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IN HONOUR OF THE 80TH ANNIVERSARY OF THE VICTORY OF THE SOVIET PEOPLE IN THE GREAT PATRIOTIC WAR
К 80-ЛЕТИЮ ПОБЕДЫ СОВЕТСКОГО НАРОДА В ВЕЛИКОЙ ОТЕЧЕСТВЕННОЙ ВОЙНЕ

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Lend-lease and the operation of Soviet railway transport in 1941–1945[1]

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ABSTRACT In recent decades, every effort has been made in the Western information space to belittle the importance of the USSR's contribution to the victory of the anti-Hitler coalition over Germany and its satellites. At the same time, the role of the United States of America is being extolled — especially the assistance it provided to the allies, in particular the USSR, under the Lend–Lease programme. This article is based on published archival materials and is intended to show the state of railway transport in the Soviet Union in the pre-war years and in different periods of the Great Patriotic War, as well as the heroic efforts of Soviet railway workers to carry out military transportation for various purposes. The paper provides an objective view on the scale and importance of American supplies of equipment and materials for the needs of railway transport of the Soviet Union during the war years. It deals with the specifics of USSR lend-lease orders for railway equipment, indicating the key quantities and the priority of railway products over supplies of other goods. The paper explores opinions on the subject in question presented by both Soviet experts from among top executives in the railway industry, historians, and American researchers.

KEYWORDS: the Great Patriotic War; USSR railway transport; lend-lease; rolling stock, track bed structure, railway automation systems, supplies of railway equipment to the USSR by the United States

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@Review article

Ленд-лиз и работа советского железнодорожного транспорта в 1941–1945 гг.

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АННОТАЦИЯ В последние десятилетия на Западе делается все, чтобы умалить значение вклада СССР в победу антигитлеровской коалиции над Германией и ее сателлитами. В то же время превозносится роль США, особенно той помощи, которую они оказывали союзникам в рамках ленд-лиза. Статья призвана объективно охарактеризовать масштабы и значимость американских поставок для нужд железнодорожного транспорта Советского Союза в годы войны.

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КЛЮЧЕВЫЕ СЛОВА: Великая Отечественная война; железнодорожный транспорт СССР; ленд-лиз; подвижной состав, верхнее строение пути, системы железнодорожной автоматики, поставки железнодорожной техники в СССР из США

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NOTE

In this article Russian translation uses the following designations for series of Russian (Soviet) steam locomotives in Cyrillic alphabet in Latin letters:

The designation of steam locomotive series adopted in Russia and the USSR is Cyrillic	The designation of steam locomotive series used in the translation of this article into English in Latin
Е	Ye
Ш	h
Э	E
СО	SO
ФД	FD
Л	L
О	O

ПРИМЕЧАНИЕ

В данной статье при переводе с русского на английский язык приняты следующие обозначения серий русских (советских) паровозов буквами кириллического алфавита, в написании латиницей:

Принятое в России и СССР обозначение серии паровоза кириллицей	Принятое в переводе данной статьи на английский язык обозначение серии паровоза латиницей
Е	Ye
Ш	Sh
Э	E
СО	SO
ФД	FD
Л	L
О	O

INTRODUCTION

In 2012, a book by Nikolai Ryzhkov, the Chairman of the Council of Ministers of the USSR in 1985–1990, cited a statement made by Leo Crowley's Administration on February 9, 1945 on the aid provided to the Soviet Union under the Lend-Lease Act[2] with respect to the supply of railway equipment.

The document stated as follows [*Cited according to the text in Russian — Translator's note*]: "Since January 1944, we have shipped to the USSR 1,045 locomotives, 7,164 flatcars, 1,000 dump cars, and 100 tank cars. The number of supplies peaked in November 1944: in that month alone, we delivered 1,367 wagons to the USSR. One of the major problems was replacing rail track. By November 1944, the Soviets received from us 2,120 thousand tons of steel, of which 478 thousand tons were intended for track replacement, and 110 thousand tons of rail wheels and axles" [1, pp. 414–415].

A book by Grigory Kumanev and Boris Serazetdinov provides a general description of the aid received from the United States for railways in the USSR: "During the war, 622 thousand tonnes of rails were supplied under the Lend-Lease programme. This accounts for about 56.5 % of the total output of railway rails in the USSR between mid-1941 and the end of 1945. And if we exclude narrow gauge rails (which were not part of lend-lease supplies) from the calculation, the shipments from the United States account for 83.5 % of the total output of wide gauge rails in the Soviet Union. Thus, more than one half of new railway rails used on Soviet railways during the war were supplied from the United States. By drastically reducing its production of rails, the Soviet manufacturing industry was able to make facilities and raw material resources available for producing steel for weapons (in 1945, rail output was 13 % of the 1940 level, and in 1944, it accounted for just 5.4 %).

Lend-Lease supplied not only railway rails and accessories, but also rolled railway wheels and axles. At that time, the USSR did not yet have relevant manufacturing technology and facilities, and made them

[2] Lend-Lease was a system for the United States of America to lend or lease weapons, ammunition, strategic raw materials, food, various goods and services to its ally countries in the anti-Hitler coalition during World War II in 1939–1945.
The Lend-Lease Act, formally known as An Act to Promote the Defense of the United States, was passed by the U.S. Congress on March 11, 1941.

from ferrous metals by casting. During the war years, 1,900 steam locomotives[3] and 66 diesel-electric locomotives[4] were also shipped to the USSR under Lend-Lease. Overall, the Soviet Union received 11,280 freight wagons, including 10,085 flat cars and 117 tank cars" [3, pp. 296–297].

The data found in works by Russian scholars almost completely match the estimates by the American author Robert Huhn Jones, who provides a general picture of what was done in accordance with the four Lend-Lease protocols that cover the supply of railway equipment [*Cited according to the text in Russian — Translator's note*]: "In order to support the Soviet Union in the construction and restoration of railways, the United States delivered 1,900 steam locomotives, 66 diesel locomotives, 9,920 flat cars, 1,000 dump cars, 120 tank cars, and 35 heavy machinery cars, for a total of 13,041 railroad units. Connecting all of the items together would produce a train longer than 200 km. In addition, Americans shipped to the USSR a significant number of rails and other components that would suffice to build railway track of approximately 12,500 km in length. More than 110 thousand tons of railway wheels and axles were intended to help Soviet engineers in the recovery of their own rolling stock. Besides, the United States extended the scope of supply to include a full set of railway locking devices (without detailing the category — the author's note) worth USD 10,900 thousand that covered 3 thousand km of track. The number of rails received by the Soviet Union under the lend-lease programme was sufficient for building more than one half of tracks built by the Soviets during the war" [4, pp. 245–246].

PROVISION OF RAILWAY TRANSPORT IN THE USSR DURING THE INITIAL PERIOD OF THE GREAT PATRIOTIC WAR

So, the cited fragments from high-profile monographs provide a seemingly unambiguous picture of the large-scale aid that the Soviet side received from the United States to support the operation of its railway transport. However, when the entirety of facts concerning railway-related lend-lease is considered thoroughly, we cannot but notice a few important points.

First, the USSR did not receive any railway equipment in 1941–1943, that is, during the hardest initial period of the Great Patriotic War and the period of a radical turn. In the monograph cited above, the American author provides data that is given in the Table below regarding railway transport.

Lend-lease supplies of railway equipment to the USSR (tonnes) [4, pp. 245–246].

Period	Via Atlantic Ocean	Via Pacific Ocean	Total	Total tonnage distribution, %
June 22 – September 30, 1941	0	0	0	0
October 1, 1941 – June 30, 1942	0	0	0	0
July 1, 1942 – June 30, 1943	0	0	0	0
July 01, 1943 – June 30, 1944	39,455	31,011	70,466	1
July 01, 1944 – May 12, 1945	14,6901	208,838	355,739	6
May 13 – September 2, 1945	9,067	32,313	41,380	3
September 3–20, 1945	0	947	947	2

No railway products were, or could have been, delivered in 1941–1943, because a special-purpose department for railway equipment was set up as part of the US-based Government Procurement Commission of the USSR as late as January 1944. The department included a railway unit of the industrial equipment department, a railway materials unit of the Industrial Raw Material Export Department (Promsyrieexport), and the singling and communications unit of the Technical Industry Imports Department (Tekhnopromimport). All orders for steam locomotives, wagons, tyres, wheels, wheel sets, rails, fastenings, and orders for devices and equipment for self-locking systems and railway dispatch communications were made a responsibility of the department [5, pp. 296–297].

A monograph by Irina Bystrova presents a complex, contradictory picture of the Lend-Lease's performance in what concerns the supply of railway equipment to the Soviet Union. It mentions a lag in the supply of locomotives and wagons despite a significant improvement in productivity of production facilities during the war. For example, Baldwin built 150 steam locomotives per month, while ALCO produced 120 locomotives. Large "left-over stocks" of locomotives built but not shipped in due time were stored in in open-air warehouses.

[3] Rakov refers to 1,888 steam locomotives received during the war, including 1,695 Ye locomotives and 193 ShA locomotives. However, he provides data on deliveries made throughout 1945, without breaking them down by month, thus considering the year entirely as a "war year" [2, pp. 337–341]. Perhaps, this is the reason behind the discrepancy.
[4] Diesel-electric locomotives. — Ed's note.

The rate at which wagons were shipped was far from perfect, too. According to data as of July 1, 1944, in accordance with the Third Protocol, 11,050 wagons (worth USD 35,481,090) were ordered, 10,748 wagons were manufactured, and only 1,690 wagons (worth USD 5,354,237) were shipped. Month after month, monthly targets failed to be reached and as of July 1, 1944, shipped wagons accounted for just 16% of the total output [5, pp. 296–297].

For two and a half years, railway workers fought the most difficult battles near Moscow, Stalingrad and Kursk together with the Red Army without receiving anything from the allies[5]. They were able to do on their own — this is the key, indisputable and comprehensive fact!

Secondly, we find it unjustifiable to use a simplistic mechanistic-statistical approach to assessing the significance of the role of 1,900 steam locomotives and slightly over 13 thousand wagons delivered in 1944–1945 [4, 5].

It is worth reminding that on the eve of the war, the railway transport sector of the Soviet Union was a very powerful system. As of May 15, 1941, the reserves of the People's Commissariat of Railways had 947 wide-gauge steam locomotives and the inventory rolling stock totalled 27,900 units[6]. It is sufficient to name the key mass-produced class of Soviet steam locomotives that were used during the war: the most powerful freight steam locomotives that were built on a relatively mass basis were 3,000 hp FD (Felix Dzerzhinsky) locomotives, of which 3,213 units were built by the Soviet manufacturing industry in 1931–1942.

There were also SO (Sergo Ordzhonikidze) steam locomotives, of which 4.487 units were built in 1934–1951 — mostly before the war. Among less powerful locomotives, the 1,500 hp EU class (with U for "reinforced") alone built in 1926–1931 accounted for 2,166 units. 2,694 EM (with M for "modernized") steam locomotives were built between 1931 and 1935. Steam locomotives were manufactured at the Kharkov, Lugansk, Sormovo, Bryansk and Kolomna plants [2, 254–263].

SUPPLYING THE STEAM LOCOMOTIVE FLEET OF THE SOVIET RAILWAYS DURING THE WAR

During the war, the number of steam locomotives produced by the manufacturing sector of the USSR was insufficient, and against this background, 1,900 steam locomotives supplied under the Lend-Lease programme look like a major support. But during the initial, most difficult period of the war, the available locomotive fleet was able to provide the front and the rear with everything needed. The Soviet leadership gave priority to other goods in their Lend-Lease orders. The railway transport sector still had a margin of safety, and during the first two years of the war it had almost no need for aid from the United States.

Nevertheless, in 1943, as the front moved westward, both the quantities of transported goods grew and the distance of transportation increased, and in anticipation of the upcoming growth in requirements for transport during the reconstruction of the country — which was certainly already being thought about in the ruling circles — the Soviet government asked the U.S. government for help by placing an order for building 2,000 steam locomotives.

A locomotive that Soviet railway workers knew pretty well was chosen for the order. It was the so called "Russian Decapod"[7] — a locomotive that was manufactured in the United States and supplied to Russia as early as during World War I.

These were manufactured in the United States and Canada in accordance with technical documentation provided by the Russian side. The documentation was prepared under the guidance of Yuri Lomonosov, a prominent scientist and engineer, professor at the Emperor Alexander I Institute of Railway Engineers, head of the mission for the procurement of railway equipment in the United States of the Provisional Government of Russia, and a member of his mission Russian engineer Alfons Lipets.

In total, 881 steam locomotives (class YeK, YeS, YeF and YeL) were shipped in 1915–1917[8]. By the beginning

[5] There is no information that any railway equipment was shipped along with tanks, aircraft, or other weapons by any means of transport before the end of 1943.

[6] Report on the mobilization of the railways of the Soviet Union (according to the 1941 Mobilization Plan). Moscow: TsVMO MPS, 1947–1948. Vol. 2. Pp. 216–219. The 808-page typewritten manuscript is kept in the collection of the Museum of Russian Railways in St. Petersburg. Prepared by military railway workers for the country's top leadership immediately after the war, this fundamental work was declassified as late as 2019 and is gradually being introduced into scientific discourse.

[7] Decapod (from Latin "ten-legged animal") is the American name for a 1-5-0 locomotive. It has five driving axles with ten wheels, hence, the name "ten-wheeler" or "ten-legged". On Russian railways, the name "decapod" has only stuck to 1-5-0 locomotives built in the United States.

[8] The superscript in the name of class Ye steam locomotives (YeF, YeS, YeK) was given by Yuri Lomonosov based on the name of the cities where the respective locomotive works were situated: YeF — the Baldwin Works in Philadelphia; YeS – the American Locomotive Company (ALCO) in Schenectady; YeK – the Canadian Locomotive Company in Kingston, near Ottawa. The superscript "L" for YeL was given by Yuri Lomonosov to commend the major contribution by engineer Alfons Lipets in the modernization of the last batch of steam locomotives intended for Russia which the latter carried out based on the results of the operation of the first locomotives manufactured in the United States [2, pp. 192–198]. However, some historians noted that "L" could also refer to the surname of Lomonosov himself...

Fig. 1. YeA class 1-5-0 locomotive No. 2201. Built for the USSR under Lend-Lease by Baldwin Works in 1944. From 1944, it was operated on the experimental ring of the Central Research Institute of the People's Commissariat of Railways near Moscow, and in 1955 it began to be used on the Far Eastern Railway. In 1992, the locomotive was moved from the Vyazemskaya depot of the Far Eastern Railway to the October Railway Museum in St. Petersburg (currently the Museum of Russian Railways)[9]

of the Great Patriotic War, 669 steam locomotives of the series were operated on the East Siberian, Transbaikal and Amur railways [2, pp. 192–198].

In 1943, when an attempt was made to order steam locomotives for the USSR from the United States, the same thing that happened in 1916–1917, when the mission of the Russian government (first the Tsarist and then the Provisional Government) tried to place orders for building steam locomotives, happened again. Just like in 1916, in 1943, the U.S. industrial sector, and in particular its mechanical engineering industry, was overwhelmed by a large amount of defence orders and was unable to manufacture steam locomotives known under the class name Ye[A] (class Ye, American) immediately — that is, in 1943[10] (*Fig. 1*). It took time to prepare the production facilities and engineering capabilities at locomotive works in the United States and Canada for the production of the locomotive class that had been all but "forgotten".

At the same time, by that time, the United States had established the production of S160 class[11] 1-4-0 steam locomotives — the so-called "military steam locomotives" or "non-luxury locomotives"[12] (*Fig. 2*). The United States built these locomotives for Lend-Lease

[9] Russian Railway Museum. Photo by: cheslav-kara.livejournal.com / https://ru-railway.livejournal.com/3294326.html
[10] This was a Ye class steam locomotive modified after thirty years of operation.
[11] "USATC" in the USATC S160 class name is the abbreviation for the United States Army Transportation Corps, which is an organization responsible for transporting weapons, ammunition, equipment, vehicles, materials, etc. to support military operations. It is still functional today; in particular, it supports the supply of U.S. weapons to Ukraine.
[12] This provokes a comparison of these steam locomotives with the well-known sea transport means — Liberty ships which were built on a large scale (in total, more than 2,700 vessels) in the United States during World War II as part of the Emergency Shipbuilding Programme. They were built using the most accessible materials, technologies, and cheap steam engines, such as, designs dating to the early 20th century, while by the 1930s, building sea and ocean ships almost exclusively used steam turbines as the main engines, and so on. Originally, the service life of these ships was five years only, although two or three of those vessels are still operational today.

Fig. 2. USATC S160 1-4-0 locomotive No. 5820. Manufactured in the United States in 1945 for the Polish Railways and shipped under Lend-Lease. In 1970, it was sold to the United Kingdom to the Keighley & Worth Valley Railway. In 2014, the locomotive underwent overhaul which included the restoration of the original grey paintwork[13]

shipments to its allied countries. The costs of production of these locomotives were minimized by excluding the use of scarce bronze and alloy steels and keeping their overall size small (the so-called "zero" size), which made them operable on nearly every railway of the world with a gauge of 1,435 mm and wider.

An order for 150 (later increased to 200) 1,524 mm gauge S160 locomotives was accepted, and in October–December 1943, the works of Baldwin and American Locomotive Company (ALCO) manufactured locomotives that were labelled as ShA class (Sh American[14]) in the USSR.

Sh^{A} class locomotives entered the USSR via Vladivostok, the ports of Murmansk and Molotov[15] and then were run to the Moscow hub. 44 steam locomotives were delivered to the USSR by January 1944; another 149 arrived by July 1, 1944. Six machines sank during transportation and one 1,524 mm gauge steam locomotive remained in the United States and was in operation until 1946 [2, pp. 337–339].

The fulfilment of the order for Ye^{A} class locomotives began in 1943. The famous railway engineer and historian Vitaly Rakov describes the fate of the Ye class locomotives ordered by the USSR as follows: "Of those steam locomotives built in 1943–1945, 2,047 units found their way to railways of the People's Commissariat of Railways, including 1,622 Ye^{A}, 412 Ye^{M16} and 13 Ye^{MV} locomotives. According to reports, year-wise, locomotives were delivered as follows: 834 in 1944; 861 in 1945; 339 in 1946; and 13 in 1947 (all locomotives were class Ye^{MV}). The construction of the last steam locomotive (Ye^{M} 4260) at the Baldwin Works was completed on August 27, 1945. ALCO also stopped building Ye^{A} locomotives in 1945 [2, pp. 339–341].

STRUCTURE OF THE LOCOMOTIVE STOCK OF THE SOVIET RAILWAYS DURING THE WAR

Ye class steam locomotives, as well as Sh class locomotives, were shipped from the United States to Vladivostok, the Murmansk and Molotov ports, and in 1945, six locomotives arrived in the Odessa port.

[13] URL: https://www.flickr.com/photos/38986305@N06/35152784656/
[14] The name of the Sh class was given to 1-4-0 locomotives manufactured in 1901–1907 that had characteristics similar to those of the ShA class.
[15] The name of Severodvinsk in the Arkhangelsk Region from 1938 to 1957.
[16] The Ye^{M} and Ye^{MV} steam locomotives had minor changes in design compared to the YeA class, which were made in-process when building an ordered batch.

The 1-5-0 steam locomotives exported to the Soviet Union began to be used on the Moscow–Kyiv, Stalin, Sverdlovsk, South Ural, Western, East Siberian, Transbaikal, Far Eastern, Primorsky, Moscow-Donbass, Amur, and Karaganda railways. After the war, as new L, SO and E^R locomotive classes emerged, Ye^A and Ye^M locomotives were transferred from the railways in the European part of the country to the railway lines in Siberia, Transbaikalia and the Far East. Steam locomotives were operated on the main lines until the mid-1960s, whereupon they were used on secondary lines and for shunting for about ten more years; some locomotives could be found as late as the early 1980s. [2, pp. 339–341].

During the first two years of the war, the main train operations were mostly exclusively performed by locomotives built in the USSR. It should be kept in mind that by 1941, the Soviet locomotive stock included a certain number of American steam locomotives that had been shipped to Russia during World War I.

By the beginning of 1941, the USSR had about 7,000 E class locomotives (*Fig. 3*) of various modifications. It was this class of locomotives, with a relatively low axle load making it possible to use them on hastily restored lines in the forward edge of the battle area, that were the key Soviet front-line locomotives during the Great Patriotic War[17]. According to various estimates, up to 68 % of all Soviet military transportation was carried out by locomotives of this class.

Shch class steam locomotives that were built as early as before the 1917 Revolution remained in operation until the 1950s (a total of 2,028 units of the class had been built). Even O^V class locomotives, known as "sheep"[18], took part in wars. In the period between the wars, they were moved to secondary lines or switched to shunting services due to the general renewal of the locomotive stock in the USSR. 4,175 "sheep" locomotives were built and a major part of them were carefully kept in service. In some places, they were operated until the 1950s.

Fig. 3. EU 708-64 (class E, reinforced) 0-5-0 locomotive, factory No. 3482; built at the Bryansk Locomotive Works in 1931. During the Great Patriotic War, it worked in Volkhovstroy and was the one to bring the first train from the mainland to Leningrad on February 7, 1943, after the breakthrough of the siege. The locomotive was installed for eternal parking as a monument at the Volkhovstroy station on May 9, 1980[19]. The monument not only serves as a tribute of gratitude to the heroic railway soldiers, but also as homage to the creators of the most widespread steam locomotive in Russia and the USSR, an irreplaceable worker of railways during three wars and the restoration of the national economy of the country. Initially, EU class steam locomotives, in particular, the EU 709-81 locomotive, even served the access railways to the Baikonur Cosmodrome

By October 1941, the Germans managed to capture only about 1,000 steam locomotives in the USSR (of which 500 were operable), and about 21,000 broad-gauge freight wagons. Most of the rolling stock of the Soviet railways survived and was moved to the eastern regions of the country. 3,388 wagons were moved out from the Orsha station during the Battle of Smolensk, and about 400 locomotives and a significant number of wagons were moved out as part of the evacuation of rolling stock from Leningrad by 800-tonne barges

[17] The concept design of the 0-5-0 steam locomotive, which received the class name E, was prepared by engineers Mikhail Pravosudovich, head of the Traction Department of the Vladikavkaz Railway, and Waclaw Lopuszynski, head of the Department's Technical Office. The working design was prepared at the Lugansk Locomotive Works which later manufactured first 15 locomotives in 1912. The E class locomotive in multiple modifications is one of the most widely used types in the world. From 1912 to 1955, more than 11 thousand locomotives of this type were manufactured by several works in Russia and the USSR, as well as in Sweden, Germany, Hungary, Poland, Romania, and Czechoslovakia. A widespread belief among Soviet railway workers was that the relatively light but powerful and easy to maintain and repair E class locomotive took out the heavy train of transport problems during the Great Patriotic War [2, p. 302].

[18] The "O^V" class of 0-4-0 locomotives is described as the "main (osnovnoy) locomotive with the Walschaerts (Valskhart) valve gear". The most widespread were various modifications of the "main" 0-4-0 steam locomotives adopted in the locomotive fleet in Russia as the "normal type". From 1890 to 1915, more than 9 thousand locomotives of the class were manufactured by 12 locomotive works in Russia. Their most widespread modifications were OV, which was fondly referred to as "sheep" (from Russian "ovechka") and OD (the "main (osnovnoy) locomotive with the Joy valve gear"), nicknamed as "joyka".

[19] EU 708-64 locomotive, Volkhov // https://vokrug-ladogi.ru/dostoprimechatelnosti/pamyatniki-monumenty/parovoz-eu-708-64-volxov/

(each carrying 4 locomotives or 10 two-axle wagons) along Lake Ladoga.

When the Red Army went on the offensive, new rolling stock began to be added to the available stock — not only by building efforts in the rear, but also with units captured in areas liberated from the enemy. In 1943 alone, the locomotive stock was expanded by 2,000 units and 56,000 wagons were added to the rolling stock. As a matter of comparison, in 1944–1945, 1,900 locomotives and slightly more than 13,000 wagons were received from the United States.

SPECIAL RESERVE LOCOMOTIVE COLUMNS OF THE PEOPLE'S COMMISSARIAT OF RAILWAYS

The People's Commissar for Railways from March 25, 1942 to February 26, 1943 Andrey Khrulyov wrote: "The railways were only able to accommodate the massive transfer of troops from near Stalingrad to the Central and Kalinin Fronts thanks to the use of locomotive columns[20]. But even on the rear railways, the columns did a lot to address challenges of train traffic. The special reserve stock, which had about 2,000 locomotives, ended the war without significant losses" [6, p. 85].

The special reserve locomotive columns of the People's Commissariat of Railways were a kind of "special forces" on railways. These units directly provided the front with everything it required. In 1943, the 31st locomotive column of the People's Commissariat of Railways had 630 FD, SO, SO^{K}, and E class locomotives, but not a single one from the United States [7, p. 249]. By the end of the war, 106 locomotive columns with 2,280 locomotives had been established. More than 30,000 railway workers worked in locomotive crews of these combat units. It was only at the final stage of the war that Ye^{A} locomotives shipped from the United States under Lend-Lease began to be used.

It should be emphasized that 1,900 or even 2,000 American locomotives delivered under Lend-Lease in the final period of the war did not make much difference in managing military or other transportation services.

For comparison, it could be noted that Order of the People's Commissariat of Railways No. 484/Ts dated June 15, 1942, created a general "reserve of steam locomotives of the People's Commissariat of Railways" which numbered 1,200 units. As of July 1, 1945, the inventory rolling stock was 25,707 units, including 1,018 locomotives in the reserve of the People's Commissariat of Railways without taking into account those designed for the West European gauge. The reserve of the People's Commissariat of Railways was at its maximum of 3,879 units on January 1, 1943. The overwhelming majority were locomotives built in Russia. On railways of the Far East only, a reserve of 880 locomotives was created by Resolution of the State Defence Committee No. 8121 dated April 13, 1945, of which 240 were new American Decapods[21].

As for the stock of freight wagons, by the beginning of the war it was determined that the average daily requirement was 100,500 wagons, including 38,250 covered wagons; 28,500 flat cars; 24,000 gondola cars; 2,000 isothermal cars; 8,000 tank cars and others wagons. The rolling stock on each of the railways counted in thousands and tens of thousands of units[22]. What could 13,000 wagons received under Lend-Lease by the end of the war add to this?

It is worth mentioning that industry workers were encouraged to ensure careful treatment of locomotives, wagons, and other railway assets not only with orders, medals, or the title "Honorary Railway Worker of the USSR", but also with considerable money rewards and improved food supplies.

OTHER MAJOR LEND-LEASE SUPPLIES FOR RAILWAYS

Let us look at Lend-Lease deliveries of metals, in particular, rails for railways in 1944–1945. Is there any reason to exaggerate their significance? Consider just some calculations.

The already mentioned researcher Robert Huhn Jones cites that a total of 12,500 km of rails were supplied under Lend-Lease [4]. Meanwhile, during the war, Soviet military railway workers built and restored 117,274 km of operational length of the main tracks, as well as secondary and station tracks, plus 2,720 km of narrow-gauge railways, and 7,990 stations and crossing loops. This required a much greater total length of rails

[20] NKPS special reserve locomotive columns (ORKP) were special formations of the People's Commissariat of Railways (NKPS) for the operation of steam locomotives during the Great Patriotic War, primarily on front-line and near-frontline railways. The State Defence Committee made a decision to establish them by Resolution No. 2263/ss on September 7, 1942. Locomotive columns were a special form of management and operation and provided high levels of maneuverability, responsiveness, and the ability to concentrate transport vehicles in areas of mass military transportation. They were successfully operated separately from locomotive depots and maintenance facilities on large operating domains. In total, there were 2,280 steam locomotives in 106 columns.

[21] Report on the mobilization of the railways of the Soviet Union...

[22] Report on the mobilization of the railways of the Soviet Union...

(even for single-track sections) than those supplied by the United States.

Thus, at a liberal estimate, the real contribution of Lend-Lease supplies for railways was no more than 10–15 %. The rest of the rail tracks necessary to cater for all requirements of the front that were built anew or restored were built at the expense of internal sources.

This was the situation until January 1944, when, according to American data, no railway assets were received from the United States. Suffice it to recall the rails removed from the built sections of the BAM for the construction of the Volga lateral line, and the dismantling of the track superstructure at a number of other sections in order to address current problems.

Nevertheless, we can state that Lend-Lease deliveries for railways helped to maintain a high rate of advance of the Soviet Army in 1944–1945 and contributed to the rapid concentration of troops for the war against Japan, in which the United States was very interested.

This is what we learn from the memoirs of Andrey Khrulyov, who, in his main position, headed the Red Army Rear Services throughout the war and was well informed about Lend-Lease supplies in general: "Facts and figures suggest the following: Under the Lend-Lease programme, the Soviet Union received about 16 million tonnes only. As little as 5,400 tonnes were received in 1941; 1,229,200 tonnes were received in 1942; in 1943, we received 4,500,800 tonnes; 6,475,500 tonnes arrived in 1944; and 4,491,900 tonnes came in 1945. These figures show that almost 11 million tonnes were delivered to the USSR in 1944 and 1945 alone. What is then the value of the statement that it was only through receiving Lend-Lease aid from the United States that the Red Army became able to strike at Hitler's military machine? Everyone knows that by the end of 1944, we had already completely cleared the territory of the Soviet Union of the fascist army and had presence in a number of places far beyond our borders" [8, p. 85].

Without exaggerating the importance of Lend-Lease for supporting the operation of the most important sector of the Soviet economy during the years of the most difficult war, we should remember that the aid received was significant.

Here is information from the already mentioned monograph by Irina Bystrova, which was collected in the Russian State Archive of Economics (RGAE): "In general, according to a summary report on placing orders under the Lend-Lease programme between October 1, 1941 and September 15, 1945 through the Soviet Procurement Commission[23] in the United States, with respect to rails, 403,436 gross tonnes worth USD 18,035,237 were requisitioned, accepted by Lend-Lease and contracted; 401,792 gross tonnes worth USD 17,966,438 were delivered to ports; and 401,726 gross tonnes worth USD 17,963,823 were shipped to the USSR. For other types of railway materials the situation is the following: fish plates: 22,937 gross tonnes worth USD 1,712,436 dollars were requisitioned, accepted by Lend-Lease and contracted; 22,891 gross tonnes worth USD 1,708,436 were delivered to ports and shipped to the USSR; baseplates: 108,354 gross tonnes worth USD 5,726,041, and 108,215 gross tonnes worth USD 5,719,029, respectively; bolts: 3,045 gross tonnes worth USD 358,875 and 2,999 gross tonnes worth USD 353,566, respectively; washer plates: 177 gross tonnes worth USD 71,706 were shipped to the USSR in full in accordance with the requisitions placed; iron spikes: 25,120 worth USD 1,837,046 were requisitioned, accepted by Lend-Lease and contracted, 25,075 worth USD 1,833,411 were delivered to ports and shipped to the USSR; rail anchors: 6,559 gross tonnes worth USD 241,251 were shipped to the USSR in full; frogs: 1,132 gross tonnes worth USD 241,251 were delivered in full; switch assemblies: 19,235 worth USD 10,711,667 were requisitioned, accepted by Lend-Lease and contracted; switch stands: 908 gross tonnes worth USD 356,385 were delivered in full; mine rails: 1,952 gross tonnes worth USD 108,183 were shipped in full in accordance with orders. Wagon tyres: 23,692 gross tonnes worth USD 3,193,834 were requisitioned, accepted by Lend-Lease and contracted, 23,628 gross tonnes worth USD 3,193,834 were delivered to ports and shipped to the USSR; locomotive tyres: 18,337 gross tonnes worth USD 2,429,906 were requisitioned, accepted by Lend-Lease and contracted, 18,244 gross tonnes worth USD 2,416,915 were delivered to ports and shipped to the USSR; locomotive axles: 198 gross tonnes worth USD 29,485 were delivered to the USSR in full; wagon axles: 32,363 gross tonnes worth USD 2,612,310 were shipped in full. All requisitions for solid-rolled wagon wheels (19,658 gross tonnes worth USD 2,160,941) and wagon wheel sets (21,312 gross tonnes worth USD 2,457,115) have been fulfilled" [5, pp. 296–297].

The People's Commissar for Railways of the USSR in 1944–1948 Ivan Kovalev later wrote: "Indeed, what I first learned as the People's Commissar about the situation on transport confirmed what I already knew as the head of military communications: the victorious year 1944, which was spent in continuous offensive

[23] The Soviet Government Procurement Commission in the United States, also known as the Soviet Commission for Procurement, was appointed by the Council of People's Commissars of the USSR on February 24, 1942 to implement the provisions of the U.S. Act to supply military equipment during World War II to 11 countries, including from the United States to the USSR; it was based in Washington, D.C.

battles, put our railways on the brink of crisis. And this was no paradox. The reason is simply that in the fourth year of the war, the railway transport sector, which mainly supported itself from internal reserves, had almost exhausted these reserves and could no longer withstand the continuously increasing loads" [9].

It seems that the country's leadership kept a close eye on how the Americans were gradually getting themselves moving to proceed with Lend-Lease supplies, and made decisions on what was needed to be procured for railway transport based on reports from the People's Commissariat of Railways. Much has been done based on concerns about the future post-war restoration and development of the country's railways.

What deserves a special note is the use of Lend-Lease railway equipment during the defeat of the Japanese Kwantung Army at the final stage of World War II. Workers and employees of the Far Eastern railways exerted their utmost efforts for four years of the war, constantly experiencing a shortage of machinery, materials, equipment, and food, which were primarily sent to battle areas.

Vasily Isakov who headed the Fourth Locomotive Department of the Far Eastern Railway during the war, recalled: "People worked very hard. Locomotive engineers did not leave their locomotives for weeks, and repairmen spent nights at the depot. Trackmen, wagon workers, signalmen, and traffic management workers worked arduously. And the diet was very poor" [10, p. 45].

The Far Eastern Railway entered 1945 with a low level of technical equipment. In 1940–1944, the equipment wore out and was repaired at local workshops. The railway Lend-Lease aid that arrived in time from the Americans, who were interested in the defeat of Japan, played a role. However, this issue deserves a special analysis and assessment.

CONCLUSION

It is high time for the professional railway community and the general public to duly appreciate the great feat of both administrators and all workers of the Soviet railways during the war period. In the first 2.5 years of the war, it was only due to the high professionalism of administrators of the People's Commissariat of Railways and all employees of the Soviet railways, along with the dedication, resourcefulness and smart performance of railway workers, technicians and engineers at all levels that the following was achieved under the extreme conditions:

- intense, huge-scale transfers of troops and equipment;
- unique rates of railway construction and restoration of bridges and other railway facilities;
- highly efficient operation of the entire massive railway facilities created by the beginning of the war.

We have every reason to believe that the Soviet leadership was confident in railway workers. As early as the 1930s, railway transport began to be referred to as "the Red Army's blood brother". In 1943, railway personnel were put on a war footing. This was indeed a real, disciplined and well-organized army of about three million people.

That is why in 1941–1943 the Soviet leadership asked the United States for weapons and materials primarily for other people's commissariats, and the People's Commissariat of Railways was able to do without American supplies, using its internal resources.

The approach to assessing the contribution of the Lend-Lease programme to the operation of Soviet railways that was used by some authors should be recognized as methodologically erroneous. This mechanistic and, to put it bluntly, simplistic approach is as follows: during the war, the industrial sector of the USSR manufactured few locomotives and wagons; therefore supplies from the United States by far exceeded the domestic output.

In fact, the physical resources and infrastructure of the Soviet railway transport sector was so significant that when its production facilities were switched to defence orders, the available reserves were quite sufficient to successfully address all the challenges in supplying the army and the rear in the period from June 1941 to December 1943 without locomotives and wagons from the United States.

REFERENCES

1. Ryzhkov N.I. *The Great Patriotic War: Lend-Lease*. Moscow, Economicheskaya Gazeta, 2012;439. EDN QPWVPP. (In Russ.).

2. Rakov V.A. *Locomotives of Domestic Railways, 1845–1955. 2nd ed*. Moscow, Transport, 1995;664. (In Russ.).

3. Kumanev G.A., Serazetdinov B.U. *The military economy of the USSR as the most important factor in the Great Victory (1941–1945)*. Moscow, Veche, 2015;512. EDN VRHWGV. (In Russ.).

4. Jones R.H. *Lend-Lease. Roads to Russia: US Military Supplies for the USSR in World War II 1941–1945*. Moscow, Tsentrpoligraf, 2015;564. (In Russ.).

5. Bystrova I.V. *Lend-Lease for the USSR: Economics, Equipment, People (1941–194)*. Moscow, Kuchkovo Pole Publishing House, 2019;479. (In Russ.).

6. Khrulyov, A.V. Formation of the strategic rear in the Great Patriotic War. *Military History Journal*. 1961;6:84-86. (In Russ.).

7. Manzhosov A.N. *"We will remember these runs..." (Activities of special formations of the People's Commissariat of Railways of the USSR and railway troops to support combat operations of the Red Army during the Great Patriotic War of 1941–1945)*. Kursk, 1999;350. (In Russ.).

8. Khrulyov A.V. United States Lend-Lease supplies. *Economist*. 2021;7:85. (In Russ.).

9. Ivan Kovalev: the legend of the railway. *Ratnik*. 2019. URL: https://ratnik.tv/articles/heroes/ivan-kovalyev-legenda-zheleznoy-dorogi/?ysclid=mb899ebdvz327840138 (In Russ.).

10. *Komsomolskaya Magistral: Far Eastern Railway: Essays. Memories. Articles*. Khabarovsk, 1996;188. (In Russ.).

ЛИТЕРАТУРА

1. *Рыжков Н.И.* Великая Отечественная: ленд-лиз. М.: Экономическая газета, 2012. 439 с. EDN QPWVPP

2. *Раков В.А.* Локомотивы отечественных железных дорог, 1845–1955 гг. 2-е изд. М.: Транспорт, 1995. 564 с.

3. *Куманев Г.А., Серазетдинов Б.У.* Военная экономика СССР — важнейший фактор Великой Победы (1941–1945 гг.). М.: Вече, 2015. 512 с. EDN VRHWGV.

4. *Джонс Р.Х.* Ленд-лиз. Дороги в Россию: военные поставки США для СССР во Второй мировой войне 1941–1945. М.: Центрполиграф, 2015. 564 с.

5. *Быстрова И.В.* Ленд-лиз для СССР: Экономика, техника, люди (1941–1945 гг.). М.: Издательство «Кучково поле», 2019. – 479 с.

6. *Хрулёв А.В.* Становление стратегического тыла в Великой Отечественной войне // Военно-исторический журнал. 1961. № 6. С. 84–86.

7. *Манжосов А.Н.* «Будем помнить эти перегоны...» (Деятельность специальных формирований Народного комиссариата путей сообщения СССР и железнодорожных войск по обеспечению боевых операций Красной Армии в период Великой Отечественной войны 1941–1945 гг.). Курск, 1999. 350 с.

8. *Хрулев А.В.* Американские поставки по ленд-лизу // Экономист. 2021. № 7. С. 85.

9. Иван Ковалев: легенда железной дороги // Ратник. 2019. URL: https://ratnik.tv/articles/heroes/ivan-kovalyev-legenda-zheleznoy-dorogi/?ysclid=mb899ebdvz327840138

10. Комсомольская магистраль: ДВЖД: Очерки. Воспоминания. Статьи. Хабаровск, 1996. 188 с.

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