turnaround time in the first half of 1959 was reported in a broadcast by the North Korean Central News Agency to have dropped to less than half the prewar level. 8/ The Minister of Transportation urged the workers to reduce this time further to 2.8 days in 1959 and 2.5 days in 1960. The average load per loaded car was stated to be 30 tons in 1958, and the goal for 1959 was apparently 35 tons per car. Such a heavy load

\* Appendix A, p. 19, below.

\*\* The figure of 28,033,000 tons originated in 1958 divided by 365 days equals 76,803 tons originated per day. The number of cars in operation (x) divided by turnaround time of 3.7 days equals cars loaded per day. The figure of 76,803 tons originated per day divided by the number of cars loaded per day  $\left(\frac{x}{3.7}\right)$  equals 30 tons per car. 5/ Solving for x gives 9,472, the average number of cars in operation.

\*\*\* Production of passenger cars and industrial locomotives was also planned for 1959.

\*\*\*\* This term is believed to be turnaround time as defined in the US.

† See Table 6, Appendix A, p. 19, below.

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per loaded car probably is an indication that a number of large cars have been added to the park and that each car is being loaded to capacity. In the European Satellites, where freight cars are predominantly 2-axle cars, the average load per car ranged from 15 tons to slightly more than 19 tons in 1958. Heavy loading in North Korea can be explained partly by the fact that a large proportion of the tons originated (at least 75 percent in 1957) are raw materials, construction materials, and the like, which load to 100 percent or more of rated capacity. In the European Satellites a larger share of commodities hauled by rail are manufactured goods that do not load so heavily.

For the 39.2 million tons estimated to have been originated in 1959, with a 30-ton average load per loaded car and a turnaround time of 3.7 days, about 13,250 cars would have been required. Increasing the load per car to 35 tons and reducing turnaround time to 2.8 days would reduce this requirement to only 8,590 cars, or less than the present operating park. By reducing turnaround time to 2.8 days and continuing to load at an average of 30 tons per car, an increase of 500 to 600 freight cars in the operating park would have been necessary to attain the estimated performance figure for 1959. It seems logical to assume that the estimated figure for tons originated has been achieved and possibly exceeded as a result of some reduction in turnaround time, some increase in average load per loaded car, and some increase in the freight car park, although not to the extent planned for each.

Employment in transportation remained fairly steady from 1954 until 1958, when a 14-percent increase took place. Most of the employees in transportation undoubtedly are working in rail transport. The following tabulation shows the total number of persons employed in transportation and the percent that these persons represent of the total number of workers and staff receiving wages in the socialized sector, including state agriculture.

| Year | Number Employed in Transportation* |  |
|------|------------------------------------|--|
|      | Thousand Persons                   | As a Percent of<br>Total Workers and Staff<br>in the Socialized Sector |
| 1953 | 49.4                               | 8.6  |
| 1954 | 55.9                               | 8.1  |
| 1955 | 58.0                               | 7.6  |
| 1956 | 55.0                               | 6.8  |
| 1957 | 54.5                               | 6.5  |
| 1958 | 62.0                               | 6.2  |

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These data do not include foreign railroad workers, technicians, and engineers (reported to be in the hundreds during 1953-56) who were employed in reconstruction and reorganization of the North Korean railroads. Foreign engineers and technicians continue to be employed, at least in the reconstruction of railroad factories and in making technical improvements in the railroad system. 11/

C. Investment

Investment in all transportation facilities in North Korea received priority in the reconstruction period, 1954-56, but the percentage allocated to this sector in more recent years may not be sufficient to continue the rapid rate of growth and to meet the demand of the present program for intensive industrial development beyond the near future. Although the transportation performance can be expected to expand at a rate at least equal to that in other major sectors of the economy for a few years, this rate of expansion probably will be achieved by intensive use of transportation facilities.

In 1954, investment in transportation and communications was about 7 times the amount invested in 1949 and amounted to 21 percent of total capital investment compared with 10.8 percent in 1949. 12/ As reconstruction progressed, the absolute amount invested each year and the percent of total capital investment declined, so that this sector received only 13.1 percent of the total in 1954-56. 13/ The original plan for 1957-61 allocated 10.1 percent of total capital investment to transportation and communications, 14/ but the 1959 plan called for about 12.5 percent, 15/ indicating either that the original First Five Year Plan has been revised or that this sector in the earlier years of the plan was to receive a higher percentage than in later years.

In comparison with the allocation of capital investment in Communist China, the proportion going to transportation and communications in North Korea is small. Communist China allocated 18.7 percent of total capital investment to this sector in 1953-57 and 21 percent in the original 1959 plan. 16/ The difference between China and North Korea may lie in the relatively large amount of expansion of the transportation network being carried out in China in the congestion experienced by the Chinese system in 1956 and 1958.

In North Korea the portion of investment in transportation and communications going to railroads is not known, but the actual amount invested by the state in rehabilitation of the railroads

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since the end of the Korean War has been 170 million new won,\* according to a report of the Korean Central News Agency early in 1959. 17/ In addition to direct investment, there have been labor contributions by the North Korean populace (as there are in China), by "volunteer" railroad construction workers from China and other Sino-Soviet Bloc countries, and by the Chinese Army units stationed in North Korea until the fall of 1958. The Central Committee of the Korean Workers (Communist) Party, discussing the 1960 plan, cited the development of rail transport along with the development of the electric, iron and steel, and coal industries as being of "cardinal importance" to the future development of the national economy.

The major construction efforts in North Korea are being concentrated on the electrification of rail lines, on the automation of block and signal equipment, on the mechanization of loading and unloading, on double tracking, and on the changeover from narrow to standard gauge. The railroad system is oriented in a north-south direction paralleling the coasts. At present, only one line, the P'yongyang-Wonsan line, connects the east coast and west coast railroads, but the North Korean press reported that a second line is under construction south of the existing line (see the map\*\*). The rail lines are for the most part standard gauge (4 feet 8 1/2 inches). The system has four international connections -- three in the northwest with Communist China and one in the northeast with a line to Vladivostok. Some bypasses of congested intersections have been added since the Korean War, and a circumferential electric line around the city of P'yongyang is under construction. Electrification of all railroads is planned for completion in 1967. Within 1 or 2 years the 224-km section between the capital city and Kowon probably will be completed. A 129-km section from Kowon to Sinsongch'on was completed by the end of 1958. 18/

### III. Motor Vehicles

Motor vehicle freight traffic in North Korea, according to official statistics, has expanded far more rapidly than other modes of freight transport, increasing in 1958 to a level nearly 6 times the 1949 performance in terms of ton-kilometers and 12 times in terms of tons originated. The share of motor vehicles in the total ton-kilometer performance of the modern transportation system of North Korea, however, remained less than 4 percent (see Table 1\*\*\*). A

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\* The rate of exchange most commonly quoted is 1.2 won to US \$1, although this rate may not apply to capital investment goods.

\*\* Inside back cover.

\*\*\* Appendix A, p. 14, below.



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decline in the average length of haul from 24 km in 1949 to about 12 km in 1958 probably reflects the increasing use of trucks as feeders for other types of transportation. In terms of tons originated, motor vehicles performed 37 percent of the total in 1958 compared with 8 percent in 1949 (see Table 2\*). Indications are that these trends continued in 1959. According to the mid-1959 report by the Central Statistical Bureau, ton-kilometer performance by motor vehicles increased 32 percent and tons originated increased 61 percent in the first half of 1959 compared with the same period in 1958. 19/ On the assumption that increases of about 30 and 60 percent, respectively, were achieved for the whole year, motor vehicle performance during 1959 probably reached about 264 million tkm and 28 million tons originated. These estimates yield an average length of haul in 1959 of only 9.4 km, indicating a continuing decline.

Data on passenger traffic by motor bus, released by the North Korean government, show the same general trend as that in freight traffic by motor vehicle. The performance of motor buses in terms of passenger-kilometers increased to more than 560 million in 1957 (see Table 3\*\*), nearly 5 times the 1949 level, and the number of passengers increased to 94 million, or more than 12 times the 1949 level. Each passenger traveled an average of 6 km in 1957 compared with about 15 km in 1949. The share of motor traffic in the total passenger-kilometer performance of the transportation system increased from 5 percent in 1949 to 19 percent in 1957, and the percentage of total passengers carried by motor buses increased from 17 percent to 68 percent in the same period. Data for passenger traffic during 1958 are not yet available. During the first half of 1959 the number of passengers increased 44 percent in comparison with the first half of 1958, according to the report of the Central Statistical Bureau. 20/

These increases in freight and passenger traffic have been achieved not only by increasing the inventory of vehicles but also by improving operating efficiency and the condition of the road network, by using trailers pulled behind conventional trucks, and by using trucks for more than one shift per day. The utilization rate (amount of time in operation with a full load) apparently has been low, however, for the need to increase the rate during 1959 was emphasized. North Korea is estimated to have had 11,000 vehicles in 1956, of which probably fewer than 1,000 were buses and sedans, and the inventory has been increased each year by imports.

The manufacture of trucks was begun in North Korea in 1958, although only two trucks were produced: a Victory 58 with a capacity of

\* Appendix A, p. 15, below.

\*\* Appendix A, p. 16, below.

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2.5 tons (a copy of the Soviet GAZ-51 cargo truck, 4 x 2) and a Flying Horse with a capacity of 8 tons. Premier Kim Il-song said that 3,000 Victory 58 trucks "should" be produced during 1959. 21/ Although series production probably began in 1959, it is unlikely that as many as 3,000 trucks were produced. The Flying Horse was produced in an automobile repair factory in a manner similar to that in which repair shops in Communist China produced trucks and locomotives during 1958. (The Chinese Communist repair shops now assign the lowest priority to the production of new trucks.) The continued production of 8-ton trucks by repair shops in North Korea is most unlikely, in spite of the announced plan to produce 2,500 in 1959. 22/

After the Korean War the road network in North Korea underwent extensive rehabilitation, including repairing, widening, and re-surfacing roads and replacing temporary bridges with stronger and more permanent structures. It is believed that, except for short stretches of hard surface roads in the vicinities of P'yongyang and Wonsan, most of the main roads are graveled. Soon after the Korean War, primary emphasis was placed on the repair and construction of roads in the forward areas near South Korea. At present the North Korean road network is being expanded to support the industrial drive and development of agriculture. The North Korean government reported the length of trafficable roads in 1957 to be 19,631 km, 45 percent longer than in 1949. 23/

IV. Inland and Coastal Water Transport

During 1958, inland and coastal water transport in North Korea accounted for about 1 percent of the total ton-kilometer performance (see Table 1\*) of the modern transportation system and a little more than 4 percent of the tons originated (see Table 2\*\*). During 1957 this type of transportation accounted for less than 1 percent of passenger-kilometers and of the number of passengers carried, or about the same proportion as in 1949. Freight traffic in terms of ton-kilometers in 1958 increased 95 percent in comparison with the 1949 level, and tons originated increased 134 percent in the same period. Inland and coastal water transport was described by a North Korean official in 1958 as "backward." 24/ Plans for developing water transport during the reconstruction period, 1954-56, were significantly underfulfilled. The 1957-61 plan, calling for water transport to expand faster than other types of transportation, apparently is being accomplished. Both ton-kilometers and tons originated by water transport increased in 1958 more than 80 percent compared with 1957, and another 75-percent increase was reported for the first half of

\* Appendix A, p. 14, below.

\*\* Appendix A, p. 15, below.

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1959 compared with the first half of 1958. 25/ Even these increases, however, will not change significantly the share of the total performance by water transport. Although the average length of haul, by 1961, was expected to be about four times that in 1956, it increased to only 35 km in 1958 compared with 31 km in 1956.

The reasons given for the increased attention to water transport are as follows: to ease the burden on railroads, particularly along the east coast 26/; to reduce dependence on imported equipment for motor vehicle transport; and to reduce transportation costs in foreign trade by shifting traffic from railroads to water transport. 27/ As a first step toward increasing the relative importance of water transport, rates were reduced 25 percent in 1957. 28/ During 1954-56, inland water transport received greater consideration than coastal water transport, but in 1957-61 the emphasis is being reversed. Coastal harbor facilities and shipyards are being expanded, and regular shipping lines are planned. 29/ The most important port under reconstruction is Nam-p'o (formerly called Chinnamp'o), the port for P'yongyang. Rehabilitation by the end of 1956 of some of the damage sustained during World War II and the Korean War permitted the port to be opened to local trade only. A 5-year development plan was started in 1957 with the intention of raising Nam-p'o to its former status as one of the largest and best equipped ports in Korea. An attempt to speed up the plan and open the port to international shipping during 1959 suggests that North Korea has a pressing need for expanding its foreign trade.

The present size of the fleet is not known, but because fishing boats are said to be used for transportation when not being used for fishing, it is believed to be inadequate. The construction of medium-size vessels was called for in the 1957-61 plan in a quantity sufficient to increase the loading capacity of the fleet by 3.8 times. 30/ At present the fleet probably has no vessels as large as 1,000 gross register tons, but a Bulgarian newspaper announced the launching in July 1959 of a 3,200-ton ship built in Varna for North Korea. 31/

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APPENDIX A

STATISTICAL TABLES

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Table 1  
 Ton-Kilometer Performance of the Modern Transportation System  
 of North Korea <sup>a/</sup>  
 1946-58

| Year | Million Ton-Kilometers |         |  |       | Percent of Total |         |                                |
|------|------------------------|---------|--|-------|------------------|---------|--------------------------------|
|      | Railroad               | Highway | Inland and Coastal<br>Waterway <sup>b/</sup> | Total | Railroad         | Highway | Inland and Coastal<br>Waterway |
| 1946 | 652                    | 8.96    | 24.47  | 685   | 95.1             | 1.3     | 3.6                            |
| 1947 | 1,491                  | 21.14   | 26.26  | 1,538 | 96.9             | 1.4     | 1.7                            |
| 1948 | 2,586                  | 24.00   | 23.21  | 2,633 | 98.2             | 0.9     | 0.9                            |
| 1949 | 3,405                  | 34.63   | 35.13  | 3,475 | 98.0             | 1.0     | 1.0                            |
| 1950 | 2,478                  | 27.15   | 26.61  | 2,532 | 97.8             | 1.1     | 1.1                            |
| 1951 | 697                    | 6.41    | 3.11   | 707   | 98.7             | 0.9     | 0.4                            |
| 1952 | 884                    | 44.68   | 6.34   | 935   | 94.5             | 4.8     | 0.7                            |
| 1953 | 1,980                  | 64.14   | 10.71  | 2,055 | 96.4             | 3.1     | 0.5                            |
| 1954 | 2,675                  | 94.51   | 14.98  | 2,784 | 96.1             | 3.4     | 0.5                            |
| 1955 | 3,792                  | 137.67  | 23.07  | 3,953 | 95.9             | 3.5     | 0.6                            |
| 1956 | 4,288                  | 129.45  | 30.54  | 4,448 | 96.4             | 2.9     | 0.7                            |
| 1957 | 5,072                  | 188.78  | 37.37  | 5,298 | 95.7             | 3.6     | 0.7                            |
| 1958 | 6,289 <sup>c/</sup>    | 203.32  | 68.57  | 6,561 | 95.8             | 3.1     | 1.1                            |

a. <sup>32/</sup>. Excluding air ton-kilometers, for which only the following estimates are available (in million ton-kilometers): 1953, 10.4; 1956, 17.9; and 1957, 26.6. These estimates indicate that air transport is responsible for 0.5 percent or less of total ton-kilometers.

b. Converted from ton nautical miles at the rate of 1.853248 kilometers per nautical mile.

c. This figure is 124 percent of the 1957 performance. <sup>33/</sup>

## C-O-N-F-I-D-E-N-T-I-A-L

Table 2  
Tons Originated by the Modern Transportation System  
of North Korea a/  
1946-58

| Year | Thousand Metric Tons Originated |         |                                |        | Percent of Total b/ |         |                                |
|------|---------------------------------|---------|--------------------------------|--------|---------------------|---------|--------------------------------|
|      | Railroad                        | Highway | Inland and Coastal<br>Waterway | Total  | Railroad            | Highway | Inland and Coastal<br>Waterway |
| 1946 | 3,273                           | 233     | 287                            | 3,793  | 86.2                | 6.1     | 7.6                            |
| 1947 | 8,276                           | 637     | 331                            | 9,244  | 89.5                | 6.9     | 3.6                            |
| 1948 | 11,708                          | 897     | 539                            | 13,144 | 89.1                | 6.8     | 4.1                            |
| 1949 | 16,255                          | 1,461   | 846                            | 18,562 | 87.5                | 7.9     | 4.6                            |
| 1950 | 11,269                          | 1,135   | 489                            | 12,893 | 87.4                | 8.8     | 3.8                            |
| 1951 | 4,142                           | 133     | 93                             | 4,368  | 94.8                | 3.0     | 2.1                            |
| 1952 | 5,785                           | 676     | 169                            | 6,630  | 87.3                | 10.2    | 2.5                            |
| 1953 | 10,625                          | 2,234   | 332                            | 13,191 | 80.6                | 16.9    | 2.5                            |
| 1954 | 14,304                          | 4,976   | 507                            | 19,787 | 72.3                | 25.2    | 2.5                            |
| 1955 | 16,756                          | 8,812   | 806                            | 26,374 | 63.5                | 33.4    | 3.1                            |
| 1956 | 18,281                          | 9,169   | 981                            | 28,431 | 64.4                | 32.2    | 3.4                            |
| 1957 | 21,455                          | 13,891  | 1,095                          | 36,441 | 58.9                | 38.1    | 3.0                            |
| 1958 | 28,033                          | 17,503  | 1,982                          | 47,518 | 59.0                | 36.8    | 4.2                            |

a. <sup>34/</sup>. Excluding tons originated by air, for which no estimates are available.

b. These figures were computed from unrounded absolute data and may not add to 100 percent.

C-O-N-F-I-D-E-N-T-I-A-L

Table 3

Passenger-Kilometer Performance of the Modern Transportation System  
of North Korea <sup>a/</sup>  
1946-57

| Year | Million Passenger-Kilometers |         |                                |       | Percent of Total <sup>b/</sup> |         |                                |
|------|------------------------------|---------|--------------------------------|-------|--------------------------------|---------|--------------------------------|
|      | Railroad                     | Highway | Inland and Coastal<br>Waterway | Total | Railroad                       | Highway | Inland and Coastal<br>Waterway |
| 1946 | 951                          | N.A.    | N.A.                           | N.A.  | N.A.                           | N.A.    | N.A.                           |
| 1947 | 2,034                        | N.A.    | 3.18                           | N.A.  | N.A.                           | N.A.    | N.A.                           |
| 1948 | 2,031                        | N.A.    | 4.94                           | N.A.  | N.A.                           | N.A.    | N.A.                           |
| 1949 | 2,253                        | 116.83  | 7.43                           | 2,377 | 94.8                           | 4.9     | 0.3                            |
| 1950 | 1,374                        | N.A.    | 5.75                           | N.A.  | N.A.                           | N.A.    | N.A.                           |
| 1951 | 83                           | N.A.    | 3.75                           | N.A.  | N.A.                           | N.A.    | N.A.                           |
| 1952 | 114                          | N.A.    | 3.89                           | N.A.  | N.A.                           | N.A.    | N.A.                           |
| 1953 | 656                          | 29.05   | 3.04                           | 688   | 95.3                           | 4.2     | 0.4                            |
| 1954 | 1,994                        | 210.94  | 5.06                           | 2,210 | 90.2                           | 9.6     | 0.2                            |
| 1955 | 2,264                        | 357.35  | 10.78                          | 2,632 | 86.0                           | 13.6    | 0.4                            |
| 1956 | 2,179                        | 418.86  | 16.74                          | 2,615 | 83.4                           | 16.0    | 0.7                            |
| 1957 | 2,374                        | 562.44  | 24.47                          | 2,961 | 80.2                           | 19.0    | 0.8                            |

a. <sup>35/</sup>. Excluding air passenger-kilometers, which were 0.2 percent or less of the total in 1956-57.

b. These figures were computed from unrounded absolute data and may not add to 100 percent.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

Table 4

Number of Passengers Transported on the Modern Transportation System  
of North Korea a/  
1946-57

| Year | Thousand Passengers |         |                                |         | Percent of Total b/ |         |                                |
|------|---------------------|---------|--------------------------------|---------|---------------------|---------|--------------------------------|
|      | Railroad            | Highway | Inland and Coastal<br>Waterway | Total   | Railroad            | Highway | Inland and Coastal<br>Waterway |
| 1946 | 22,123              | N.A.    | N.A.                           | N.A.    | N.A.                | N.A.    | N.A.                           |
| 1947 | 31,415              | N.A.    | 316                            | N.A.    | N.A.                | N.A.    | N.A.                           |
| 1948 | 33,074              | N.A.    | 359                            | N.A.    | N.A.                | N.A.    | N.A.                           |
| 1949 | 37,339              | 7,646   | 694                            | 45,679  | 81.8                | 16.7    | 1.5                            |
| 1950 | 22,861              | N.A.    | 627                            | N.A.    | N.A.                | N.A.    | N.A.                           |
| 1951 | 1,172               | N.A.    | 416                            | N.A.    | N.A.                | N.A.    | N.A.                           |
| 1952 | 1,400               | N.A.    | 76                             | N.A.    | N.A.                | N.A.    | N.A.                           |
| 1953 | 7,765               | 2,100   | 61                             | 9,926   | 78.2                | 21.2    | 0.6                            |
| 1954 | 22,838              | 29,875  | 186                            | 52,899  | 43.2                | 56.4    | 0.4                            |
| 1955 | 31,127              | 51,601  | 493                            | 83,221  | 37.4                | 62.0    | 0.6                            |
| 1956 | 36,853              | 64,759  | 882                            | 102,494 | 36.0                | 63.2    | 0.9                            |
| 1957 | 43,529              | 94,481  | 1,280                          | 139,290 | 31.3                | 67.8    | 0.9                            |

a. 36/. Excluding air passengers, for which no estimates are available.

b. These figures were computed from unrounded absolute data and may not add to 100 percent.

C-O-N-F-I-D-E-N-T-I-A-L



C-O-N-F-I-D-E-N-T-I-A-L

Table 5

Average Length of Haul, by Commodity, and Commodity Composition  
of Tons Originated by the Railroads of North Korea  
Selected Years, 1949-57

| Commodity                        | Average Length<br>of Haul <sup>a/</sup><br>(Kilometers) | Tons Originated <sup>b/</sup><br>(Thousand Metric Tons) |        |        |        | Percent of Total<br>Tons Originated <sup>a/</sup> |       |       |       |
|----------------------------------|---|---|--------|--------|--------|---|-------|-------|-------|
|                                  | 1957  | 1949  | 1953   | 1956   | 1957   | 1949  | 1953  | 1956  | 1957  |
| Coal                             | 235.3   | 5,055   | 1,434  | 4,662  | 5,557  | 31.1  | 13.5  | 25.5  | 25.9  |
| Construction materials           | 289.4 <sup>c/</sup>                                     | 2,422   | 1,126  | 3,272  | 4,141  | 14.9  | 10.6  | 17.9  | 19.3  |
| Timber                           | 335.7   | 1,512   | 1,318  | 1,974  | 2,167  | 9.3   | 12.4  | 10.8  | 10.1  |
| Minerals                         | 255.5   | 1,414   | 159    | 1,280  | 2,060  | 8.7   | 1.5   | 7.0   | 9.6   |
| Ferrous and<br>nonferrous metals | 372.9   | 406   | 521    | 859    | 1,072  | 2.5   | 4.9   | 4.7   | 5.0   |
| Grain                            | 240.7   | 1,008   | 808    | 750    | 858    | 6.2   | 7.6   | 4.1   | 4.0   |
| Chemical fertilizer              | 316.8   | 423   | 42     | 256    | 343    | 2.6   | 0.4   | 1.4   | 1.6   |
| Salt                             | 288.5   | 179   | 223    | 219    | 215    | 1.1   | 2.1   | 1.2   | 1.0   |
| Other                            | N.A.  | 3,836   | 4,994  | 5,009  | 5,042  | 23.6  | 47.0  | 27.4  | 23.5  |
| Total                            | 236.4   | 16,255  | 10,625 | 18,281 | 21,455 | 100.0   | 100.0 | 100.0 | 100.0 |

a. 37/

b. Computed, using total tons originated given in Table 2, p. 15, above, and the percentages given in this table.

c. For cement only. The average length of haul for brick and tile was 126 kilometers.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

Table 6

Operational Statistics of the Railroads  
of North Korea a/  
1946, 1949, and 1953-58

| Year | Freight Car<br>Turnaround Time b/<br>(Days) | Locomotive<br>Running Distance<br>(Kilometers per Day) | Average Technical<br>Speed of Train c/<br>(Kilometers per Hour) | Average<br>Operational<br>Speed of Train d/<br>(Kilometers per Hour) | Average Tonnage<br>of Freight Trains<br>(Metric Tons) |
|------|---|--|---|--|---|
| 1946 | 10.6  | 111.1  | N.A.  | N.A.   | N.A.  |
| 1949 | 6.7   | 207.6  | 24.3  | 17.1   | N.A.  |
| 1953 | 5.2   | 151.9  | 22.5  | 10.3   | N.A.  |
| 1954 | 5.9   | 204.8  | 24.0  | 15.2   | 551   |
| 1955 | 5.3   | 228.5  | 25.3  | 16.6   | 629   |
| 1956 | 5.1   | 223.6  | 27.2  | 18.7   | 628   |
| 1957 | 4.4   | 244.0  | 29.7  | 20.3   | 659   |
| 1958 | 3.7   | 248.8  | N.A.  | N.A.   | 712   |

a. 38/

b. These figures are believed to be turnaround time as defined in the US.

c. Average speed during running time only, excluding stops.

d. Average speed, including stops.

C-O-N-F-I-D-E-N-T-I-A-L

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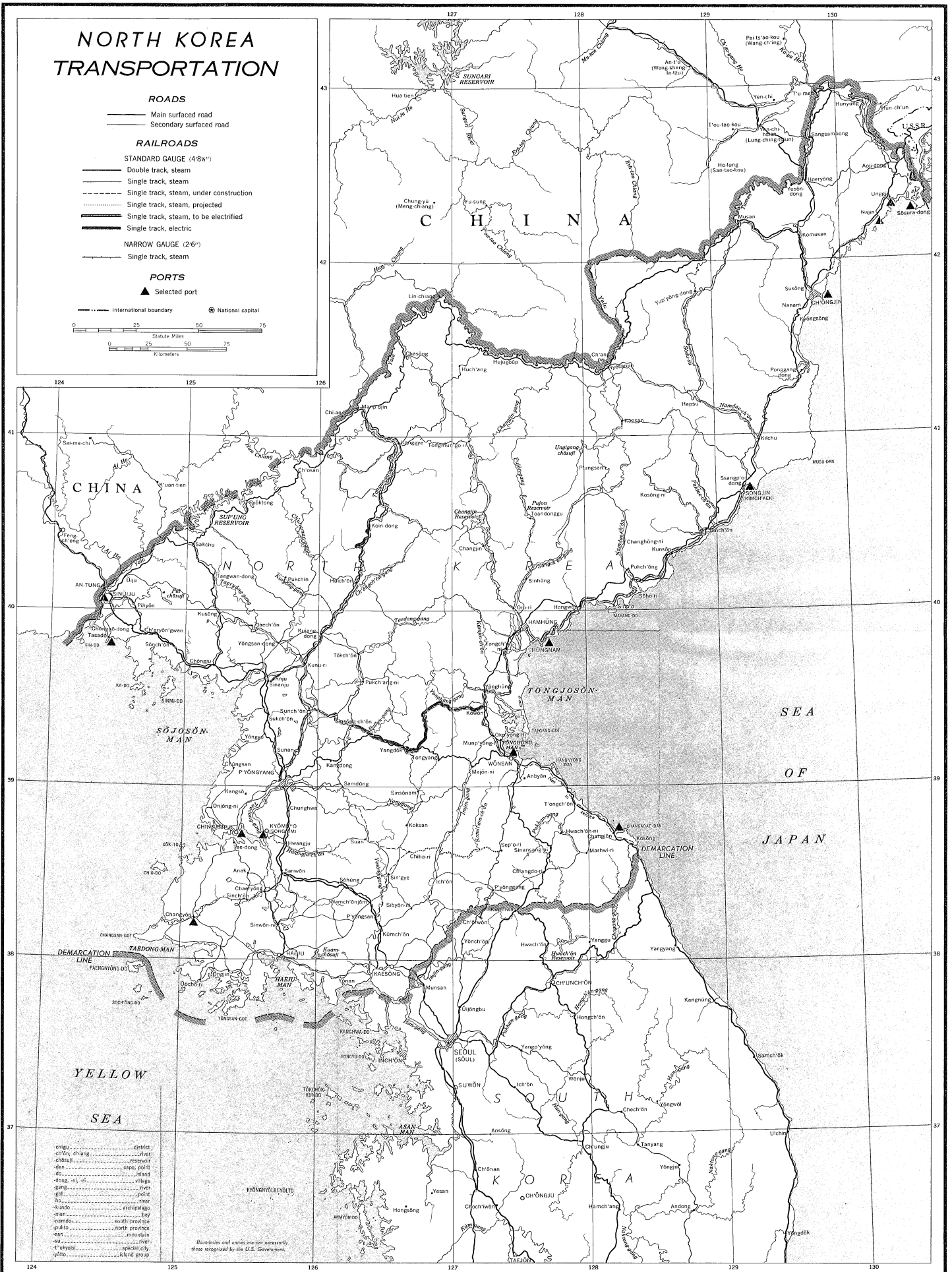
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# NORTH KOREA TRANSPORTATION

- ROADS**
- Main surfaced road
  - Secondary surfaced road
- RAILROADS**
- STANDARD GAUGE (4'8 1/2")**
- Double track, steam
  - Single track, steam
  - Single track, steam, under construction
  - Single track, steam, projected
  - Single track, steam, to be electrified
  - Single track, electric
- NARROW GAUGE (2'6")**
- Single track, steam

**PORTS**

- Selected port
  - International boundary
  - National capital
- 0 25 50 75  
Statute Miles
- 0 25 50 75  
Kilometers



- ch'ŏng... district
- ch'ŏn... river
- ch'ŏng... reservoir
- ch'ŏng... cape, point
- ch'ŏng... island
- ch'ŏng... village
- ch'ŏng... river est.
- ch'ŏng... river
- ch'ŏng... archipelago
- ch'ŏng... north province
- ch'ŏng... mountain
- ch'ŏng... island group

Boundaries and names are not necessarily those recognized by the U.S. Government.

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