

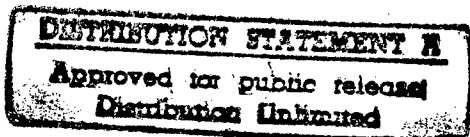
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SUCCESSSES OF RAILROAD TRANSPORT IN CHINA

By Yu. I. Fomin



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### FOREWORD

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## SUCSESSES OF RAILROAD TRANSPORT IN CHINA

Following is the translation of an article by Yu. I. Fomin in Zheleznodorozhnyy Transport (Railroad Transport), No 6, Moscow, 1960, pages 81-83.

Under the leadership of the Communist Party the Chinese people are carrying out majestic plans for construction of socialism in the country. On the basis of a broadly unfolding nationwide movement for a "great leap" in the country's development, 28 out of 40 of the most important indices of industrial and agricultural production planned for the end of the Second Five-Year Plan, i.e., for 1962, were surpassed in 1959. In comparison with 1957, which was the last year of the First Five-Year Plan, the volume of industrial production in 1959 increased by 131.5%, or twice that planned for 1962; of agricultural production by 48.5%, as compared to the 35% scheduled for 1962. The table shows the dynamics of output increases of the chief types of production in 1959 as compared to the control figures for the 1962 plan:

<u>Production</u>	<u>Planned for 1962</u>	<u>Actually produced in 1959</u>
Steel (millions of tons)-----	10.5 - 12	13.35
Coal (millions of tons)-----	190 - 210	347.8
Electric power (bill. of kwh)----	40 - 43	41.5
Machinery (thousands of units)---	60 - 65	70
Cement (millions of tons)-----	12.5 - 14	12.27
Lumber (millions of m <sup>3</sup> )-----	31 - 34	41.2
Cotton fabric (millions of m)----	72.9 - 80.6	75
Paper (millions of tons)-----	1.5 - 1.6	1.7
Grain (millions of chin)-----	500	540.1
Cotton (millions of tan)-----	480	482

Note: A chin is approximately equivalent to 604.5 grams; a tan is approximately equivalent to 59.7 kg.

As a result of the steady, rapid development of the country's economy, the total amount of freight hauled by various kinds of transport in 1959 was 2,212 million tons, or 67% higher than in 1958. Of this amount, 504.2 million tons were hauled by railroads, which is 42% more than in 1958. Freight turnover of railroad transport reached 263.4 ton-kilometers, which is 12 times more than the freight turnover in 1949. The average

distance of railroad freight haulage in China is 493.3 km.

The main freight of the railroads are coal and coke (39.8%), lumber products (6%), ore (5.4%), ferrous metals (4.7%). Agricultural goods, construction materials, petroleum and petroleum products also constitute a significant portion of the freight.

Following the rapid reconstruction and further development of China's economy, the reconstruction of destroyed railroads and the construction of new ones proceeded on a broad front. After the liberation of the country from Kuomintang rule by the efforts of the people under the leadership of the Communist Party, already by the end of 1949 the main lines had been reestablished and the existing railroad network lengthened from 10,000 km to over 20,000 km.

During the First Five-Year Plan, railroad maintenance work was systematized; major, average, and preventive types of repairs were introduced on the basis of a fixed technological process. Within a few years the replacement of rails and major repairs of the line were carried out on the most important freight lines, such as Peiping-Shen-yang, Peiping-Shanghai, Peiping-Canton. The quantity of rails laid weighing over 42 kilograms per linear meter in 1959 was 56% as against 24% in 1950. The old switch points which were of varied construction were subjected to a radical technological reconstruction. At the present time 32% of the switch boxes permit trains to pass directly through at a speed of 80 km per hour, and the railroads have rails with high resistance to wear, permitting speeds up to 100-120 km per hour. Switch boxes have been set up in many stations, which permit trains to pass through without slowing down.

Over 36 million cubic meters of ballast have been added to the road beds over the past 10 years. The length of railroads having ballast layer thickness over 25 centimeters increased from 25% to 60% of the main lines, and on 10,000 km of railroads it is 35 centimeters in depth.

On Chinese railroads there is a large number of bridges, comprising a total length of over 500 km, and tunnels and tubes. Through efforts of railway engineers, all of them have been put in order and are kept in good condition, thus ensuring rapid and secure movement of trains.

In the Chinese People's Republic from 1950 to 1958, 7,512 km of new steel main lines was built, 1,749 km of old lines restored, and 2,828 km of secondary lines newly built or restored. Over 32,000 km of railroad lines are now being used in China.

The most important main lines were built during these years: Chengto - Chun-tsin, of which the Chinese people dreamed for many decades; T'ien-shui - Lan-chou, which runs northwest through narrow, almost impassable gorges; Lai-pin - Mu-nan-kuang and Ch'ing-ning - Ehr-lien, connecting the CPR with the Democratic Republic of Vietnam and the Mongolian People's Republic; the railroad linking Kwangsi with the southern port of Chan-chiang; the line Pao-chi - Chengto connecting the northwest with the southeast, and many others. A railroad network uniting all economic regions of the new China has been created. Future railroad routes in Tibet, the last region which does not yet have railroads, are being explored.

Currently under construction is the western section of the Lan-chou - Sinkiang line, which after its completion will link the CPR with the Soviet Union. Six [more] new main lines are being built: Ch'ungking - Kwei-yang, Nei-chiang - Kun-ming, Chengto - Kun-ming, Hsiang-tan - Kwei-yang, Szechwan - Honan, Kwei-yang - Kuei-min in southwest China. In Fukien Province lines are under construction from Ch'an-chou to Chang-ping and from Chang-ping to Yuan; two provinces, Honan and Shansi, will be linked by railroad. Railroads for hauling timber, railroads to mines, and spur tracks to various enterprises are being built in the northeast.

Nearing completion is the construction of an electrified section from Pao-chi to Feng-chou, having alternating current for a length of 140 km on the stretch Pao-chi - Chendu.

The construction of new railroad lines in China proceeds under exceptionally complex geological conditions. For example, the 669 km long Pao-chi -- Chendu line for 80% of its length runs through mountainous terrain; tunnels constitute 12.6% of its total length. Therefore the Chinese railroads are characterized by the presence of a large number of artificial installations. Great bridges are being built in Chungking and Nanking across the Yangtse River, in Canton across the Chiu-chiang River, in Nan-ch'ang and Cheng-chou across the Yellow River, and in Harbin across the Sung-hua River. A large number of tunnels have to be built.

In connection with the development of railroad transport construction in the country, there developed many collectives of designers and prospectors, numbering more than 10,000 people. Special and complex design institutes have been established, each line has prospector - projects organizations. Model designing is being implemented on a broad scale.

The tremendous work done by railroad engineers over these 10 years has made possible raising the permissible average train speeds from 40 - 50 km per hour in 1949 to 80 km per hour at the present time. Currently the length of lines on which it is possible to develop speeds over 90 km per hour constitute 34.3% of the length of the whole railroad network.

Radical changes in the technical equipment of locomotive and car repair works have taken place since the establishment of the Peoples' Government. In the car repair works, technical reconstruction has been carried out. Some of them have been converted to locomotive and car construction works. At the same time new plants have been built which turn out rolling stock for the country's railroad transport. By end of the first half of 1959 the area of newly constructed and expanded plants had increased, in comparison with the first period following the liberation, more than three times, and the number of metal-cutting lathes has more than doubled. Engineering - technical cadres are rapidly increasing. In addition to the Central Railroad Transport Research Institute in Peiping, a research institute on rolling stock problems has been established.

In August 1952 the Syfanskiy factory successfully completed testing the first domestically built high power locomotive. In 1956 a still more powerful freight locomotive "Peace" was constructed and tested successfully.

During 1958-1959, 1,400 new locomotives were built in the country, which is three times more than in the preceding eight years.

Over 70 new types of rolling stock have been designed, put in production and produced in the CPE by the country's own efforts over the past few years. Experimental models of 28 new types of production rolling stock were designed and constructed in 1958 alone; they included diesel locomotives of 2,000 and 4,000 horsepower with electrical transmissions, an electric locomotive of 5,200 horsepower operating on alternating current, a diesel train with hydraulic transmission, a general purpose freight car, and new freight cars having perfect technical - economic indices.

The freight car fleet of China consists chiefly of four-axle cars.

The fleet of freight and passenger cars in 1958 and 1959 increased by more than 27,000 units.

Chinese railwaymen have achieved great successes in the organization of locomotive economy. The effectiveness of locomotive utilization in the country not only exceeds by far the productivity attained during the Japanese rule in Manchuria, but also the current level in capitalist countries. In 1958 the average daily run of a freight locomotive was 415 km, which is 1.5 times higher than during the Japanese occupation of Manchuria, and twice as high as during the rule of the Chiang Kai-shek clique of the reactionary Kuomintang. The weight standard of freight trains for the MK-1 locomotive on the Japanese-occupied Harbin - Shenyang line was set at 2,040 tons, and under the Kuomintang, before liberation, at 1,870 tons on the section between Peiping and Tientsin. In the new China, on the same sections of the same railroads, locomotives pull cars having 2,500, 2,700 and 3,200 ton weights, and the best locomotive engineers operate even heavier trains, significantly exceeding the established weight standards.

In 1958 the average speed of a freight locomotive reached 40.1 km per hour, representing an increase of 10.3 km in comparison with 1949.

In locomotive economy the indices set by the Second Five-Year Plan were overfulfilled three years ahead of schedule. From January to August 1959 the everyday run of locomotives reached an average of 403.6 km, which exceeds by 5.1% the distance scheduled for the last year of the Five-Year Plan.

The average daily performance of locomotives in ton-kilometers in 1958 increased by 50,000 tkm in comparison with 1957, and constituted 661,000 tkm; in August 1959 it reached 716,000 tkm, which exceeds by 13.2% the standard set for 1962.

Repairs involving locomotive hoisting during the Japanese occupation took place once every six months (after a run of approximately 35,000 km); in liberated China it was carried out after a run of roughly 84,000 km in 1952, after 115,000 km in 1957, and in the first half of 1959 repairs involving hoisting were carried out after 136,400 kilometers, which exceeds by four times the period between hoisting repairs during the period of Japanese rule in Manchuria, and by seven times the performance rate existing during the period of the reactionary Kuomintang regime. In the organization

of cleaning and hoisting types of repairs in depots, and the ordinary and major repairs in the factories, the advanced experience of the Soviet Union is widely utilized.

Great economy has been achieved in materials and fuel. Fuel consumption alone, expressed in terms of coal, has decreased for the whole railroad network from 250 kg per 10,000 tkm in 1950 to 148 kg in 1958, or by 40%.

Before the liberation of China, cars were for the most part acquired abroad in capitalist countries, as a result of which the car fleet consisted of multitude of models. The cars were taken to depots for repairs only when they had become unusable.

During the period of the People's Government the situation regarding car economy changed radically. On the whole, the availability of passenger cars increased 2.32 times, of all-metal cars 3.59 times. The freight car fleet increased 2.26 times.

In addition to the production of large quantities of new model cars, a broad technical reconstruction of the old car fleet has been carried out. Retained for use were chiefly four-axle cars. Passenger and freight cars have been fully equipped with pneumatic brakes and automatic couplings.

Together with the growth of the car fleet the base for car inspection and repairs also grew. In comparison with 1949, the number of car depots has now doubled. Car wheel repair shops, car inspection points, and washing and steam cleaning stations have been set up, which formerly were nonexistent. Following the example of the Soviet Union, a new technology for car inspection and repair has been introduced. Inspection is now carried out once a year, medium repairs once every four years, major repairs once every eight years, for some cars once every 12 years.

In comparison with 1949, car repairs are now finished in one fifth the time, which gives the state, by calculation based on the car fleet existing in 1959, an additional 900 cars per year. Repairs of cars without uncoupling is widely practiced on China's railroads. Thanks to the better qualitative condition of the car fleet, the number of unusable cars has decreased: passenger cars from 74 in 1951 to 2 in 1958, freight cars from 1,062 in 1951 to 178 in 1958. In 1958 there were half as many accidents caused by defective cars as in 1952.

All this created favorable conditions for the fulfillment of the daily increasing amount of freight.

In order to increase new car production, the functions of factories in major and medium repairs were in 1958 turned over to the car depots. In 1959 the volume of work for these depots was three times that of 1958. Due to construction improvements and modernization of rolling stock, the average freight capacity per car increased to 44.4 tons, which additionally releases to the state more than 10,000 cars per year.

Considerable changes have taken place on the railroads of the new China in the fields of STsB [from context it appears this is some kind of automatic signalization and blocking device] and communications. On railroads of the old China, STsB and communications were extremely imperfect in the technical sense; long-range communications were absent, 32% of the

stations were not equipped with STsB; as a result of this, the security of train movements was poorly provided for. At the present time on the GPR railroads, especially on those freight lines which are used intensively, semi-automatic and automatic block systems are employed. Electric centralization is being introduced at heavily used junctions and stations; route relay centralization of switches and signals is being introduced.

Chinese specialists of the Shanghai line developed the first domestically built 12-channel communications apparatus, which is 70% cheaper than an imported one and permits simultaneous conversation with 24 persons. Train radio communications, etc. are employed.

The improvement of work methods and the accomplished technical reconstruction of the railroad transport of the Chinese People's Republic is accompanied by an incessant improvement in its work indices. In 1959 the turnover of a freight car had been reduced to 2.47 days as compared to 3.34 days in 1950. The time cars stand idle during freight operations and the time they spend in sorting yards has been significantly shortened. Car loads reached over 95% of capacity, being on the average 39.4 tons per car. Commercial speed has increased from 20.9 km per hour in 1950 to 26.3 km per hour in 1958.

In the Chinese Peoples Republic great attention is being paid to the preparation of railwaymen's cadres and to raising their cultural level. In the old China approximately 57% of the railroad workers were illiterate. In the old China during a period of more than 40 years, from 1908 to 1949, only two higher railroad educational institutions, 15 intermediate and 205 elementary railroad schools were opened. By 1949, only 6,460 students had been trained in the intermediate railroad schools, and only 76,946 students were trained in the elementary schools. The Peiping and Tiang-shan institutes were not only underdeveloped for conditions of that time, but even barely escaped being fully shut down. On the eve of the country's liberation, there were less than 500 students in both institutes, and the teaching staff consisted of 57 persons. Among them fascist elements predominated.

The preparation of railroad cadres was radically improved under the People's Government. By 1957 the number of students in the Peiping and Tiang-shan institutes reached 4,300. The number of intermediate railroad schools increased to 55, of elementary schools to 413. Establishment of intermediate technical railroad schools, educational institutions for medical personnel and vocational schools was begun in 1951. By 1957 there existed already 28 intermediate technical and 15 vocational schools. Over 70,000 railroad workers received instruction without leaving production. Simultaneously there developed a movement for the liquidation of illiteracy and raising the cultural level of railroad workers. By 1957 there remained only 10% illiterates.

Simultaneously with the leap in production, a leap in the educational front took place in 1958. In the space of only one year, the number of higher railroad educational institutions increased to 34, intermediate technical schools to 88, and vocational schools to 27. In the higher educational institutions training proceeds according to the principle:

studies - production - research work. Many educational institutions through their own efforts have equipped research laboratories, which raises the quality of training. In 10 years the higher railroad educational institutions have turned out over 6,600 specialists. The intermediate special schools have trained over 28,100 persons. They all are working in the most diverse branches of railroad transport.

During the time of the People's Government, much has been done in the field of preparing medical workers for railroad transport. The number of medical workers was in 1958 more than six times that of 1949. In 1958 the Railroad Medical Institute was founded, and intermediate medical schools and special courses were established on all lines. In comparison with 1949, the number of medical institutions had by 1958 increased by 444%, among them hospitals by 200%, dispensaries and public health stations by 150%, etc. The railroad workers of the new China have a large number of sanatoriums and rest homes.

Much work has been done in the field of improving medical care of passengers and creating hygienic conditions on the trains.

In the railroad transport of the Chinese People's Republic the initiative of the masses is increasing, their creative activity in deciding production questions is growing. The broadly developing work competition and socialist attitudes to work guarantee that the Chinese railroad workers will successfully solve the important tasks facing railroad transport during the construction of socialism.