

CENTRAL AND EASTERN EUROPE 1941–1942 (see maps on the page 411)

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|  Third Reich, its allies, and occupied territories (21 June 1941) |  Soviet Union (21 June 1941) |
|  Neutral states (21 June 1941) |  Maximal reach of the Axis forces in the East (1941-1942) |

Robert Rochowicz

Military Institute of Armament Technology, Zielonka, Poland
ORCID 0000-0002-1533-6725



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AMERICAN AND BRITISH MILITARY AID TO THE RED FLEET DURING WORLD WAR II

ARTICLES

Abstract

One aspect of the Anglo-American military aid to the Soviet Union under the Lend-Lease Act during World War II was the supply of several types of vessels that became part of the Red Fleet. In addition, the supplies included arms, engines, power generators, and components of naval equipment. The supplies significantly strengthened the Soviet Navy, both during and after the war.

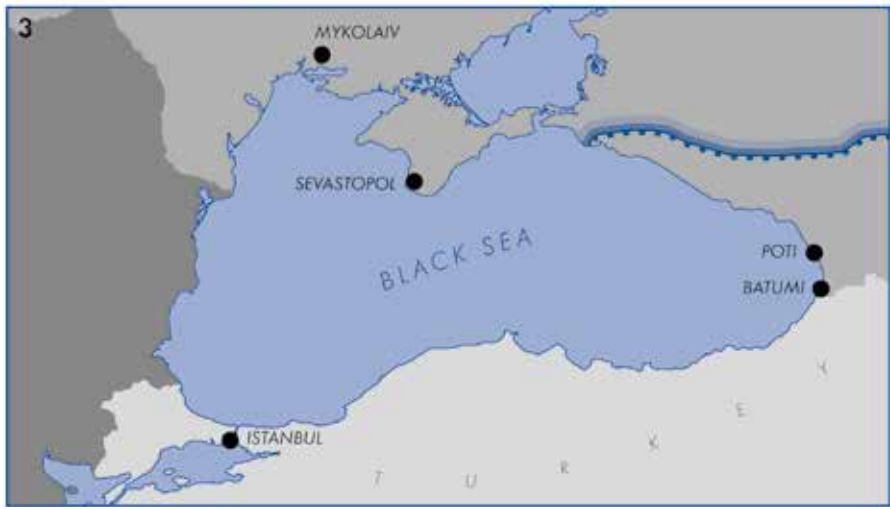
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Introduction

The problem of the military aid given by the United States and Great Britain to the Soviet Armed Forces between 1941 and 1945 was discussed for many years after the war, yet only by the donor countries that provided specific types of arms and equipment. While the amount of equipment and the types of devices that were sent to the USSR are generally known, the all-encompassing assessment of the issue from the point of view of the beneficiary is less clear.

Until the end of the 1980s, the subject of supplies under the Lend-Lease Act was hardly discussed in Russian, or Soviet, historiography (Pozdeyeva 2010). No one denied that the equipment was received, but its impact on the overall warfare and the effort of the country during the war tended to be marginalized. According to the official estimates issued in 1948 by Nikolai Alexeyevich Voznesenski, the first deputy chairman of the Council of People's Commissars, the supplies amounted to no more than 4% of the domestic production in 1941–1945 (*Lend-liz* 2000). Works published at the time lacked any information based on the documents from the military archives which were inaccessible to most researchers until the last decade of the 20th century. Before that, the problem of the adequacy and the usefulness of the equipment supplied by the Allies had not been thoroughly explored. Instead, the discussion concentrated on the political aspects of the military collaboration. This approach is hardly surprising given that after the war the USSR, the USA and Britain were divided by the Iron Curtain.

Owing to *glasnost* and *perestroyka*, and the subsequent decline of the Soviet Union, the military archives became more open to the public. In effect, many important studies concerning the history of naval arms, among others, have come to the light (Krasnov and Artemyev 1992). The same works have also investigated problems related to the worldwide military aid provided by the USA and Britain during World War II. Some of them cite complete lists of vessels which have been part of the Soviet and Russian fleet from the time of the Russian Revolution (1917) until the present day. The lists include the dates when the ships were built, the main events occurring during their military service, technical data, and the history of the projects' implementation. A complete register of the Soviet Navyships up to 1945 is given in a three-volume work by S. S. Bierzchnoy (Berezchnoy 1988 and Berezchnoy 1994a). A few years later, A. Shirokorad (see



Shirokorad 2002) published another variant of the list in a one-volume book. Reports on how individual ship components were made, and the descriptions of the weapon systems and electronic devices helped researchers find some answers to the question of the quality and technical condition of the Soviet Navy (*Voенно-морской Флот СССР*, i.e. VMF SSSR) before June 1941, as well as the significance of the military supplies to the Soviet Union during the war (Pozdeyeva 2010).

The Red Fleet Under Construction

In 1941, VMF SSSR, like all military forces, was subject to a dynamic expansion with regard to the personnel, infrastructure and equipment. The grand 10-year modernization plan initiated in 1938 was aimed at building several hundred ships of different types from aircraft carriers and battleships, through cruisers, destroyers, and submarines to small coastal ships. The list included, among others, 6 battleships (ships of the line), 21 cruisers and 98 destroyers (Shitikov, Krasnov and, Balandin 1995). In 1941, the plans were only just afoot. Selected types of new ships went right into flow production but many other were still on the drawing boards in design offices. The designs included, for example:

- battleships (project 23); in 1939, four hulks started to be built; in 1941, all of them were still in the early stages of the production process; none of them were finished and the works were completely abandoned after the war;
- light cruisers (project 68); in 1939, the construction works for seven hulks began in the shipyards in Leningrad and Mykolaiv; two of the hulks were destroyed after Mykolaiv was taken over by the Germans. The remaining five were left intact and the works were completed after the war; the original design was modified to a certain extent, namely, the cruisers were equipped with radar stations;
- destroyers (project 30); in 1939, eleven hulks started to be built, although the original project was devised for twenty-eight destroyers; only one destroyer was completed by 1949; the remaining ones were built after the war but the design was modified, namely, the destroyers were equipped with radar devices and a more up-to-date sonars;
- big submarines of the K-type; the construction works on twelve hulks began, out of which six were put into service before the

- war, and five more were completed during the war;
- forty-one hulks of submarine ships of different types and in different stages of the production process were moved into maintenance during the war;

Moreover, works initiated before the war included the construction of the following: the hulks of 25 minesweepers, 10 big submarine chasers, 70 motor torpedo boats; most of these vessels, as well as the subsequent ones, were built during the war (Shitikov, Krasnov and Balandin, 1995, 5–21).

On 22 June, 1941, the first day of the Third Reich's attack on the VMF, the SSSR had at its disposal: 3 battleships, 1 heavy cruiser and 7 light cruisers (the USSR did not sign naval disarmament treaties and it did not implement the generally accepted standardization norms, which divided the cruisers into two categories: heavy and light. The division adopted here is conventional and meant to indicate the approximate evaluation of the potential of the ships as compared to the tactical and technical parameters adopted in other countries for both subcategories), over 230 submarine ships of different sizes, 7 big destroyers – the so-called leaders, 77 destroyers, 24 patrol vessels, over 430 motor torpedo boats, and 78 submarine chasers (Shirokorad 2002). Thus, the fleet was not substantial, perhaps with the exception of the motor torpedo boats (in this case, however, the number of vessels was inversely proportional to their quality, as most of the MTBs were outdated and served merely as training ships). Furthermore, the resources were split between four main bodies of water and stationed at the Far East, the Baltic Sea, the Black Sea and the Arctic waters. In the event of a conflict in Europe, the Pacific Ocean Fleet could not, in principle, be counted as a part of combat value.

Due to the fact that the major Soviet shipyards were located along the coast of the Baltic Sea (Leningrad) and the Black Sea (Mykolaiv, Sebastopol) (Shitikov, Krasnov and, Balandin 1995, 9, 11, 13), the situation on the eastern front in the summer and autumn of 1941 did not help to speed along the expansion of particular fleet forces. Although the Leningrad shipyards were operating even during the siege, they focused mainly on the production of light vessels, such as motor torpedo boats, small submarine chasers and minesweepers. The situation was similar in the shipyards on the Caucasian coast of the Black Sea (Poti and Batumi). Many vessels were built and put into service only thanks to equipment deliveries provided by the Allies, which included engines, power generators, accumulator batteries, and parts of armament.



Soviet military mission after arrival to USA, La Guardia airport, New York, July 1941.

Soviet Ambassador Konstantin Umansky (centre), Gen. Filipp Golikov, deputy chief of staff of the Red Army and head of Main Intelligence Directorate (GRU) (left), Col. Alexandr Repin (second from right), Soviet attaché militaire in USA Maj. Il'ya Saraev (right). Press photo, National Digital Archives, Warsaw, Poland, collection Wydawnictwo Prasowe Kraków-Warszawa, ref. no. 3/2/0/-/17058

The Lend-Lease Act – Aid to the Soviet Navy

On 11 March 1941, the American Congress passed a federal law known as the Lend-Lease Act, which allowed the US authorities to grant loans, rent, sell and transfer material goods, such as raw materials, food and war equipment free of charge to the anti-fascist coalition countries (Lend-Lease Act 1941). The first countries to join the programme were the UK, China and Free France. The Soviet Union entered the programme after 22 of June 1941. The first fleet of ships carrying military aid left Hvalfjörður in Iceland on 21 August 1941, and reached Arkhangelsk ten days later (It is in the waters surrounding Iceland that subsequent fleets were formed on the Arctic route. It is also here that the ships coming from the British and American ports were assigned their positions in formation and sent further eastward) (*Lend-liz 2000*).

In 1941-1945, VMF SSSR was granted multi-layered aid. As regards the naval equipment, water crafts were the most obvious component of the support provided for the new member of the anti-fascist coalition. However, emergency supplies were provided even earlier, before the Soviet crews received the first vessels. They included single weapon systems, ammunition, fuel and food supplies delivered by the convoys. According to Russian studies based on the archival documents, the Navy used circa 50,000 tons of isoctane and 40,000 tons of high-octane aviation gasoline B-100. The fuel supplied by the Americans

and the British was used for the planes sent as part of the aid, too. It was also mixed with domestic lower-octane aviation fuel used for the planes manufactured in the Soviet Union. According to the Russian historians, imported food supplies amounted to circa 25% of all the rations given to the crews of the Soviet ships during the war (Komarov 2014; Komarkov 2014).

However, as mentioned above, water crafts were the most essential part of the supplies. Owing to the implementation of the Lend-Lease Act, VMF SSSR received a total of 676 water crafts, including warships, and auxiliary vessels. The exact numbers vary slightly, depending on the publication. According to some authors, they may have been higher. However, it is impossible to verify the data without conducting *in situ* research in the Russian archives. The Soviet crews included, among others:

- 28 convoy vessels of the *Tacoma* type (in the country of origin they were classified as gunboats, and later, as of 1943, as patrol frigates;
- 202 torpedo boats of three types;
- 138 submarine chasers of two types;
- 89 minesweepers of four types;
- 49 landing crafts of three types (Berezhnoy 1994a).

The numbers given above are impressive even though the vessels had little or no military value (cf. commercial vessels below). However, it is exactly these types of ships that the Soviet fleet operating within the closed waters of the Baltic and the Black Seas needed most. They did not need submarines since they had enough of their own. Large



USS Tacoma (PT-3) patrol frigate, 29 October 1943, one of the Tacoma class ships transferred to Soviet Navy (as EK-11). Official U.S. Navy Photograph. Courtesy of the Naval History & Heritage Command, ref. no. NH 107264, history.navy.mil

convoy ships that protected the convoys on the Arctic waters, on the other hand, were provided by the US Navy and the Royal Navy.

The first supply included seven minesweepers of the TAM-type. They were the former Norwegian whalers confiscated by the Royal Navy and transformed into auxiliary minesweepers in 1940. They were deployed in 1942 with full equipment, including minesweeps with acoustic (bow sound generator, the so-called bow hammer) and magnetic detonators, neither of which was known to the Soviets at that time. In October 1942, five more, smaller but more advanced MMS minesweepers were delivered. All twelve water crafts became part of the Northern Fleet. Their main task was to protect the shipping routes leading to the ports in Murmansk and Arkhangelsk. Yet another group, consisting of ten minesweepers of the AM-type, was sent to the same waters between June and October 1943 (Shirokorad 2002).

Deliveries of other types of ships started in 1943. In April 1943, the Soviet crews began operating the first torpedo boats sent by the US. The shipment of these vessels caused many problems since they had to be transported to their destination on board of commercial ships. Moreover, as of 1944, vessels of this type were first sent to Murmansk or Arkhangelsk, and from there – further to the Baltic or the Black Sea, where they started their military service for the Soviet Navy. In 1943, submarine minesweepers were delivered, too. The first eight heavy vessels, classified in US as the SC-type, were shipped to Murmansk. However, the biggest handover of vessels to the Soviet Union took place in 1944. The process was time-consuming since the ships had to be dismantled into pieces, the dislocation had to be changed, and finally their former technical efficiency had to be fully restored. In some cases, the supply of hulks to a Soviet port took place in January 1945. The entire process of redeployment and the preparation of the ships for military operations would take a year or even longer. When the war ended, the rush was no longer necessary and that is why the last torpedo boats were put into service on the Baltic Sea in September 1947 (Komarkov 2014; Komarov 2014).

Similarly, some of the submarine chasers were moved to different waters after they had been transported to a Soviet port. The transport of heavy chasers to the Arctic Sea began in the summer of 1943 and lasted until January 1945. Beginning in 1944, the transport of some vessels to the Black Sea was arranged via inland routes. Most of these vessels took part in military operations at the Black Sea. At the same time, lighter water crafts of the American RTS-type, turned into light submarine chasers in the Soviet fleet, were moved to Murmansk and

Petropavlovsk at Kamchatka in the Far East from February to March 1944. These transports ended after approximately four months (Berezhnoy 1994a).

Interestingly, the ship supplies to the Red Fleet significantly strengthened the forces based in Murmansk and Arkhangelsk in March and April 1944. On account of the anticipated share in the Italian naval resources that were supposed to be distributed among the Allies as part of the settlement, the Royal Navy and the US Navy sent the following ships to the Soviet Union in advance: 1 battleship (HMS *Royal Sovereign*, i.e. VMF SSSR *Arkhangelsk*), 1 light cruiser (USS *Milwaukee*, i.e. VMF SSSR *Murmansk*), 9 destroyers, and 4 submarine ships. Only the latter were relatively advanced models built in British shipyards shortly before or during the war. The battleship, the cruiser and the destroyers were models of the old type built during World War I. They were handed over to the Soviet Fleet so that it could protect the northern shipping routes more efficiently after the American and British forces, formerly responsible for the task, focused on providing fire support for the troops landing in France. It should be pointed out that the above mentioned destroyers were transferred to the Royal Navy in 1940 by the US Navy. It was part of a plan devised to expand the escort forces which provided anti-aircraft and anti-submarine defence for the convoys travelling between the USA and Great Britain (*Navsource*).



Battleship *Arkhangelsk*, i.e. former Royal Navy *HMS Royal Sovereign*, was the biggest ship VMF USSR obtained as a military aid during World War II. (1944) © Crown Copyright. Imperial War Museums, ref. no. A 23812

The Contribution of the Military Aid to the Great Patriotic War

During World War II, the Soviet fleet did not carry out any strategically significant naval operations in Europe. Extra vessels located in the Arctic waters provided the protection of the inland waters at the White Sea, the Kara Sea, and the Barents Sea. The process of mine clearing in the waters surrounding the Norwegian land alongside the pre-war border with Finland and the Soviet Union occupied by the Germans was then initiated. This process paved the way for

the Petsamo-Kyreneian operation in 1944, which helped to push the Germans to the West, set up a convenient base for the Northern Fleet in the fjords, and minimize the danger of air raids on Murmansk.

In an attempt to evaluate the contribution of the ships received by the Soviet Union via the military aid and the activities of the Soviet Navy, one should highlight the input of the Northern Fleet, in the first place. The former American and British ships significantly reinforced the Northern Fleet when the war broke out, especially since the Fleet did not have any battleships or cruisers before. Also destroyers were always scarce at this busy communication route. The number of torpedo boats raised significantly, too: 5 Soviet torpedo boats, produced in July 1941, were reinforced by 47 American vessels of three types. At the outbreak of war, minesweepers were available only due to the mobilization of the fishing units. The latter, however, had little military value as compared to the units provided by the Allies (*Lend-liz* 2000).

Destroyer HMS
Churchill (former USS
Herndon), transferred
to Soviet Northern
Fleet and renamed
Deyatelny. © Crown
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War Museums, ref.
no. FL 25452

The ships supplied by the Allies were operated until the end of war, even though they were not particularly efficient. The submarines managed to sink five patrol vessels and chasers, while the torpedo boats – according to Russian studies – sank 13 lighter ships and troop ships. The most significant success was supposed to be the sinking of a U-Boot by the *Derzhkiy* destroyer in August 1944. It is not entirely



clear, however, what part the latter vessel played in this military action. According to the British and American studies, in August 1944, two U-Boats chasing the JW 59 convoy ships were sunk. In both cases, however, the Soviet destroyer was merely one of the military escort vessels. U 344 was sunk by the Swordfish crew from HMS *Vindex*, and U 354 by the British ships HMS *Mermaid* and HMS *Loch Dunvegan*. The active role of the Soviet ship in the destruction of U 344 has only been reported by Berezhnoy (Berezhnoy 1994b).

Regrettably, there were also losses. Out of all the vessels supplied by the Allies, 9 torpedo boats, 7 submarine chasers, and 4 minesweepers were sunk in the Arctic waters. That the area was dangerous for the Allied fleet even in the final months of the war is confirmed by the fact that a destroyer – known as USS *Herndon*, renamed HMS *Churchill* in 1940, and – *Deyatelny*, as of 10 April 1944, was torpedoed by a German submarine during a patrol on the Barents Sea on 16 January 1944 (Komarkov 2014, Komarov 2014).

After the end of war in Europe, the ships provided by the Allies began to perform training courses. In 1949, when the Soviet Navy eventually took over its share of the Italian ships, the water crafts received via the military aid in 1944 were returned to the Royal Navy, with the exception of the above-mentioned sunk destroyer and a submarine lost in 1944 (the former British submarine HMS *Sunfish* began its journey to the Polar base on 27 July 1944 under the command of the Soviet crew but it was sunk by the British patrol aircrafts on 30 May 1944). Most ships changed the Navy ensign for the last time between February 1949 and January 1950. Only two destroyers remained in the ranks of the Northern Fleet until August 1952 (Berezhnoy 1994b).

Submarines and torpedo boats, which prevailed in the Baltic Fleet, gained greater operational freedom in the Baltic waters after Leningrad was liberated and access to Estonia and Latvia restored in 1944. Similarly, in the Black Sea, the German fleet became defensive only after the Crimea was recaptured from the Germans in May 1944. However, different units of the former American and British vessels reached their destination relatively late during the war, and many of them did not make it on time to take part in any military operations at all before the war in Europe ended. Inevitably, this had an impact on the statistics. The fact that the Soviet vessels did not participate in any significant military operations meant that not many ships were lost, but, at the same time, no spectacular successes were achieved, either (Shirokorad 2002).

LCI(L)-196 vessel, 3 August 1943, Sicily, near Scoglitti. Such landing craft vessels were transferred to the Soviet Pacific Fleet, and were used in landing operations against Japanese Isles in 1945. Official U.S. Navy Photograph, Library of Congress, Digital ID cph 3b43752

There Is Still Japan Left

The capitulation of the Third Reich was not the last act of World War II, nor did it end the cooperation of the three great powers. There was still Japan left to be defeated. Although Stalin agreed to take part in the final confrontation in Asia, the necessary prerequisite to accomplish the task was to strengthen the Allied forces in the Far East. Therefore, the military aid following from the Lend-Lease Act continued, although now the reception points were confined to the Soviet bases located along the Pacific coast. The same arrangements were made regarding the naval equipment (*Lend-liz* 2000). Since Japan was completely passive due to the effective non-aggression pact with the Soviet Union, a total of approximately 8,600,000 tons of cargo were transferred from the USA through the Pacific (400,000 tons of which were transferred via the Bering Strait directly to the High North). By way of comparison, only 3,900,000 tons were transferred via the Northern Atlantic, 680,000 – via the Mediterranean Sea and the Turkish Straits, and 4,160,000 – via Iran and the Caspian Sea. Before 1941, the Soviet Pacific Fleet, like the Northern Fleet, was relatively



small, and its ships were neither particularly modern nor technically advanced. Registers from that period list only 3 destroyers, a gunboat, a division of torpedo boats and about 30 submarines, most of which were light and transported via land from Europe (Shirokorad 2002). One of the tasks that the Soviet Union took on in what was assumed to be the last phase of the war with Japan was the coordination of naval amphibious operation on the Kuril Islands. The strengthening of the naval forces was, therefore, of vital importance.

The first ships handed over as part of the American-British military aid in the Far East were transferred in April 1944. They included patrol ships, classified as small submarine chasers in the Soviet fleet. The latter were to patrol the Bering Strait waters. Subsequent units sent to the Soviets were devised as part of the preparations for the new battle front against the Japanese (*Lend-liz* 2000).

Taking all these ship supplies into account, the Pacific Ocean Fleet turned out to be the largest beneficiary of the military aid following from the Lend-Lease Act. In sum, it included the following: 28 Tacoma-class escorts (*Navsource*); 64 torpedo boats of two types (32 units of the Vosper and Higgins types each), 55 minesweepers (including 24 of the AM-type and 31 of the YMS-type); 61 submarine chasers (including 32 larger and 29 small ones); 40 landing crafts (30 larger of the LCI-type and 10 smaller of the LCT-type). The entire project was even assigned a separate name, i.e. the Hull Project (Russell 1997). It is worth noting that the largest water crafts on the list, namely the escort ships, along with the vast majority of the landing crafts, were all assigned to the Pacific Ocean Fleet. Although the Soviet Union launched a large-scale land military operation in Manchuria on August 8, after it had declared war with Japan, the naval operations – vital for the geopolitical balance of forces – were continued. It was possible due to the above-mentioned escort ships and landing crafts supplied by the US Navy. The number of escort ships transferred then outnumbered the total of destroyers previously owned by the Pacific Ocean Fleet. Before that, the latter had fewer home-built minesweepers and no landing crafts or chasers, either (Berezhnoy 1988).

Undoubtedly, the most famous operation carried out by the Pacific Fleet at the time was a series of naval landings on the Kuril Islands, which took place between August 18 and September 1, 1945. The Japanese fought hard defending their positions even though their garrisons were relatively small. On the first day of the operation, the Soviets lost four LCI-type landing crafts destroyed in the artillery fire, but these were the only losses incurred on their part. Military operations continued

after Japan announced it was ready to surrender unconditionally. The newly deployed ships managed to take part in the seizure of the southern part of Sakhalin and the ports in the northern part of the Korean Peninsula. After Japan surrendered on October 15, 1945, two minesweepers supplied by the Americans sank in mine explosions.

It is worthwhile pointing out that, *per analogiam* to the earlier situation on the European front, ship deliveries did not end when Japan signed the act of surrender on September 2, 1945. It was partly caused by delivery delays to the Soviet ports, which, in the case of the Higgins torpedo boats, were protracted until October 1945 (*Lend-liz* 2000).

Not Only Water Crafts

The actual support that the VMF SSSR received due to the Lend Lease Act goes beyond the list of ships, water crafts and auxiliary vessels. Of equal importance were also benefits such as armaments, conventional naval equipment, communications and reconnaissance systems, and ship engines. All of the above found their way onto the boards of ships constructed in Soviet shipyards.

In the course of bilateral negotiations, representatives of the Soviet Navy briefed the Americans on the deficiencies regarding the types of weapons and naval equipment. The talks preceded the first supplies. As a matter of priority, the Soviets listed automatic anti-aircraft weapons, search and anti-submarine systems and minesweeping equipment (*Lend-liz* 2000).

According to Russian publications, the majority of items delivered to Murmansk and Arkhangelsk included 20 mm anti-aircraft guns of the Oerlikon system (1,998 pieces) and 12.7 mm heavy machine guns of the Vickers and Colt Browning types (1512 pieces). In addition, the supplies included 147 American 76 mm and 127 mm heavy machine guns and 20 British 76 mm and 101.8 mm heavy machine guns, each. Most of them were installed on the ship decks. Moreover, troop ships, such as *Liberty*, were armed with 127 mm guns (Komarkov 2014, Komarov 2014). It is worthwhile mentioning that after the war, three 127 mm heavy machine guns manufactured in the US were installed in coastal positions in Świnoujście in the Pomerania region, at a local Soviet naval base. They were operated until the mid-1950s (*Wspomnienia* 2016).

In the following months of the war, further deficiencies in the armament of the ships came to the attention of VMF SSSR. Accordingly, a request was issued for minesweeping sets devised

mainly to dispose of new types of acoustic and magnetic mines. These were supplied to the Northern Fleet along with minesweepers and soon after that they started controlling the final sections of the convoy route to Murmansk and Arkhangelsk.

Many years later, when more and more studies concerning the military aid to the Soviet Union were published, it turned out that Soviet factories tried to copy American electromagnetic and acoustic minesweeps. However, Russian production technologies diverged significantly from the original ones. Consequently, the manufactured devices did not meet the required technical parameters. Hence, it was necessary to order additional sets of minesweeps for the minesweepers manufactured in Soviet shipyards. By the end of the war, the Americans provided 47 electromagnetic sweeps and 84 acoustic sweeps, as well as a small number of mechanical sweeps and, river and port sweeps (*Lend-liz* 2000).

Furthermore, it was necessary to protect the convoys against the U-boats. The ASDIC sonars and Hedgehog depth charge launchers installed on American and British ships were a novelty for the Soviet crews. Therefore, it is not surprising that they soon appeared on the list of requested items. In 1943, the Soviet crews took over the first AM-type minesweepers adapted to submarine searching. Along with the latter, the Allies sent units of modern minesweepers, an ASDIC sonar and a Hedgehog mortar. The Russian crews now had an opportunity to get to know a different type of depth charge projector, namely the American Mk 20 Mousetrap as well as sonars and radar stations designed overseas. The new anti-submarine weapons quickly became a desirable commodity. By the end of the war, the Soviet Union received over 20 000 depth charges, mostly rocket depth charges, and 105 British ASDIC sonars, such as ASDIC-128 and ASDIC-144 for larger ships, namely, destroyers and frigates; ASDIC-129 for submarines, and ASDIC-134 for coastal vessels including large and small submarine chasers (Komarkov 2014, Komarov 2014).

Radar stations, sent to the Soviet Union, were yet another novelty used on contemporary battlefields. Given that Russians started to manufacture these devices on a large scale only in 1944, it was an invaluable experience for them to get to know the American and British prototypes beforehand. According to Russian publications, by the end of the war, VMF SSSR would have received a total of over 800 radars of various types made in the West. Some were part of the equipment of the ships transferred overseas, but most of them were transported in ship bunkers to the ports in Murmansk and

Arkhangelsk. Most of the devices were to be installed on ships, with the exception of 38 radars designed for coastal outposts and another 149 – for aircrafts. Although there are no detailed lists of the types of devices handed over to the Soviets, Russian publications state that not only did Americans disassemble up-to-date artillery radars from the escort vessels, but they also withdrew the newer types of stations from their supplies toward the end of the war (*Lend-liz* 2000).

Subsequent aid supplies dispatched by the Allies included other specialized naval equipment required for the productions of the ship and water craft hulks built in Soviet shipyards. The lists of equipment delivered in subsequent convoys and via the northern route through Alaska and Siberia by 1945, included, among others, approximately 3,000 different types of radio stations. In addition, delivered were 43 radio direction finders, 52 radio altimeters, and 200 telephone exchanges. All of the above were copied in Soviet factories and later manufactured on a mass scale, and rebranded. Copied were also 20 echo sounders and 13 ship logs ordered from the USA for hydrographic units.

Many factories producing drive units and power generators, located in the areas occupied by the Third Reich, were inaccessible, which was a severe loss. The Allies started to deliver these devices in 1942, at first in small quantities due to deficits on the American market. As of 1943, when the full-scale war production began, the supplies increased and were more diversified with regard to the types and brands of engines. In fact, the supplies were so significant that, by the end of the war, virtually all smaller ships built in Soviet shipyards were equipped with American-made propulsion motors. A total of 3,263 engines and power generating units were delivered to the Soviet Union between 1942 and 1945, out of which just over 2,000 units were installed on ships by May 1945. The most popular type on the list was the 1,200 HP Packard gasoline engine. The list of supplies in this category is given in Fig. 1. The chart also includes pieces of equipment which were not built into the vessels handed over to the Soviets but delivered separately. Unfortunately, the list is not complete. For example, it does not detail a small 230 HP Superior diesel engines, even though three engines of this type were installed on each of the 253L roadstead minesweepers built in Leningrad in 1944–1945 (Military Archive in Gdynia. Ref. no. 3360/70/45, p. 36).

When new ships began to be built on a large scale again in the Baltic and Black Sea shipyards in 1944–1945, the demand for engines increased significantly. Hence, the People's Commissar of the Navy, Admiral Nikolai Kuznetsov, insisted that further supplies be provided,

including up to 2,000 Packard engines and nearly 1,000 power generators (Komarkov 2014, Komarov 2014).

The importance of the propulsion motors supplies may be confirmed by the high number of ships built in 1943–1945 and equipped with the device. It included, among others: 92 253L minesweepers, 154 BMO and OD-200 submarine chasers, and 56 D-3 torpedo boats. Complete accumulator batteries were also delivered and installed on 82 submarines.

The loss of industrial connections interrupted the deliveries of propellers to the shipyards that were still operating at the time. The Allies provided propellers for 20 destroyers, 30 submarines and over 400 smaller combat units until the production capacity in the area was restored. Also delivered were steel sheets, pipes for power cables, and other materials for the construction or repair of water crafts. The list of deliveries included, among others, 182 compressors and 45 shipyard welding devices (Komarkov 2014, Komarov 2014).



Soviet Type 253L minesweeper of wartime construction, powered by American engines; ahead of funnel visible the American heavy machine guns Colt type. Nine such ships were transferred after the war from the Soviet Baltic Fleet to the Polish Navy – here the Soviet T-228 (renamed ORP *Czapla*) arriving at Gdynia seaport, with Soviet ensign and crew onboard, Gdynia, Poland, March 1946. National Digital Archives, Warsaw, Poland, collection Wojskowa Agencja Fotograficzna, ref. no. 3/39/0/-/723-4

Not Only During the Wartime

When the war was coming to an end, first in Europe and then in Asia, the military aid sent to the Red Army via different routes gradually ceased. In the last months of the war, the fleet expanded significantly. At the time, it included water crafts of various classes and types, from typical combat ships to auxiliary vessels and merchant ships. This paper has focused mainly on military ships but other types of vessels and equipment were also used for military and merchant purposes, and proved to be useful after the war, too.

The fact that the Soviet Union was not forced to return the ships right after the war was a crucial factor that helped to maintain the smooth functioning of its fleets. It helped to implement a post-war programme of naval expansion based on Soviet designs, but refined with Western technologies which the Russians got to know during the war.

The process of returning ships took years. Britain turned out to be the most uncompromising in the process. The first TAM minesweepers were returned to Britain in 1948. Seven months later, the water crafts which had temporarily replaced the ones taken over from the Italian *Regia Marina* were returned to the Royal Navy, too. In 1951, the Soviet Navy withdrew all the MMS minesweepers from service, but they were not returned to Britain.

The US Navy was less strict regarding the formal procedures of equipment return. Not earlier than in 1952–1956, withdrawn were the American ships still operating in the Soviet military service. Only *Tacoma* patrol frigates, with one exception, returned under the star-spangled banner as early as 1950. Although these vessels were not particularly essential to the functioning of the US Navy, they soon became a vital element of equipment sent to other countries as part of military aid. In 1950–1951, five units were shipped to South Korea, and in 1952–1953 – two more to Columbia and Thailand, each. The rest of the vessels went to Japan.

The process of withdrawing ships that had become part of the Soviet fleet owing to the programme of the military aid was highly diversified. It depended upon the class and type of units and the fleet into which they were incorporated. The units which went to the Baltic Fleet were shipped to the port in Kiel in West Germany. These included, among others, 54 Vosper and Elco torpedo boats, and 5 submarine chasers of both types. Under an agreement with the USA,

torpedo boats withdrawn from active service, were to be disassembled in a designated facility. The same regulations applied to other units of this type in service of the remaining fleets.

Istanbul was designated as the Black Sea Fleet port from which water crafts were returned to the US. These included 12 torpedo boats and over 40 submarine chasers of both types. Ships from the Pacific Ocean Fleet were sent to Maizuru, a port in Japan, as early as 1950. The latter was the last port from which the Americans collected their ships. Five years later, the Soviet transferred 5 landing crafts, 4 chasers and 8 torpedo boats to that port (Berezhnoy 1994b).

The Long-Lasting Freighters

Most studies concerning the military aid to the Soviet Union as part of the Lend-Lease Act focus on military equipment. Fewer publications explore the problem of the merchant fleet and its expansion at the time. This fleet included:

- 105 transport ships of various capacity and purpose;
- 28 ships for transporting liquid fuel;
- 3 sea-going icebreakers;
- 18 tugs;
- 11 river icebreakers;
- 5 workshop barges (Berezhnoy 1994b).

From the very beginning, freighters and tankers supplied by the Allies were used for carrying the equipment and liquid cargo from American and British ports. Already in 1942, a state-run shipowner *Dal'nevostochnoye morskoye parokhodstvo* [Дальневосточное морское пароходство] received 27 American water crafts indispensable to start the supply routes via Pacific to Los Angeles, San Francisco and Seattle. Some supplies were a random collection of different types of water crafts. There were ships that had been operating for as long as 20 years. However, in the wartime, the capacity to carry valuable cargo as quickly as possible was of the utmost importance. The most valuable part of the supply included 40 Liberty freighters designed during the war and handed over to the Russians just after they had been built. They proved valuable to the Soviet merchant fleet, both during and after the war. Most of them were still operating until the mid-70-ties of the 20th century (Berezhnoy 1994b).

Equally valuable were the icebreakers and the tugboats, especially in the post-war times. Dispatched to the Soviets in the summer of 1945, they were transferred to Siberian rivers a few weeks later. Officially, they were supervised by the People's Commissariat of the Inland Waterway Transport (*Narkomat rechnogo transporta, Narkomrechflot* [*Наркомат речного транспорта, Наркомречфлот*]), transformed into a ministry in 1946. These water crafts turned out to be indispensable in the harsh Siberian climate for the next two decades. They were used for clearing rivers that served as communication routes for barges transporting natural resources and wood from the region to the industrialized areas of the Soviet Union (Berezhnoy 1994b).

Tugs and ice breakers were essential for keeping the routes for the Allied aid convoys in Murmansk and Arkhangelsk clear. At the time, the sea-going icebreakers were among the most advanced American vessels in their class (Wind type). They were designed and built for the US Coast Guard based on the war experience. The above-mentioned icebreakers proved to be extremely useful, too. In Siberia, there were no meridian routes. Instead, goods were transported via rivers. Hence, the ice breakers were essential as they enabled the transportation of goods from river estuaries to the north of the country during the navigation season. After the war, American ice-breakers served as prototypes for similar vessels designed and made in Russia. The hulks and propulsion parameters of the latter were modelled on the American ones.

Valuable Operational Experience

The victory over Germans in Europe, and four months later over the Japanese in Asia, effectively closed the cooperation of the Big Three. The end of war also meant that there was no longer any reason to continue the military aid for the Soviet Union. Nonetheless, ships were still being sent for the next several weeks after 8 May 1945 to Europe, and after 2 September 1945 – to the Far East.

Both the ships supplied by the Allies, as well as those built in Russian shipyards, equipped with weapons and naval gear, effectively strengthened the military potential of the Red Fleet. Even though some of the naval units were returned to the Royal Navy and the US Navy over the next 11 years, the fact that Russians had the opportunity to use them and learnt how to operate them was crucial for the future development of the Soviet Navy.

Selected elements of arms and specialized equipment transferred separately or assembled on ships were considered vital for the construction of new models or for the improvement of the former Soviet ship designs. The light cruisers (project 68) and the destroyers (project 30) were modified first within a few months after the war. Owing to the experience gained during the operation of ASDIC and several types of radars and radar rangefinders, the Russians decided to install the Soviet counterpart of these devices modelled on the American and British prototypes. The project was soon carried out (Shirokorad, Taras 2001).

The history of replicating American and British models of weapons and specialized equipment, and subsequent modernization of these copies is a fascinating topic, though not fully explored. Not even did the *glasnost*, the fall of the Soviet Union or the opening of the military archives shed light on the process. To this day, Russian studies have not openly acknowledged that specific types of equipment developed in the 1940s, and sometimes later than that, were modelled on the original devices supplied as part of the aid programme during World War II.

The entire process started when the ASDIC-134 sonar was installed on smaller surface vessels. At that time, *Tamir-1* station, made in Russia, was being developed for the ships constructed in Soviet shipyards. However, the technical parameters of the latter were poor to an extent that detecting a submerged submarine sailing directly under the keel of the searching vessel was often practically impossible. Therefore, a decision was made to modernize the device based on the prototypical components of a British sonar system. In 1944, right after the end of the war, the Soviets produced *Tamir-9*, which was soon followed by more advanced variants, namely *Tamir-10* and *Tamir-11*. A variant of the latter type, known as *Tamir-5*, was adapted for destroyers and submarines (post-war ships in Polish Navy were also equipped with the same gear; the last submarine chasers using *Tamir-11* stations were withdrawn as late as 2004) (*Nevskiy Bastion*).

Russian studies hardly acknowledge that a given type of weapon or electronic equipment system was based on American or British prototypes supplied as part of the military aid. One such example may be a Gjuis-1M

Polish destroyer ORP *Błyskawica*. On the top of the mast visible the X-shaped antenna of the British Mk. 271 radar, installed during World War II. After the war the device was repaired with use of parts of *Gjuis-1M4*, Soviet copy of the British radar. (1947–1950). National Digital Archives, Warsaw, Poland, collection Wojskowa Agencja Fotograficzna, ref. no. 3/39/0/-/676





Soviet depth charge RGB used in the depth charge projector system RBM (apparently following the model of the American depth charge used in depth charge projectors Mk 20 *Mousetrap*), developed right after the end of World War II, and commonly used in a range of ships of various classes and types; Here on the Soviet Type 122bis submarine chaser of the Polish Navy. Naval Museum, Gdynia, Poland (photo provided by the author)

radar station commonly used on Soviet ships directly after World War II. According to official Russian studies, it was made in 1944 and modelled on another Soviet device known as *Redut-K (Nevskiy Bastion)*. In fact, it was a copy of the British 271 radar, as confirmed by Polish archival military documents from the 50-ties of the 20th century. The British radar was installed on the ORP *Błyskawica* destroyer when it returned to the country after the war in 1947. Since there were no spare parts left for the electronic devices or ammunition used in the Royal Navy, the ship was to undergo modernization. 271-type radar, installed on the ship during the war, was non-operational, but it was the least

problematic defect. The radar scanner, the wiring system, electron valve boxes, all made in the Soviet Russia, were identical to the original. In effect, it was sufficient to exchange the worn and defective components by fully functional ones in order to transform the 271 radar into *Gjuis-1M4*. (Military Archive in Gdynia, ref. no. 2701/69/111, p. 125).

Since the Soviets did not have innovative systems for developing depth charge rocket launchers of their own, they launched copies of two types of the device after the war. The British *Hedgehog* system – a symbol of the Allies' combat with U-Boots at sea – was doubtlessly copied and named MBU-200. The acronym MBU stands for Russian *mnogostvolnaya bombometnaya ustanovka (multi-barrel bomb launching device)*, while the number – 200 – designates the maximal range of the bomb fired from the projector. MBU-200 was registered as a Soviet brand. Russian literature on naval armament does not mention the British prototype at all. In 1956, Soviet engineers constructed a depth charge with the range of 600m on their own (Shirokorad 1996).

A Soviet system based on a less-known American system Mk 20 *Mousetrap* has similar provenance. In this case, Russian studies clearly imply that the naval system was based on a remodelled missile system known as M-13 *Katyusha*. Although the latter, designated as RBM, looks different from its American counterpart, the depth-charge rocket itself was undoubtedly modelled on the American prototype and has little in common with the aforementioned *Katyusha* rocket. Photographic documentation of all three devices leaves no doubt that this must have been the case (Shirokorad, Taras 2001).

After the war, the RBM launchers were installed mainly on the decks of large 122-type submarine chasers produced on a mass-scale. These units were subsequently equipped with the *Tamir* sonars enhanced by the British ASDIC devices. Initially, they were also equipped with 12.7 mm Colt Browning heavy machine guns (Kachur 2004).

Soviet engineers duplicated technological and constructional methodology known from the western water crafts not only for manufacturing individual devices. The acquisition of three types of torpedo boats, extensive operational experience gained in the process, and the fact that they had the opportunity to compare western technology to that of their own, opened the avenue for devising a completely innovating type of vessel just after the war.

This novel type of torpedo boat was supposed to exhibit high durability and stability not only in the coastal zone but also when sailing in open waters. One of its assets was the capacity for shelling even in poor weather conditions.

The referential model was the Higgins barge with its capacity of seekeeping at the sea-state 6 and its safe autonomous ocean cruises. The advantage of the American models was that they could be equipped with four torpedo tubes and additional gear, and not just with machine guns, but also with 20 mm or even 40 mm cannons, which were the prerequisites for better self-defence against the enemy water crafts of comparable parameters. Soviet engineers focused mainly on examining the construction of the *Elco*-type unit. Later technical drawings of the 183-type torpedo boat indicate that *Elco* must have been the underlying project used by the Soviet team of design engineers (Prasnikov 2000).

A Brief Summary and Conclusions

Today, nearly 80 years after the events outlined above, the problem of the military aid to the Soviet Union during World War II has been fairly well researched and discussed. We owe this mainly to the Russian historians who have been studying archival military documents since the 1990s. A number of important conclusions can be drawn from the publications based on their research.

Firstly, owing to a considerable number of ships, weapons and specialized naval equipment supplied by the Allies, the military activity of the Soviet Navy increased significantly in the Arctic waters and the Far East. The military aid was especially effective in the areas

that had been underdeveloped (*Lend-liz* 2000). An excellent example are the operations carried out with the help of the escort ships and landing crafts in the Far East, or those of the minesweepers and the submarine chasers in the Arctic waters.

Secondly, Soviet naval aviation was significantly strengthened due to the support of 2,158 different American and British combat aircrafts. The Soviets produced 6,877 aircrafts at the same time. Hence, one may easily calculate that the input from the Allies was 31,3%, which is considerably higher than the 4% reported by the Soviets (Komarkov 2014, Komarov 2014). This aspect of the military aid to VMF SSSR is so significant that it merits a separate in-depth research.

Thirdly, most of the water crafts supplied by the Allies were deployed only in 1944-1945, which was rather unfortunate, given that VMF SSSR could use them in the first years after the war when the former Allies were already on two sides of the Iron Curtain (Berezhnoy 1994b).

Lastly, Soviet naval engineers who were developing their own novel technologies drew their ideas from the technical solutions adopted for the ships, weapons and specialized equipment in the West. In addition to the actual military support in warfare, this was the most important aspect of the military aid given by the USA and Britain to the Soviet Union via the Lend-Lease Act (*Lend-liz* 2000).

Engine, producer, power	Items delivered	Items assembled on ships
Gasoline engine Packard, 1200 KM	1,500	990
Gasoline engine Hall-Scott, 900 KM	174	140
Gasoline engine Kermach, 85 KM	375	370
High-pressure engine General Motors, 1200 KM	180	54
High-pressure engine General Motors, 1800 KM	24	0
High-pressure engine General Motors, 500 KM	125	4
High-pressure engine Cummins, 150 KM	146	86
High-pressure engine Larimer, 170 KM	119	79
High-pressure engine Continental, 90 KM	300	152
Power generator Barco, 15 kW	178	150
Power generator General Motors, 25 kW	142	36

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