

Building a Soviet Navy

THE FIRST NEW SHIPS

The differences between proponents of the young and old schools in post-Revolution Russia had little influence on the actual development of the Soviet Navy during the early post-Civil War period. The initial planning for naval ship construction was based primarily on what was economically and technically feasible, using such foreign assistance as might be available.

However, early in the Soviet regime the decision was made to emphasize submarine development and construction. On 19 August 1923, a committee headed by the chief of the submarine directorate of the Naval Staff, N.A. Zarubin, was established to work out the operational-tactical requirements for new undersea craft. A special conference dealing with submarine affairs was held in February 1925, in the Baltic Fleet, chaired by Frunze, the People's Commissar for Military and Naval Affairs. Frunze had been appointed to this key post the previous month, and the timing of this conference appears to have had special significance.

This meeting dealt with the future of the submarine fleet.¹ The suggestion of using the BARS-class design

was rejected as being outdated; similarly, foreign designs were—at the time—rejected, ostensibly because foreign designs from before the war were considered by the Soviet regime to be inferior to indigenous Russian designs. The political isolation of Soviet Russia, however, was a more valid reason. As a result of this conference, in 1925 engineer Boris Mikhaylovich Malinin of the Baltic Shipyard in Leningrad became director of the submarine design bureau.²

Since 1920, however, there had been direct contact between Soviet representatives and officials of the German government and industrial firms. But Soviet-German naval collaboration was slow in developing compared with military and aviation affairs. Two reasons have been offered for this situation by Professor John Erickson, the dean of Western observers of the Soviet military scene:³ first, Germany found other methods of circumventing the restrictions against naval development in the Versailles Treaty, and second, following the 1921 Kronshtadt rebellion the Russian leadership concentrated on the political rather than technical rebuilding of the fleet.

¹The submarine engineers identified at that time and probably at the conference included N.V. Alekseev, A.B. Basilevskiy, P.V. Belkiy, P.P. Boltsedvorskii, V.P. Funikov, V.P. Goryachev, V.F. Kritskiy, E.E. Kryuger, B.M. Malinin, V.N. Peregudov, M.A. Rudnitskiy, V.F. Segal, P.N. Serdyuk, K.F. Terletskiy, G.M. Trusov, A.P. Tsertov, and A.K. Tslyupkin. At the time Professor P.F. Pankovskiy was head of submarine construction.

²Malinin was a graduate of the Polytechnic Institute in St. Petersburg and worked at the submarine department of the Baltic Shipyard from 1914. In 1917 he was sent to Nikolayev to supervise completion of the submarine *UTKA* during that hectic period. His principal assistants in his submarine design efforts of the 1920s were A.N. Shcheglov and E.E. Kryuger.

³See John Erickson, *The Soviet High Command* (London: Macmillan, 1962), pp. 251–255.

GERMAN U-BOAT DESIGNS PROVIDED TO THE SOVIET UNION

Type	Series	Completed	Displacement	Length
Ms (<i>Mobilmachungs</i>)	U-105	1917	798 tons	235½ ft/71.6 m
UB III	UB-48	1917	516 tons	181½ ft/55.3 m
UE II* (Project 45)	U-122	1918	I,163 tons	269 ft/82 m
Project 46*	U-139	1918	I,930 tons	301¼ ft/92 m

*Minelayer.

As a direct outcome of a secret Russo-German naval conference in Berlin in March 1926, the following June a German naval mission under Rear Admiral Arno Spindler travelled to the Soviet Union to discuss specific Soviet naval interests. V.I. Zof, the Soviet Chief of Naval Forces, presented the German delegation with requests for assistance in submarine construction, training submarine commanders, and producing submarine engines.⁴ Zof was particularly interested in the submarine assistance that Germany was giving to Turkey and the later World War I-era submarine designs.⁵

In December 1926 there was a discussion of the establishment of a joint German-Soviet submarine training facility on the Black Sea, similar to the arrangements for aviation training at Lipetsk and for tank training at Kazan. The submarine training proposal was not pursued further, however.

The Germans were accommodating and agreed to provide the Soviets with the plans for their war-built submarines, which had already been provided to the victors after the war (with Britain, France, Japan, and the United States also receiving German U-boats). Four submarine designs were dispatched to Moscow on 24 July, indicating the speed with which the Germans reacted to the Soviet requests. These plans appear to have been for the U-boats shown in the accompanying table.

On 26 November 1926, the Council of Labor and Defense approved a six-year naval program that called for the construction of 12 submarines, 18 patrol ships, and 36 torpedo boats, and for the modernization of several older warships.⁶ The implementation of this program suffered delays due to the shortage of experienced naval engineers and skilled workmen, limitations in available technology, and poor quality control within industry. To overcome these difficulties, in 1928

⁴Zof was replaced as head of the Navy in August 1926 by R.A. Muklevich, a former Red Army commissar, who also had helped to reorganize the Air Force.

⁵The Germans had in July 1922 established the *Ingenieurskantoor voor Scheepsbouw* (IVS) to provide a foreign commercial entity for submarine development, which was prohibited under the Versailles Treaty. It was IVS, operating from Holland, that “fronted” the German submarine program for Turkey.

⁶The term “patrol ship” is used in this text for the Soviet *storozhevoy korabl'*, a ship type used primarily for coastal patrol by the state security forces (NKVD/KGB) as well as the Navy. The first ships of this type were the URAGAN class, launched from 1927 onward.

the naval program was incorporated into the First Five-Year Economic Plan (1928–1933) and expanded. As initially formulated, the first plan authorized:

- 18 large submarines
- 5 small submarines
- 3 destroyer leaders
- 18 patrol ships
- 5 submarine chasers
- 60 torpedo boats
- 2 river gunboats

The emphasis on submarines and torpedo boats reflected an adoption of the young school strategy; still, the Soviet Union at the time had no capability to build major warships (although the three existing battleships were modernized, and the 8,030-ton cruiser KRASNYY KAVKAZ, formerly ADMIRAL LAZAREV, was completed during this plan).

At the start of the five-year plan, in May 1928, the *Revvoensoviet* (Revolutionary Military Council) of the USSR, discussing the role of the Navy in the military forces of the country, concluded that “while developing the navy it is necessary to combine surface and submarine fleets, coastal and mine position defense, as well as naval aviation in proportion corresponding to the character of combat operations.” Although this may have given the hint of future construction of major surface warships, it would be the submarine that dominated the 1928–1933 plan.

And, in this period, Josef Stalin, who had succeeded Lenin as head of the Communist Party and de facto head of the government after the death of Lenin in 1924, began to take a direct role in decisions concerning weapons development and production. This role increased in the 1930s and 1940s, as evidenced in the memoirs of various military leaders and designers. One naval commissar would write that “without Stalin no one ventured to decide the large questions concerning the navy.”⁷ Stalin also became involved in the small questions as well; he discussed—and often decided—gun caliber, armor requirements, and other weapon issues.

⁷See Adm. of the Fleet N.G. Kuznetsov, “Before the War,” *Oktiabr'* (No. 9, 1965), pp. 174–182; also, see Col. Albert Seaton, *Stalin as Military Commander* (New York: Praeger Publishers, 1976), pp. 87–89 *et seq.*, and Gen. A.S. Iakovlev [Yakovlev], *The Aim of a Lifetime* (Moscow, 1966).

Stalin's direct association with the Navy was, however, limited. In 1929 he made his first Black Sea cruise in the cruiser *CHERVONAYA UKRAINA*. On a later visit to that cruiser, in 1932, he met the ship's 28-year-old commanding officer, Nikolai Gerasimovich Kuznetsov. Stalin was impressed with the "new" Soviet naval officer.

THE SOVIET SUBMARINES

The 12 new submarines originally provided in the six-year naval program were to have been six units of the DEKABRIST class (Series I) and six units of the LENINETS class (Series II). The DEKABRIST-class submarines, designed by the Malinin team, had a surface/submerged displacement of 924/1,354 tons and a length of 249½ feet (76 m). Propulsion was provided by diesels and electric motors that provided a surface speed of 14 knots and an underwater maximum of 9 knots. Their armament consisted of six bow and two stern 21-inch (533-mm) tubes with a total of 14 torpedoes being embarked. These submarines had a double-hull configuration, with seven watertight compartments.

Construction of the first three DEKABRISTS was begun on Saturday, 5 March 1927, at the Ordzhonikidze Shipyard, as the Baltic Works was renamed in this period.⁸ The keel laying ceremony was carefully scheduled for a Saturday afternoon, after the day's work shift had been dismissed. Although S.M. Kirov, the leader of the Leningrad Communist Party, was present, no speeches were given and no ceremonies held as Malinin drove the first rivet into the keel plate of the

⁸S.K. Ordzhonikidze, a friend and associate of Stalin, was a key organizer of the early five-year plans and the People's Commissar for Heavy Industries, which included shipbuilding.

DEKABRIST. Three more submarines of this class were begun a short time later at Marti (south) yard in Nikolayev.⁹

The Malinin team modified the DEKABRIST design to produce the slightly larger LENINETS class. Also influencing this design was the British submarine L-55, sunk in the Baltic in 1919. The craft appears to have been forgotten for seven years. Then, in 1926, a fishing trawler accidentally located the sunken craft, resting in 104 feet (32 m) of water. The British craft was salvaged between April and August 1928 by the submarine rescue-salvage vessel *KOMMUNA*.

Inside the submarine's hull were the skeletons of 42 British officers and ratings.¹⁰ The L-55 was taken to Kronshtadt and, a short time later, to the Baltic/Ordzhonikidze yard in Leningrad where her design features were closely studied by Malinin and his colleagues. In particular, the L-55 was adopted as a basis for the subsequent Series III and Series V submarines. Soviet submarine designers accordingly had extensive British as well as German design information available to them.

⁹The two Nikolayev shipyards were apparently combined in this period and renamed for André Marti, a French revolutionary sailor. The former Nikolayev Shipbuilding, Mechanical, and Iron Works is referred to in this section as Marti (south); it is now the Black Sea Shipyard (No. 444); the Admiralty or Naval Shipyard at Nikolayev became the *RUSSUD* yard in 1911 and, after the Revolution, the Marti (north) and, subsequently, the 61 *Kommuna* Shipyard (No. 445), with the latter designation being used in this volume. In Leningrad, the Admiralty yard was also renamed Marti in this period (No. 194).

¹⁰The British had wanted to send a warship to Kronshtadt to bring home the remains of the L-55 submariners. The Soviets, however, refused because the British had broken off diplomatic relations with the Soviet Union on 24 May 1927. Subsequently, the merchant ship *TRURO* was sent to Kronshtadt to pick up the remains, which were given over with full military honors. The remains were transferred to the cruiser *CHAMPION* at Tallinn and returned to England for burial at Haslar, near Portsmouth.



An artist's impression of Josef Stalin, at sea. Stalin's decisions of the late 1920s to build a large, long-range fleet laid the foundation for today's Soviet submarine force. Nikolay Kuznetsov became Stalin's naval chief for building that fleet. (U.S. Navy)



The DEKABRIST was the first Soviet submarine class, designed by a team led by B.M. Malinin. The rows of openings along the hull are limber or flood holes, indicating the craft's double-hull configuration. This is the NARODOVOLYETS in Arctic waters during World War II; her conning tower has been cut down and the gun moved down to the main deck. (Imperial War Museum)

Following restoration, the L-55 began trials on 7 August 1931 and was commissioned in the Soviet Navy on 5 October 1931, retaining her original designation L-55.¹¹ That October the L-55 was in a collision with a merchant ship and again sunk. Again raised, she was thereafter employed as a training craft.

These LENINETS Series II submarines had the two after torpedo tubes replaced by two minelaying tubes for a total of 20 mines, retaining six tubes forward with

12 torpedoes. This minelaying arrangement was similar to that of the earlier KRAB design and demonstrated the continued interest in mine warfare. Indeed, the Soviet Navy held that submarines were the principal platform for offensive minelaying.

Larger than the Series I boats, the first LENINETS-class units had a displacement of 1,040/1,335 tons and a length of $256\frac{1}{2}$ feet (78.3 m), with diesel-electric propulsion to provide speeds similar to those of the DEKABRIST class. These submarines did not have a complete double hull, but rather "saddle tanks" extending partially on both sides of the pressure hull for fuel and ballast. Like the Series I submarines, the first three of

¹¹The name BEZBOZHNIK (atheist) has been reported from some sources as the name given to this submarine by the Soviets, but there is no known confirmation from official Soviet sources.



The DEKABRIST-class submarine YAKOBINETS off Istanbul in October 1933. The large submarines of the D class were built in both Leningrad and Nikolayev, this unit having been constructed in the latter's Marti (south) yard. Note the 102-mm gun mounted at the front of the conning tower, the original position of the gun. The bow planes retract into a position flush against the hull.



The ex-British L-55 in Soviet service, shown underway in the Baltic in 1938. The L-55 was sunk by a Russian destroyer in 1919; she was raised in 1928 and rehabilitated to provide Soviet engineers with considerable information on British wartime designs. Note the gun positions at both ends of the large conning tower.

the LENINETs class were begun at the Ordzhonikidze yard and three more units at the Marti/south yard in Nikolayev, the first unit being laid down on 6 September 1929.

The inclusion of the original naval construction program in the First Five-Year Plan added 6 submarines, for a total of 18 submarines intended to be built in the period 1928–1933. But subsequent changes gave the Soviet Navy a total of 88 submarines being approved under the program!

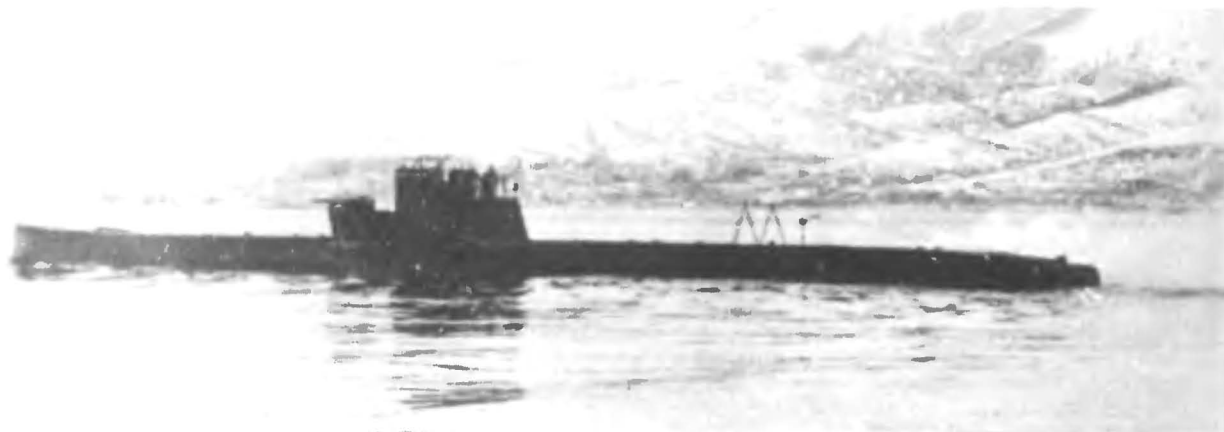
6 DEKABRIST class	Series I
6 LENINETs class	Series II
4 SHCHUKA class	Series III
3 PRAVDA class	Series IV
12 SHCHUKA class	Series V
14 SHCHUKA class	Series V-bis
13 SHCHUKA class	Series V-bis-2
30 <i>Malyutka</i> class	Series VI

The original SHCHUKA (pike) or SHCH design was another product of the Malinin team. This was smaller than the Series I and II submarines, having a displacement of 577/704 tons for the SHCH Series III with a length of 187 feet (57 m). Armed with only four

21-inch (533-mm) bow tubes and two stern tubes, these boats carried 10 torpedoes. Fitted with saddle tanks extending some two-thirds of the length of the submarine, the SHCH design had six compartments within the pressure hull. A U.S. naval intelligence analysis of the SHCH class noted, "These boats are generally popular—are easily handled even in rough seas, but are apt to be a little lively on the surface."¹²

The Ordzhonikidze/Baltic yard built the first four SHCH-class submarines, one of which was paid for by public subscription as Soviet propagandists called for the people to contribute to help rebuild the fleet. The subsequent SHCH design, the Series V, was slightly larger, with seven compartments. The principal designer for the Series V was M.A. Rudnitskiy. This series included the first Soviet submarines to be assembled in the Far East. Beginning in 1933, most of the SHCH Series V variants were completed at the Dalzavod Shipyard in Vladivostok with components that were

¹²U.S.S.R. Navy, Division of Naval Intelligence Report, Serial 40–43, Department of the Navy (Washington, D.C.: 30 November 1943), p. 132 (Secret).



An early LENINETs, one of the Series II submarines, at sea, probably during World War II. The forward and after edges of the conning tower have been cut down, the early units having been built with bridge structures similar to the L-55 and D class. Later L-class submarines had the forward gun on the main deck, ahead of a smaller conning tower.



The SHCH-116, one of the “pikes” of the SHCH V-*bis* design. This view shows the submarine underway in a Far East port in 1938. Two 45-mm model K-21 anti-aircraft guns are mounted on the conning tower steps. The stands forward and aft hold radio antennas; like the Germans, the Russians made extensive use of radio communications to direct and monitor their submarines.

fabricated at the Marti (formerly Admiralty) Shipyard in Leningrad and the 61 Kommuna (north) yard in Nikolayev.

The three PRAVDA Series IV submarines were considered as *kreyser* submarines, intended to operate with surface forces, in some respects similar to the ill-fated British K class. These submarines carried the names PRAVDA (truth), ZVEZDA (star), and ISKRA (spark). Designed by A.N. Asafov, the PRAVDAS were relatively large submarines, with a displacement of 955/1,671 tons and a length of $287\frac{5}{12}$ feet (87.6 m). They were, however, poor sea boats, suffering from a long diving time, not achieving their intended surface or submerged speeds (20/10 knots), and needing 20 hours to charge their batteries fully. The Baltic/Ordzhonikidze yard built the only three units of this class, the first unit being laid down in 1931 but not launched until 1934. A fourth unit, to have been named REVOLUTSIYA, may also have been built at the Baltic/Ordzhonikidze yard, but if so she was never operational. These were the least successful Soviet submarines of the between-war period.

Finally, initiated during the later stages of the First Five-Year Plan was the construction of the first four of a total of 30 *Malyutka* (little one) Series VI-class submarines, also designed by A.N. Asafov. These diminutive submarines were intended specifically for transport by rail or inland waterways between the Soviet fleet

areas. The first M-class series displaced approximately 160/202 tons, were 124 feet (37.8 m) in length, and had a single-shaft, diesel-electric propulsion plant. Armament for these boats, manned by only 17 men, consisted of two bow torpedo tubes (no reloads) and a 45-mm deck gun. There was no torpedo hatch, and “fish” were loaded through the bow (outer) doors with the submarine trimmed bow up.

Built at the Ural Machine Works at Sverdlovsk, the hulls of these submarines were completely welded. The two lead units first ran trials in the Black Sea and were then transported by rail to the Far East, arriving at Dalny Vostok on 1 December 1933. (Eighteen special 120-ton railroad flatcars were constructed to transport these Series VI-class units.)

The first Soviet-era submarine, the DEKABRIST, was commissioned into the Baltic Fleet on 18 November 1930. In contrast to their clandestine beginning, there was a ceremonial commissioning, complete with a brass band and speeches by naval and party officials. Two sister ships, the NARODOVOLYETS and KRASNOGVARDYETS, entered service in October and November 1931, respectively. In 1934, their names were deleted in favor of numbers, becoming the D-1, D-2, and D-3. The three additional units of this class, REVOLYUTIONER (D-4), SPARTAKOVETS (D-5), and YAKOBINETS (D-6) had been laid down on 14 April 1927, at



The SHCH-307 of the V-*bis*-2 design shown underway in the Baltic in 1939. She has 45-mm guns on a step forward of the conning tower and another on an after platform, the latter faired into the after tower casing. This unit survived World War II to have her conning tower preserved as a memorial at the submarine school in Leningrad.



A PRAVDA-class submarine underway. This was an unsuccessful design, suffering from long diving time and slow battery recharge rates. They were reconstructed several times, but were never fully operational and were employed as transports during the war. There is a long conning tower, with the 100-mm gun mounts faired into both ends.

the Marti/south yard in Nikolayev. The YAKOBINETS, the final unit of the class, was commissioned on 12 June 1931, in the Black Sea Fleet. The six DEKABRISTS constituted the total number of new submarines delivered during the First Five-Year Plan. During 1933 the first three DEKABRISTS departed Kronshtadt and sailed through the White Sea (Belomor) river-canal system—later named the Stalin Canal—to reach the port of Murmansk on the Arctic coast.¹³

The first of the LENINETs-class submarines was commissioned on 22 October 1933, with the remainder of the class being completed during 1933–1934. Their names were also dropped in 1934 and replaced by hull numbers beginning with L-1. The lead SHCH V-series submarine was commissioned as the SHCH-101 in Sep-

¹³This route—developed specifically to transfer warships between the Baltic and Northern Fleet areas—ran from Leningrad through the Mariinskaya Canal (just south of Lake Ladoga), Svir River, Lake Onega, the White Sea Canal, and into the White Sea at Soroka (now Belomorsk). The Belomor Canal was the first great construction project of the Soviet slave (*gulag*) archipelago. It was built in 20 months (September 1931–April 1933) at the cost of more than 100,000 lives—possibly as many as a quarter of a million men and women, according to gulag historian Aleksandr I. Solzhenitsyn in *The Gulag Archipelago*, Vol. 2 (New York: Harper & Row, 1975), pp. 86–113.

tember 1933. The SHCH-113 of the Series V-*bis* carried out tests with a primitive snorkel system about 1936, attempting to permit battery recharging with her diesel engine while at periscope depth.

Thus, less than a decade after the Civil War ended the Soviet shipbuilding industry was producing large numbers of relatively modern submarines.

While Soviet submarine designers and engineers were gaining considerable experience, the Soviet government still sought foreign assistance for submarines as well as other weapons. The People's Commissar of Defense, K.E. Voroshilov, approached the Germans for further collaboration in 1929. This renewed contact led to a visit by V.M. Orlov, commander of the Black Sea Fleet, and P.A. Smirnov, commander of a minelaying squadron in the Baltic Fleet, to Kiel and Wilhelms-haven in February 1930. The following month Orlov met with German naval authorities in Berlin, and proposed a visit by a German delegation to Sevastopol and Leningrad, which took place during July and August of that year. The Germans were by now reluctant to provide the Russians with too many technical details and warship plans, as little could be expected in return from the Soviets. The Germans, however, were willing



An M-class submarine in the Arctic, probably one of the Series XII-*bis*. These small craft, with two torpedo tubes and no reloads, saw extensive service in all theaters of the war. These submarines could be easily dismantled and transported by rail to the various fleet areas. Service in these craft, especially in northern waters, was arduous.



White Sea Canal (later names in parentheses).

to assist the Soviets with submarine and torpedo designs, and in 1933 this resulted in the sale of the plans of the S class submarines to the Soviets (see chapter 8). During the next few years a limited number of MAN diesels were also supplied for Soviet submarines.¹⁴

And, with the increase in submarine production, by the mid-1930s the Soviets began to designate submarines according to size and importance:

<i>kreyser</i>	(cruiser)
<i>bolshoy</i>	(large)
<i>средный</i>	(medium)
<i>малый</i>	(small)

The hull numbering of individual submarines was based on this categorization, the numbers having the prefix K, B, S, or M. (The system was not fully imple-

¹⁴According to the records of the German firm MAN, a total of 12 submarine diesel engines were delivered to the Soviet Union between 1934 and 1937. They varied in horsepower between 2,000 and 2,700.

mented until late 1949, being applied to the surviving submarines; e.g., the PRAVDA-class P-2 became the B-31.)

EXPANDING THE FLEET

The Program of Naval Construction for 1933–1938 was accepted by the Council of Labor and Defense on 11 July 1933. This program envisioned the construction of 369 submarines for the Soviet Navy, of which almost one-quarter had been initiated under the First Five-Year Plan. Centered on the Second Five-Year Plan (1933–1937), this ambitious naval construction program included the first 4 KIROV-class cruisers of 8,800 tons, to be armed with nine 180-mm guns, 4 destroyer leaders, 46 destroyers, 6 escort ships, 27 minesweepers, and 9 river monitors.

The KIROV was laid down on 22 October 1935. The construction of the KIROV-class cruisers was, to many, the first indication that Stalin planned to build a massive Soviet fleet along conventional naval lines. By the early 1930s work was underway on two major shipbuilding facilities, one at Severodvinsk in the Arctic and another at Komsomol'sk in the Far East. The Severodvinsk yard, initially named for Soviet foreign minister V.M. Molotov, was erected on the Dvina Gulf, about 30 miles (48 km) across the delta of the Northern Dvina River from the port of Arkhangel'sk. The yard at Komsomol'sk—known as the Leninskaya Komsomola—was built on the Amur River, some 280 miles (450 km) south of where the river empties into the Straits of Tartary, the shallow, narrow passage between Siberia and Sakhalin Island. The depth of water at the yard would prevent the completion of larger ships and submarines, which would have to be towed on pontoons or transporter docks to Vladivostok or Sovetskaya Gavan' for completion and fitting out.

At both of these yards were erected large covered construction halls that could permit the building of two battleships side by side. Covered building ways were required to allow year-round work at the yards. A U.S. naval officer who visited the Komsomol'sk facility during World War II has given a graphic description of the yard:

The shipyard was an enormous, roofed structure, all building ways under cover. Windows were blacked out as a precaution against ever possible Japanese surprise attack, so that the eerie gloom inside gave an unreal aspect to the shadowy bulks of a cruiser [the KAGANOVICH], three destroyers, and numerous smaller craft, illuminated here and there by dim bulbs or the flickering blue-white lightning of welding torches.¹⁵

¹⁵Rear Adm. Kemp Tolley, USN (Ret.), *Caviar and Commissars* (Annapolis, Md.: Naval Institute Press, 1983), p. 150.

Stalin sent his emissaries to Germany, Italy, and the United States during the 1930s to buy plans and components for the warships that he intended to build at the new shipyards as well as the traditional shipbuilding centers of Leningrad and Nikolayev. Their quests included plans for cruisers, battleships, and aircraft carriers, with the American firm of Gibbs & Cox preparing plans for what would have been the largest battleships ever built.¹⁶ In March of 1939, the brilliant vice commissar of naval affairs, Ivan Stephanovich Isakov, led a naval mission to the United States but after two months of meetings with the Secretary of the Navy and senior officers, he returned to the Soviet Union empty-handed. American help was not forthcoming to the Soviets because of the intransigence of U.S. naval officers, who were generally anti-Communist and regarded the Soviet representatives with distrust.

The Soviet Navy continued to receive considerable albeit selective assistance from Germany, including the outright transfer of an unfinished 14,240-ton heavy cruiser of the ADMIRAL HIPPER class.¹⁷ (The Soviets sought but did not receive plans for the German battleship BISMARCK as well as for the aircraft carrier GRAF ZEPPELIN.) And, the Italians provided design assistance, including constructing a prototype destroyer leader for the Soviets, providing equipment for other ships under construction in the Soviet Union, and helping to design the projected battleships.

Coupled with his plans to build an ocean-going fleet, Stalin established fleet organizations in the Far East and Arctic. After the Japanese had left Siberia in 1922, the surviving Russian naval craft were administered as the Amur Naval Flotilla; that was disbanded in 1926. In April 1932, the Naval Forces of the Far East was established, and on 11 January 1935 it became the Pacific Ocean Fleet.

In the north, on 18 May 1933, the DEKABRIST-class submarines D-1 and D-2 accompanied by two destroyers and two patrol ships departed Kronshtadt, passed upstream on the Neva River through Leningrad, and entered the White Sea river-canal system. On 21 July the last ship passed through the nineteenth lock of the White Sea Canal, which had only just been completed, and entered the White Sea. On 5 August the force arrived at Murmansk. In the meantime, during July Stalin and other Soviet leaders cruised through the canal

¹⁶Labeled Ship X, the proposed battleship design provided for a standard displacement of about 62,000 tons, a length of 1,005 feet (306.4 m), a 300,000-hp propulsion plant to provide at least 34 knots at full-load displacement, and an armament of 12 16-inch (406-mm) guns, plus accommodations for about 36 combat aircraft and a flight deck 400 feet (122-m) long. The Soviets also sought battleship armor and turrets in the United States, and plans for the aircraft carrier RANGER (CV 4).

¹⁷This was the German LÜTZOW, delivered in 1940. The Soviets did little work on her before the Russo-German war began in June 1941, and the ship was never finished.

on a steamer in one of his few publicized appearances outside of Moscow. And on 21 July 1933, he attended ceremonies held at Murmansk formally establishing the Northern Naval Flotilla. (In following months 120 writers made an excursion through the canal to publicize these great Soviet accomplishments even further.)

More ships followed through the White Sea Canal, with the submarine D-3 arriving at Murmansk in September. The three DEKABRISTS and the small transport UMBA, employed as a depot ship, were formed into a submarine division.

Murmansk was but a temporary base for the submarines and other naval units of the flotilla as facilities were being built at Polyarnyy (formerly Aleksandrovskiy), on the shore of Yekaterininskaya Bay. The port is 15 miles (24 km) north of Murmansk, a major commercial port and rail terminus. The fleet shifted there in the fall of 1935. On 11 May 1937, the flotilla was reorganized as the Northern Fleet.

Stalin obviously had made key decisions about a naval buildup at least by the late 1920s. The beginning of major shipyards in Severodvinsk and Komsomol'sk in the early 1930s and the seeking of German and U.S. naval assistance came as Stalin was seeking to define a big-fleet program. When the 17th Party Congress convened in January 1934, Stalin appeared ready to discard the young school strategy publicly (which he had already done earlier in fact) and move toward a major, conventional fleet program. Resorting to a "trial balloon," Stalin ordered a young submarine commanding officer named Seleznev from the Far East to tell the delegates that the Soviet Union must not base its naval defense solely on submarines. Rather, his dramatic speech was an appeal for an ocean-going fleet with major surface warships.

In December 1935, Stalin summoned to Moscow several junior naval officers from the Far East. Principal members of the government attended the ensuing discussions on the advantages of an oceanic naval strategy. The officials included President V.M. Molotov, heavy industries commissar G.K. Ordzhonikidze, and defense commissar Voroshilov. One of the officers from the Far East brought to the Kremlin was N.G. Kuznetsov, former commanding officer of the cruiser CHERVONAYA UKRAINA. Shortly thereafter, in 1936–1937, Kuznetsov was sent to Spain as the Soviet advisor to the Republican naval forces during the Spanish Civil War.¹⁸ Soon after his return to the Soviet Union, on 10 January 1938, Kuznetsov was appointed Commander in Chief of the Pacific Fleet. (Many of his com-

¹⁸Soviet naval officers served as advisors to the commanders of the 12 Republican submarines during the 1936–1939 war; those craft are not believed to have sunk any nationalist, German, or Italian ships during the conflict.

rades who served in Spain were recalled to be executed in the Stalin purges.)

The reasons behind Stalin's drive to make the Soviet Union a major sea power have been the subject of considerable speculation. Robert Herrick, one of the first Americans to address this subject analytically, has proffered:

But why the big ships, the heavy cruisers and battleships. . . . The amphibious assaults in the Northern and Black Sea Fleet areas during the Allied intervention right after the Bolshevik Party seized power and the USSR's internationally noted naval impotence in the Spanish Civil War suggest two complementary reasons: deterrence and prestige.¹⁹

But the ocean-going fleet desired by Stalin appears to have had more ambitious goals than reasonable deterrence and prestige. He sought ships far larger than those planned by other naval powers. And, large numbers of submarines would be a major component of this new Soviet fleet.

Admiral S.G. Gorshkov, several decades later, rationalized the shift to an ocean-going fleet:

A branch of military science, new in principle, that of operational science, began to develop at the beginning of the 1930s, not only in the fleet, but in other branches of the Armed Forces as well. However, the long indoctrination of command cadres in defensive theories of the "small war" [i.e., young school] of the period during which the fleet was being restored, had a substantial effect on further development of the Navy in the prewar years. . . . The ingrained habit of thinking about defensive categories in the strategic plan, and the coastal scales of operations, made itself felt even when the economic might of the country, and its scientific achievement, had opened up new avenues for fleet development. . . .²⁰

With the Navy being expanded and fleets being formally established in the Arctic and Far East, the Soviet Union became involved in the issue of warship passage through the Turkish Straits. After World War I the London Straits Convention, which had governed warship passage through the Dardanelles and Bosphorus since 1841, was revoked. Neither the Soviet Union nor the new Turkish republic (formally proclaimed in 1923) was satisfied with the absence of passage controls. The Montreux Convention, signed in Switzerland on 20 July 1936, established a new regime for the straits.²¹

The convention carefully listed terms and conditions for the passage of Black Sea and other nations' war-

ships. Article 12 limited Soviet submarine passage to units joining their base after construction or repairs. Thus, Soviet submarines—with the proper notice to the Turkish government—could pass through the straits providing they then entered a dockyard. This effectively prevented Black Sea-based submarines from deploying into the Mediterranean on patrol and then returning to their Black Sea base.

With the Soviet Union becoming increasingly involved in international negotiations, it was only a matter of time before the nation would participate in naval arms limitation conferences. The Soviets had been excluded from the Washington conference of 1921 and as well from the 1930 conference in London, which extended warship limitations. Japan, however, announced in December 1934 that it would withdraw from the agreements, effective in two years. Thus, the Anglo-American attempt to form a system of naval disarmament had broken down.

Britain persisted in naval limitation efforts. Adolf Hitler publicly repudiated the Versailles Treaty on 16 March 1935, and Germany was already rearming. On 18 June of that year Britain and Germany signed an agreement permitting Hitler to build up to 35 percent of the Royal Navy's strength, except that parity was permitted in submarine tonnage. (The Germans agreed not to build beyond 45 percent of Britain's submarine strength without giving special notice.)

Still seeking to stem a warship building race, Britain sponsored yet another naval conference in London, and in March 1936 a treaty was signed by representatives of Britain, France, and the United States. Japan had withdrawn from international treaties, and France refused to allow Germany to be invited. Again, the Soviet Union was absent. Britain attempted to reach a new agreement with Germany, but Hitler refused to do so until the Soviet government accepted quantitative limitations on warship size and armament. The Soviet Union agreed to adhere to the London treaty with two qualifications: first, any form of limitation accepted by the Soviets would also be binding on Germany, and second, should Japan exceed treaty limits the Soviets would be permitted to increase naval construction in the Far East. While the 1936 London treaty extended for another five years the limitations on capital ship and aircraft carrier construction, the final Anglo-Soviet agreements signed on 17 July 1937 allowed the Soviets to start construction of two battleships armed with 16-inch (406-mm) guns.

PURGES AND COMMAND CHANGES

As the Soviet Union sought to build an ocean-going fleet, in the late 1930s Stalin decimated the Navy's officer ranks. He had begun political purges in 1935 to

¹⁹Comdr. Robert Waring Herrick, USN (ret.), *Soviet Naval Strategy* (Annapolis, Md.: U.S. Naval Institute, 1968), p. 35.

²⁰Adm. of the Fleet S.G. Gorshkov, "The Development of Soviet Naval Science," *Morskoy Sbornik* (No. 2, 1967), trans. pp. 4–5.

²¹The Montreux Convention was signed by Bulgaria, France, Great Britain, Greece, Japan, Rumania, Turkey, the USSR, and Yugoslavia. It entered into force on 9 November 1936.

rid the country of his political opponents, real and imagined. Then, without warning, on 11 June 1937, it was revealed that the senior leaders of the Red Army had been arrested and charged with treason. The next day it was announced that they had been tried and executed, among them Marshal of the Soviet Union M.N. Tukhachevsky, the Soviet Union's most innovative and capable officer. Among the charges leveled at Tukhachevsky (and at naval commissar V.M. Orlov) was that he had opposed the building of a powerful surface fleet!

During the next two years the Stalinist purges ravaged the nation's military and naval officer corps. Of eight men with the rank of *flagman* (admiral) at the beginning of the purge, none was alive at the end. Orlov, who had been head of the Navy from July 1931 to July 1937, was executed, as were his predecessor and his successor, the commanders of the Baltic, Black Sea, and Northern fleets, the head of the naval construction department, and several hundred other officers. The purges of the Army's leadership—political as well as military—were more severe, with wives, sisters, and brothers of those purged also being arrested and deported to prison camps (although often reduced to privation, few of the women were intentionally killed). Usually the naval officers were charged with spying for the British, a lesser crime than Army officers charged with treason on behalf of Poland or Japan. The purges left the Navy with few experienced officers.

Of the fleet and flotilla commanders at the beginning of the purges, only M.V. Viktorov, commander in the Far East, whose junior officers had met with Stalin in 1935, survived this purge of senior commanders. Viktorov was made head of the Navy in August 1937 but held the position only until January 1938, when he was dismissed and executed.²² His immediate successor was P.A. Smirnov, who served only until August 1938, and then a former deputy head of the state security apparatus (NKVD), M.P. Frinovskiy, was made commissar for the Navy. He was nominally head of the Navy until March 1939. Smirnov, however, remained as first deputy and apparently continued to run the naval establishment.

During Smirnov's tenure in Moscow the Navy became a separate commissariat, independent of the Commissariat of Defense. This reorganization—on 30 December 1937—marked the first time since 1918 that the Navy was independent of the Red Army and further

²²Viktorov was a "somewhat odd case." Until 1921 the commander of the Baltic Fleet, in 1924 he was relieved of all command duties as a consequence of his wife's involvement in an espionage case. A submarine specialist and considered a highly capable officer, he was exiled by Stalin to the Far East where he (temporarily) restored his credibility with the Soviet dictator, becoming the naval commissar in August 1937. (John Erickson, *Soviet High Command*, p. 392.)

testified to the importance that Stalin was placing on the Navy. Also, a separate People's Commissariat of the Shipbuilding Industry was established on 30 December 1937, to facilitate Stalin's naval expansion.²³

When Viktorov became head of the Navy he was replaced as Commander in Chief of the Pacific Fleet in January 1938 by Kuznetsov, recently returned from service in Spain. In December 1938, Kuznetsov was again summoned to Moscow for discussions with the new naval leadership. He returned to Moscow in March 1939 for the Communist Party's 18th Congress.

In Moscow, Kuznetsov was told to be prepared to give a speech at the congress on the state of the Navy—in place of Frinovskiy, who was rumored to have fallen from Stalin's grace. Reportedly, Kuznetsov worked at preparing a paper on the importance of submarines, as many of the senior naval officers apparently felt that war would come too soon for the completion of the planned cruisers, battleships, and aircraft carriers. However, during a recess at the congress Stalin handed Kuznetsov a paper on the Navy with the order, "Read it."

The report, which included Frinovskiy's "request" to be relieved as People's Commissar of the Navy, told how the Soviet Navy was ready to fulfill its obligations. And, it attacked the Army and Navy leaders who had been purged. Kuznetsov became the People's Commissar for the Navy and Chief of Naval Forces in April 1939 (official Soviet biographies list 28 April as his date of appointment).²⁴ Frinovskiy was soon executed. Smirnov was promptly dismissed as deputy commissar, but not executed; he died while in prison in March 1940. Kuznetsov would serve as head of the Navy through the coming war,²⁵ although most of the Navy's decision-making power was vested in the Supreme Naval Council. Established in 1938 under A.A. Zhdanov, one of Stalin's most trusted and most capable lieutenants, the council consisted of senior naval officers and shipbuilding managers. These men were directed to fulfill the dictum stated by the nation's leadership—the Soviet Union would have a fleet equal to that of other great world powers.

²³The Commissariat of Military and Naval Affairs was replaced in 1934 by the Commissariat of Defense, which incorporated both the Army and Navy.

²⁴Admiral Kuznetsov's recollection of his appointment is related in "Before the War," pp. 174–182. Kuznetsov authored a series of three articles published in *Oktiabr* during 1965. At the time of his appointment as naval commissar Kuznetsov was 35 years of age!

²⁵The Soviet government reinstated the ranks of general and admiral in May 1940, the latter replacing the euphemism *flagman* that had been in Soviet naval use since 20 November 1935, when the lower naval ranks were formally reinstated. Five years later, naval commissar Kuznetsov, the chief of the Main Naval staff (L.M. Galler), and the vice commissar (I.S. Isakov) became admirals, and the commanders of the Baltic Fleet (V.F. Tributs) and Pacific Fleet (I.S. Yumashev) became vice admirals. Yumashev was senior to the commander of the larger Black Sea Fleet, again testifying to Stalin's preference for the Pacific area.

Kuznetsov would later write a vivid description of his relationship with Stalin:

When I was installed in the position of People's Commissar of the Navy in April, 1939, Stalin no longer appreciated objections and did not pay any special attention even to specialists. There had already formed around him a kind of thick cloud of toadying and servility, which made it difficult for people who did not occupy high positions to get through to him, and his opinions evoked no objections, even from his closest advisers. Young people

like myself who had been raised to the heights by the waves of the "turbulent period" of 1937–1938 [i.e., the purges], having tried to "have our own opinions," were quickly convinced that our lot was more to listen than to speak.²⁶

This was the environment in which Stalin sought to build the world's most powerful fleet.

²⁶Quoted in Capt. 3rd Rank O. Odnokolenko, "The History and Fate of People's Commissar Kuznetsov," *Krasnaya Zvezda* (21 May 1988), p. 4.

An Emphasis on Submarines

AN AMBITIOUS PROGRAM

Submarine construction received particular attention under the Program of Naval Construction for 1933–1938, approved by the Council of Labor and Defense in 1933. It called for a force of 369 submarines: 69 large, 200 medium, and 100 small units. It was also planned to construct eight submarine tenders or depot ships.

The implementation of this massive submarine program necessitated the use of improved construction techniques. Riveting was replaced by welding in a greater proportion of the hulls, with construction of the first all-welded submarine starting in 1934. This and other advanced construction techniques provided greater hull strength, reduced the amount of steel needed, and shortened production times.

The submarines authorized during the 1933–1938 program consisted of:

26 M class	Series VI
20 M class	Series VI- <i>bis</i>
3 S class	Series IX
47 S class	Series IX- <i>bis</i>
32 SHCH class	Series X
6 L class	Series XI
5 M class*	Series XII
46 M class*	Series XII- <i>bis</i>
7 L class	Series XIII
6 K class	Series XIV

*Includes one experimental submarine of each series.

These totalled 198 submarines—a remarkably ambitious peacetime construction program. Some of these submarines had already been started during the First Five-Year Plan.

The M-class VI-*bis* submarines were modified models of the original M design, with streamlined conning towers for better hydrodynamic performance. These boats were built at the Zhdanov (formerly Putilov) and Sudomekh shipyards in Leningrad, and Marti (south) in Nikolayev.

Trials with the M Series VI boats had demonstrated that the speed was less than projected, and other, more serious problems were experienced. When the torpedoes had been fired it was almost impossible to maintain depth control. Design changes and improvements suggested in 1934 by engineer S.A. Basilevskiy permitted the elimination of these serious defects in the M Series VI-*bis*.

The Stalinets or S-class submarine had its origins in July 1933, when the German design organization *Ingenieurskantoor voor Scheepsbouw* (IvS) offered the Soviets the plans for the submarine E-1, which had just been constructed at Cadiz for the Spanish Navy to the design of the German firm Deschimag. The E-1 had started trials in May 1931, and during the following year several Soviet submarine designers participated in tests of the submarine in the Mediterranean.

The initial submarine drawings were submitted by Deschimag in November 1933, but the Soviets insisted

on a number of changes, which included fitting more powerful diesel engines and a Soviet-designed deck gun. The former required an increase in size of the machinery spaces. Several Soviet engineers were sent to the IvS office at Deschimag in Bremen to participate in the design work.¹ Modified drawings for the design—designated both as IvS Project E-II and as Project 224 II—were completed in March 1934, and three German engineers were dispatched to Leningrad to assist in the construction of the lead unit, which started at the Baltic/Ordzhonikidze Shipyard in Leningrad on 31 December 1934.² The initial order consisted of three Series IX units, the N-1, N-2, and N-3, which were renumbered S-1, S-2, and S-3 on 20 October 1937.

These submarines displaced 840 tons surfaced and 1,070 tons submerged, were $255\frac{1}{2}$ feet (77.75 m) long, and had diesel-electric propulsion capable of driving them at 19.5/9 knots. Armament consisted of the now standard Soviet arrangement of four bow and two stern torpedo tubes with 12 21-inch (533-mm) torpedoes. Single 100-mm and 45-mm deck guns were provided. The strongly built hull was of riveted construction.

The S-1, originally to be named NALIM, was commissioned in the Baltic Fleet on 11 September 1936. Construction of the three Series IX submarines was immediately followed by the large number of Series IX-*bis* craft with generally improved operational characteristics. The first units were built at the Ordzhonikidze/Baltic yard, with others constructed at Sudomekh, Marti (south) in Nikolayev, and the Dalzavod yard in Vladivostok. This class also introduced the inland Krasnoye Sormovo yard in Gor'kiy to submarine construction. Gor'kiy is located some 200 miles (320 km) east of Moscow on the Volga River at its confluence with the Oka River.

The SHCH Series X submarines were similar to the previous submarines of the "pike" design, but with some emphasis on reducing machinery noise although equipped with more powerful diesels that provided for a higher surfaced speed. The 32 submarines of the Series X were ordered from the Baltic/Ordzhonikidze, Zhdanov, Marti (south) in Nikolayev, 61 Kommuna, and Dalzavod shipyards.

All of the L Series XI and XIII minelaying submarines were to be built at Dalzavod in Vladivostok for service in the Far East. Material and sections for these submarines were fabricated at European shipyards and

factories. Two submarines, the L-20 and L-22, were begun at the Baltic/Ordzhonikidze, but after the war began they were moved via the inland river-canal system to the Molotovsk/Severodvinsk yard for completion. Some of the criticisms of the early L-class submarines were overcome by modifications in the later series, and the Series XIII boats added two stern torpedo tubes (while carrying 18 mines).

The final class of submarines initiated in this period was the large K-class Series XIV *kreysler* submarines. Their design began in 1934 under the guidance of M.A. Rudnitskiy. These were the largest and in most respects the best Soviet undersea craft of the prewar period. One Soviet submarine commander described them as "splendid underwater cruisers any country would be proud to have. . . . [They] were marvelously seaworthy and had considerable operational range."³

The *katyushas*, as the submariners affectionately called the K-class submarines, displaced 1,480/2,095 tons, were $320\frac{1}{3}$ feet (97.65 m) long, and had large diesel-electric propulsion plants that could drive them at 21/10 knots. These were also the most heavily armed Soviet submarines of the period, with six bow and two stern torpedo tubes plus two trainable tubes in the outer hull casing. Twenty Type EM mines could be carried in mine "shafts" in addition to 24 torpedoes. For surface action the *katyushas* had two 100-mm deck guns and two 45-mm guns. The class was also intended to carry a floatplane for scouting duties, but this aspect of the design was abandoned.⁴ These submarines had a double-hull configuration with seven compartments, and were of mixed riveted and welded construction. The first three submarines were built by the Marti (south) yard in Nikolayev and the next six at the Baltic/Ordzhonikidze yard in Leningrad.

Beyond these submarines, the Soviets conducted extensive research into submarine propulsion plants that could be independent of outside air. These efforts began during the mid-1930s. Soviet engineers S.A. Basilevskiy and A.S. Kassatsir have been identified with these efforts, but there were undoubtedly others. The possibility of employing a diesel for submerged propulsion was first put forward by Basilevskiy in early 1936. His proposed engine, known as the REDO (*Regenerativny Edini Dvigatel' Osebovo Naznacheniya*), was first installed in the S-92, a unit of the M Series XII, in August 1938.⁵ The submarine's batteries were removed and replaced

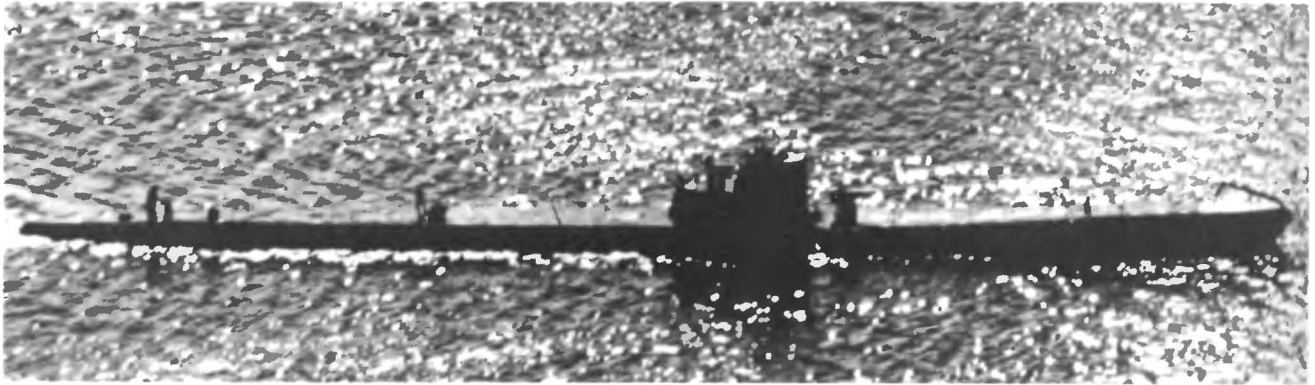
¹The Soviet engineers sent to Deschimag included Z.A. Derivin, V.F. Kritskiy, V.N. Peregudov, V.V. Perlovskiy, A.G. Sokolov, and S.G. Turkov. Peregudov had been among the engineers who had participated in the E-1 tests in the Mediterranean; he later became chief designer of the first Soviet nuclear submarines.

²The British-German naval agreement of 1935 legitimized the rebuilding of the German fleet and ended the need for clandestine submarine programs outside of Germany to enable German engineers to develop advanced submarine designs.

³Rear Adm. I. Kolyshkin, *Submarines in Arctic Waters* (Moscow: Progress Publishers, 1966), p. 16.

⁴The aircraft was designated SPL for *Samolyet Podvodnikh Lodok* (airplane for submarines); it was adapted from the I.V. Chyvetverikov—designed OSGA-101 amphibian. Accordingly, no Soviet submarines ever operated aircraft (as did U.S., British, French, and Japanese submarines, the last on an operational basis during World War II).

⁵Note that this is the only known M-series submarine with an S designation; it may have been a shipyard vice naval identification.



An S-class submarine, one of the Series IX-*bis*, en route from the Far East to the Northern Fleet via the Panama Canal during the war. Originally designated as the Stalinets class, this was a German/IvS design and bore a major resemblance to later German U-boats. The saw-tooth device on the bow was for cutting through anti-submarine nets. (U.S. Navy)

by the single REDO engine fueled by a gas mixture. The original diesel engine and electric motor apparently remained in place. The S-92 made several test runs and a single trial dive before the war; she was put in preservation at the Sudomekh Shipyard in Leningrad in 1941, with trials and experiments being resumed after the war.

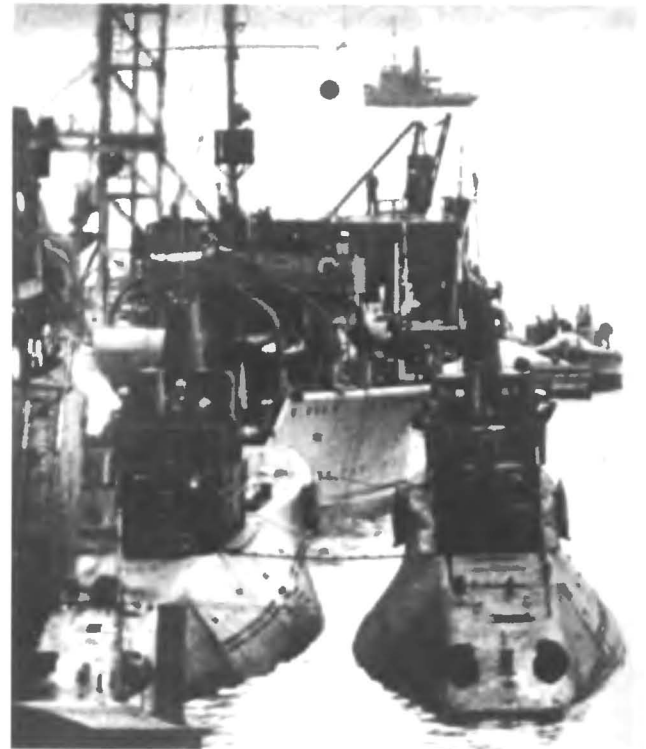
Another interesting submarine project was the M-400, also known as Project 95 in the Soviet ship designation scheme. Designed by B.L. Byezinskiy in 1939 for a special NKVD construction bureau and constructed at the Sudomekh Shipyard in 1940–1941, the M-400 was a 65½-foot (20-m) high-speed submarine-submersible torpedo boat fitted with a single propulsion plant (two diesels) for submerged and surfaced operation. The deck and conning tower were of aluminum alloy, and the armament consisted of one 45-mm gun and two torpedo tubes. The craft was intended to run submerged for a long period and then surface to attack its target at high speed. She was launched in July 1941. Her hull was damaged by German artillery fire during the siege of Leningrad, and construction was suspended in 1942.



The last Soviet submarine design of the 1930s was the large K or *kreyser* class. This submarine was intended to carry two dismantled floatplanes; that feature, however, was not provided. These submarines were highly capable craft and well liked by the Soviet Navy. Note the position of the 100-mm guns on the conning tower steps and the radio direction finding loop.

The experimental submarine M-401, belonging to the M Series XII-*bis* design, was laid down at Gor'kiy on 28 November 1939 and launched on 31 May 1941. She was propelled by a single closed-cycle diesel engine designed by Kassatsir. The craft ran sea trials in the Caspian Sea.

Before the war Soviet designers also developed several midget submarine designs. These included sub-



Two K-class submarines alongside a support ship. Note the stern openings for mine tubes that permitted these craft to carry 20 mines in addition to 24 torpedoes. They were fitted with ten 21-inch (533-mm) torpedo tubes and two 100-mm deck guns plus lesser guns, a considerable weapons load.



The 3.9-inch (100-mm) gun was the largest carried in Soviet submarines during World War II except for a 102-mm gun in the LENINETS class. Gunfire was the preferred—and less expensive—method of sinking small coastal craft if there was no danger of counterattack to the submarine. A radio direction finder is mounted atop the conning tower. (Sovfoto)

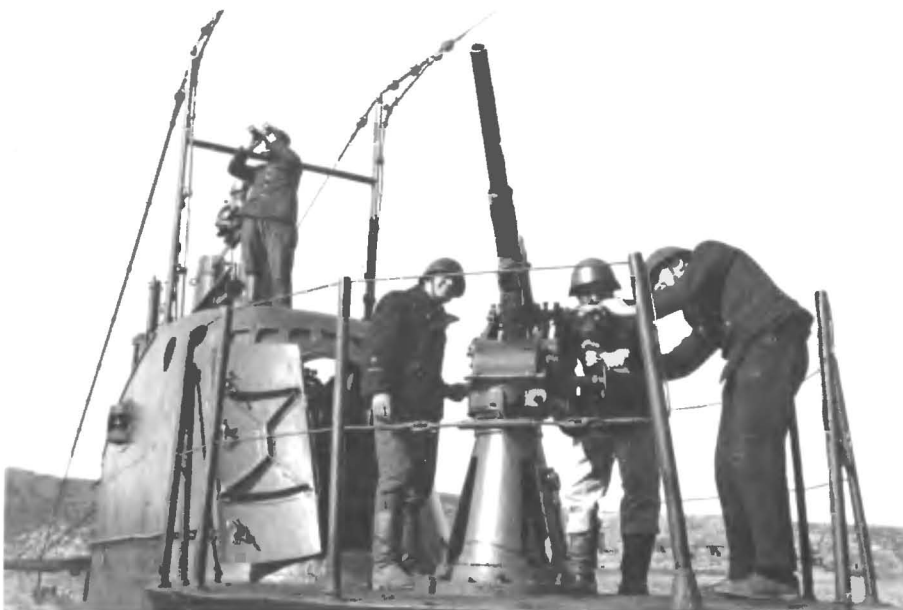
marines that could be transported by rail and carried to a target area by small cargo ships, submarines, or even aircraft. As such the tactics of their employment in various operating areas could be highly flexible. The designs developed were the Moskita (designed by a team headed by B.M. Malinin), Blokha (B.L. Byezhinskiy), APSS (B.I. Bekauri), and Pigmei (Bekauri). The APSS may have been sized for being carried by the K-class submarines, which were under development at the same time. No known production of these designs

followed, and few details of their designs have ever been made public.

In all, six shipyards plus the Ural Machine Works at Sverdlovsk constructed submarines during the period from 1927 until the outbreak of war.

THE OLDER SUBMARINES

While new submarines were joining the fleet, several older units were lost or stricken during the 1930s. The



Helmeted sailors man a 45-mm K-21 anti-aircraft gun on a Soviet submarine. This was the standard submarine anti-aircraft weapon; it lacked the high rate of fire of the 40-mm Bofors guns fitted in U.S. submarines during the war. (Sovfoto)

submarine minelayer RABOCHIY sank on 22 May 1931 in the Gulf of Finland after a collision with the submarine KRASNOARMEYETS. Two years later the RABOCHIY was raised by the rescue ship KOMMUNA and sold for scrap.

The eight surviving BARS-class submarines were allocated pendant numbers in place of names on 14 November 1931. Subsequently, on 10 December 1932, the BATRAK, PROLETARIY, and KRASNOARMEYETS were transferred to the training detachment of the submarine school on 10 December 1932; they received U-series designations, indicating *uchebno* or “instructional.” Finally, the BARS-class submarines were allocated letter-number designations on 15 September 1934:

<i>Submarine</i>	<i>14 Nov 1931</i>	<i>10 Dec 1932</i>	<i>15 Sep 1934</i>
KOMMUNAR	11		B-1
TOVARITSCH	12		B-8
KOMISSAR	13		B-2
BOLSHEVIK	14		B-3
BATRAK	21	U-1	B-5
KRASNOFLOTETS	22		B-4
PROLETARIY	23	U-2	B-6
KRASNOARMEYETS	24	U-3	B-7

The B-3 sank in the Gulf of Finland on 25 July 1935. During an exercise she collided with the battleship MARAT while surfacing; 55 men in the B-3 were lost. She was raised from a depth of 200 feet (61 m) in August of the same year and sold for scrap. The B-5 and B-6 were sold for scrap on 11 March 1935, and the B-4, B-7, and B-8 became floating battery charging stations on 8 March 1936.

The B-2 was extensively refitted during 1934–1935, during which two watertight bulkheads were installed. She was withdrawn from service on 10 January 1940, and on 11 May 1942 she was designated as a floating battery charging station.

The NERPA was retired in February 1931.

The surviving AG (Holland) units similarly received letter-number designations on 15 September 1934:

<i>Submarine</i>	<i>1934</i>
SHAKTER	A-1
KOMMUNIST	A-2
MARKSIST	A-3
POLITRABOTNIK	A-4
METALLIST	A-5

All of these submarines served through the 1920s and 1930s without substantial modernization (and took part in World War II). The A-1 was heavily damaged by explosions in Sevastopol on 26 June 1942 and was no longer seaworthy. The A-5 struck a mine near Odessa on 25 July 1942 but survived. The cause of the sinking of the A-3 is unknown but one possibility is that she was sunk by the German submarine chaser SCHIFF 19 off Tendra peninsula in the Black Sea on 28 October 1943.

THE THIRD FIVE-YEAR PLAN

The Third Five-Year Economic Plan (1938–1942) was approved by the 18th Party Congress in March 1939. The naval construction program for this five-year plan envisioned the construction of 198 submarines—27 large (12 K class and 15 L class), 89 medium (49 S class and 40 SHCH class), and 82 small (M class) submarines. Simultaneous with this massive submarine effort, the Soviet Navy embarked on a major construction program of surface ships. Four large, 59,150-ton battleships of the SOVIETSKIY SOYUZ class were also approved along with four 35,240-ton battle cruisers of the KRONSHADT class, two more cruisers of the KIROV class, seven 11,300-ton light cruisers of the CHAPAYEV class, and additional destroyers and smaller warships. (Aircraft carrier construction was envisioned for the last year of the Third Five-Year Plan or for the Fourth Five-Year Plan, which was to begin in 1943; additional capital ships, cruisers, and destroyers were also planned.⁶)

Of the eight capital ships, three of the battleships and two cruisers were laid down in 1938–1939, but none would be completed. In October 1940, the naval building program was reviewed by Stalin and the Navy’s leadership, and the decision was made to suspend temporarily the construction of the battleships and cruisers, and to concentrate the available materials and workers on completing destroyers, submarines, and smaller combat craft. At the time the Soviet Union was only eight months away from war with Germany.

Throughout the 1920s and 1930s the Soviet Navy looked primarily at Britain as its future antagonist. Stalin’s large battleships and supporting warships were meant to control regional seas and to sail into the North Sea and even beyond to engage the Royal Navy. This attitude was reflected in the comment of a Baltic Fleet captain. Visiting the grave of his infant son at Kronshadt in 1940, he was heard to declare, “Aleksandr, my son, you are buried here in Kronshadt. I will be buried in the Atlantic.” (He survived the war, attaining the rank of rear admiral.)

During the 13 years of the first three five-year plans—1928 to June 1941—533 naval ships of guard-ship size and larger were laid down, according to Soviet statements. Of that number, 312 were completed by June 1941: 206 submarines, 4 cruisers, 7 destroyer leaders, 30 destroyers, 18 guard ships, 38 minesweepers, 1 minelayer, and 8 river monitors. Considering the state of the Soviet shipbuilding industry and navy after

⁶One Soviet writer has listed the following fleet goals for major warships to be in service by 1943: 19 battleships and battle cruisers (including 3 of World War I vintage), 20 cruisers, 163 destroyers, and 341 submarines. See M.V. Zakhov, “On the Eve of the Second World War,” *Novaya i Noveyshaya Istoriya* (No. 5, 1970), p. 11.

the Revolution and Civil War, and the massive army and air force being developed during the 1930s, this shipbuilding effort was a remarkable achievement.

TORPEDO AND MINE DEVELOPMENT

The first Soviet-era torpedo to enter service was the 53-27, developed in 1927. This 21-inch (533-mm) weapon had a warhead of 583 pounds (265 kg) and a range of 4,070 yards (3,700 m) at a speed of 45 knots.

The 53-38 torpedo was developed in 1938. This weapon featured three preset speed/range combinations, and had a horizontal and vertical deviation of $30\frac{1}{2}$ feet (100 m) and $3\frac{1}{4}$ feet (1 m), respectively, at the aiming point over a distance of $6\frac{1}{4}$ miles (10 km). This torpedo, in its basic configuration and in the 53-38U variant, was the standard Soviet torpedo at the time of the Soviet entry into World War II. Further development of the 53-38 torpedo was halted with the introduction of the 53-39, which reached the fleet in July 1941. The 53-39 differed from its predecessor in having a more powerful engine and an increased supply of compressed air, kerosene, and oil, and it was fitted with a larger warhead. The speed/range settings could be set at intervals of 5–6 knots, up to approximately 45 knots. This torpedo was designed for use with all ships equipped with 21-inch (533-mm) torpedo tubes.

Research work to develop a magnetic pistol had already begun in early 1923, and during 1925–1927 the magnetic signatures of surface warships had been investigated to determine the required sensitivity.⁷ By 1938, the magnetic pistol had been sufficiently perfected to be activated at a distance of $6\frac{1}{2}$ feet (2 m) by the magnetic field of a non-degaussed ship with a displacement of over 3,000 tons. Widespread introduction of the magnetic pistol into the fleet occurred by 1943.

Introduced simultaneously with the 53-39 torpedo in 1941 was the MO-3 gyroscope, allowing for setting the torpedo turning angles from 0 to 90 degrees to the right and left with a precision to 10 minutes. The gyroscope made it possible to switch to volley torpedo firing in a fan instead of firing with a time interval. The MO-3 was widely distributed by 1943.

Development work on acoustic homing torpedoes (SAT) commenced in 1936. It was first attempted to incorporate an acoustic homing system into the 53-38 torpedo. The torpedo's excessive noise prevented the system from being effective, and the experiment was abandoned after a short period. The development of acoustic homing torpedoes was evidently interrupted by the war, but was taken up again in 1945 following the acquisition of smaller German weapons and their technology.

⁷Also referred to as *Nekontaktniy Vzryivatel' so Stabilizatorom* (NVS) (proximity fuses with a stabilizer).



Sailor-technicians ready a torpedo for loading on board ship. Service in submarines was arduous, but led to a high degree of esprit de corps. (Imperial War Museum)

Two experimental ET-45 electrically driven torpedoes were manufactured in 1937–1938. They were fitted with a PM-45 electric motor developing 45 kilowatts. Experiments at sea, conducted in 1938, revealed numerous construction deficiencies. The gyrating/rotating effect of the dynamo necessitated the installation of contra-rotating propellers to prevent the torpedo from spinning.

The experience gained with the ET-45 torpedo and its propulsive system in 1938 led to the development of a totally new electric motor design, the PM-4. Apparently this was a small-scale, experimental dual-armature system in which the dynamos rotated in opposite directions, simultaneously driving two propeller shafts, thereby eliminating the need for the installation of differential gearing. Introduced at the same time were the new type V-6 batteries.

The wakeless ET-80 electric torpedo, powered by the PM 5-2 electric motor developing 80 kilowatts, passed government trials in 1942 and was adopted for service in submarines in September of that year. The

wakeless ET-80 had a range of 4,400 yards (4,000 m) at 29 knots and a warhead of 880 pounds (400 kg).

Soviet submarines were initially fitted with torpedo tubes with compressed air firing, but a modernization program was initiated during the war to allow for bubbleless torpedo firing. Torpedo fire control was further refined during the war years. A device for setting the torpedo depth known as PUG began testing in 1943–1944, while the automatic torpedo launch system for submarines designated TAS-L was tested and introduced at about the same time. The TAS-L—using sonar data—made it possible to conduct torpedo attacks without use of the periscope with the attendant danger of detection.

Soviet submariners during World War II would initially fire only a single torpedo or at most two torpedoes at a target. Not until about 1944 did they shift to volley firing, launching torpedoes in succession with a six-to-ten-second interval and a constant lead angle. By that time the method of “fan” or salvo firing was also introduced, i.e., discharging several torpedoes almost simultaneously with an angular spacing of one degree.

The Soviet Navy continued the historical Russian interest in mines, with, as noted above, six L-class submarines and six K-class submarine minelayers entering service by 1941, with another six *katyushas* in various stages of construction. These submarines carried the PL-150 mine, introduced in 1924 as a successor to the outdated submarine-laid PL-100. The PL-150 carried 330 pounds (150 kg) of explosive in an assembly with

neutral buoyancy so that it did not upset the trim of the submarine when laid. The development of an improved series of submarine mines was initiated in 1927 for the K class. These were the similar EP-G and PLT-G mines for use by the *katyushas*, the latter for deep-water use, i.e., in depths greater than 820 feet (250 m). Engineer-Captain 3rd Rank N.G. Fedorov was responsible for the development of these mines, which had contact firing mechanisms for use against surface ships and submarines.

It should be noted that these mines were all laid from special mine tubes or “shafts.” Mines launched from torpedo tubes—as employed by the British, German, and U.S. navies—were not used by the Soviet Navy during the war.

ACOUSTIC DEVELOPMENTS

Soviet research into sonar technology began in 1924, when the Special Technical Bureau for Military Inventions with Special Military Applications (*Ostekhbyuro*) was designated to develop passive sonars. The Baltic Fleet submarine No. 5 (formerly the *PANTERA*) in 1927 received and tested the first pilot models.

Development work was turned over to the specialized *Vodtrantpribor* plant in Leningrad in May 1933, under the leadership of chief engineer V. Tyulin. The first elliptical-array Mars passive sonars were tested in the Baltic Fleet submarine S-2 in 1934–1936.

Soviet sources indicate that at the time of the Ger-



Soviet torpedo development has been innovative, although it was limited during World War II by the displacement of research facilities and the shortage of production capability. Equally significant, the Soviets emphasized mine development although, unlike the U.S. Navy, the Soviets built several submarines with special minelaying tubes during the war, an evolution of the *KRAB* design. (Imperial War Museum)

man attack on the Soviet Union in 1941 there were 176 submarines—almost 80 percent of the force—fitted with the Mars passive sonars, i.e., Mars-8, Mars-12, and Mars-16, for small, medium, and large submarines, respectively. The suffix numeral indicated the number of hydrophones in the acoustic array.

These sonars were capable of detecting ships at distances of some 5,000 to 20,000 yards (4,550–18,200 m), depending on the intensity and spectrum of the sound signal, the searching submarine's own sonar characteristics, the level of interference, and water conditions. The mean bearing error was 2 or 3 degrees, and the time of a 360-degree scan was 40 to 60 seconds. The equipment was not able to give an indication of the distance to the target.

A number of shortcomings of the Mars became apparent when first used in combat. Submarines were notably poor at station keeping, and when any form of speed increase was executed to keep the submarine in position, the reception quality of the sound signal deteriorated rapidly. The maneuvering of the submarine therefore significantly decreased the accuracy of the estimated bearing of the target, and with it the precision of the salvo being fired. In addition, there was no direct communication between the acoustic and command stations, which impeded the proper interaction between maneuvering the submarine and organizing the torpedo attack. Also, the submarines needed to gain experience in integrating acoustic data with the torpedo firing control system.

A related Soviet development in this period was a device known as the SPRUT-1. This was a hydrostatic depth control that allowed a submarine to switch off its electric motors and remain in the same position, regardless of water currents. The motionless submarine, with motors switched off, was a much more effective sonar platform. Beginning in 1942, the submarines SHCH-309, M-102, M-171, and M-172 were the first operational submarines to receive the SPRUT-1.

SAILING UNDER THE ICE

A final significant area of Soviet submarine development of the 1930s was the progress in conducting operations under ice, an important requirement for Soviet submarines during winter periods in several bordering sea areas. Submarines in the Far East were the first to undertake combat training exercises in the ice during the 1930s.⁸

The chief of staff of one of the Baltic Fleet submarine brigades, A.T. Taradin, in 1936 presented a report to

⁸The KEFAL' made what is claimed to be the world's first under-ice submarine navigation in the Far East in December 1908 (see page 17).

BALTIC FLEET TRANSFERS TO THE PACIFIC

Designation as built	Northern Fleet designation	Year transferred	Pacific Fleet designation
SHCH-312	—	1937	SHCH-134
SHCH-321	—	1939	SHCH-135
SHCH-328	—	1939	SHCH-136*
SHCH-327	SHCH-423	1940	SHCH-139
SHCH-329	—	1940	SHCH-141

*The SHCH-328 was apparently lost on trials in the Arctic, with the SHCH-327 possibly sent as a replacement.

the Main Military Council of the Navy on the need for submarines to be able to conduct passages under "fast ice" to execute combat missions in the Gulf of Finland and in the Baltic during the winter. He later proposed structural modifications to submarines to permit them to navigate under the ice.

Also in 1936, the SHCH-117 in the Far East conducted a long-endurance cruise under severe winter conditions, presumably sailing under ice. Details of this operation were not known, but the submarine received a decoration on 3 April 1936.

Under-ice navigation was not without problems, as possibly indicated by the loss of the SHCH-139 while on trials in the Arctic in 1939. The executive officer of a Baltic Fleet submarine in early 1940 proposed a "device for observing from a submarine below the ice."⁹ Such a device was in fact developed and installed in the Baltic Fleet submarine M-90 for testing and yielded satisfactory results. The outbreak of war, however, interrupted further development.

⁹Capt. 2nd Rank V.G. Redanskiy, "Bound for the Pole," *Morskoy Sbornik* (No. 7, 1970), trans. p. 29.

SUBMARINE DELIVERIES, NOVEMBER 1930–JUNE 1941

Class-series	Number delivered
D Series I	6
L Series II	6
SHCH Series III	4
P Series IV	3
SHCH Series V	12
SHCH Series V-bis	14
SHCH Series V-bis-2	13
M Series VI	30
M Series VI-bis	20
S Series IX	3
S Series IX-bis	16
SHCH Series X	32
SHCH Series X-bis	4
L Series XI	6
M Series XII	4
M Series XII-bis	24
L Series XIII	7
K Series XIV	6
Total	210

In the meantime, there were extensive ice operations by other Soviet submarines. The Pacific Fleet submarines M-2, M-19, M-20, and M-24 conducted an under-ice cruise on 26 December 1940. Clearly, from the 1930s onward, the Soviet submarine force had a deep interest in under-ice operations.

Between 1937 and 1940 four new construction submarines built in Leningrad transferred via the White

Sea river-canal system to the Northern Fleet area; they then transited the Northern Sea Route through the Arctic to the Far East.¹⁰

¹⁰The Northern Sea Route between Murmansk and Vladivostok is some 5,930 nautical miles (11,000 km)—one-half the distance via the Suez Canal or around Africa and across the Indian Ocean. It is kept open in part through the use of large icebreakers. The first Northern Sea Route transit completed in a single year occurred in 1932.

World War II in the Baltic

SUBMARINES IN THE RUSSO-FINNISH WAR

When World War II began in Europe in September 1939, the Soviet Union had the world's largest submarine force, with 168 undersea craft in service.¹ Of these, 55 were in the Baltic Fleet (plus 37 others in Leningrad shipyards under construction or fitting out).

German armies under massive air cover invaded Poland on 1 September, easily defeating the unprepared, poorly armed Polish forces. On the 17th Soviet troops invaded Poland across their common border. The eastern provinces of Poland came under Soviet control and were annexed in October 1939, when the Soviets also took over the Baltic states—Estonia, Latvia, and Lithuania.² Naval participation in these operations was virtually nil. The only loss was the Soviet tanker *METALLIST*.

The tanker was sunk in Narva Bay on 26 September, according to Soviet spokesmen, by the Polish submarine *ORZEL*.³ The Soviets had sought to blame the sink-

ing on Poland as an excuse for moving into the Baltic states. In reality, the Soviet submarine SHCH-303 had unsuccessfully tried to torpedo the *METALLIST*, after which the tanker was sunk by a Soviet torpedo boat.

Occupation of the Baltic states gave the Soviets control of the eastern coast of the Baltic Sea, and from mid-October 1939 the Soviet Navy was able to base naval forces at Revel (now Tallinn), Libau (now Liepaya), and Baltiski Port (now Paldiski). These ports were ice-free for most of the year, a significant advantage for Soviet naval operations in the Baltic. The Soviet Navy immediately moved ships to those ports, including 25 Baltic Fleet submarines and three depot ships.

Neither the submarines nor the rest of the Navy nor the other Soviet military forces were ready for combat when the Soviet Union attacked Finland in November 1939.⁴ The Finnish border was only 20 miles (32 km) from Leningrad, which was within artillery range of Finland. The Soviet leadership feared that Germany would use Finland as an invasion route. Demands were made on Finland to move the border and to permit the Soviets to fortify the island of Suursaari to protect the Gulf of Finland; subsequently, the Soviets added more islands, to serve as observation posts, to their demands, with the port of Hango being requested as a base for Soviet naval forces.

¹By comparison, at the time the submarine strength of the other major naval powers was Britain 69, France 77, Germany 57, Italy 115, Japan 62, and United States 99.

²The Baltic states were Russian from the time of Peter the Great until World War I, then independent from 1918–1920 until 1939. During World War II they were overrun by German forces.

³One of Poland's five submarines had already departed the Baltic (en route to Britain), and three were already interned in Sweden at the time of the tanker's sinking. The *ORZEL* was, however, still in the Baltic (she subsequently also left the Baltic for Britain).

⁴Finland was under Russian control prior to 1917.



An aerial photograph of Leningrad—taken by a German aircraft in August 1941—shows the major shipyards in the city: (A) Baltic Shipyard with one battleship, one heavy cruiser, and several destroyers under construction; (B) Marti/Admiralty Shipyard; (C) wharves; (D) Zhdanov Shipyard with several destroyers being fitted out; (E) protected harbor with cargo ships; (G) coal port with one wrecked battleship and several destroyers; (1) and (2) heavy cruisers being fitted out; (3) dock; and (4) icebreaker. (*Luftwaffe* photo)

BALTIC FLEET SUBMARINES, OCTOBER 1939

1st Brigade	2nd Brigade	3rd Brigade
12th Division (Revel)	17th Division (Revel)	23rd Division (Oranienbaum)
L-1	SHCH-317	M-72
L-2	SHCH-318	M-73
L-3	SHCH-319	M-74
13th Division (Revel)	SHCH-320	M-75
S-1	22nd Division (Revel)	M-77
S-2	SHCH-322	26th Division (being formed)
S-3	SHCH-323	M-90
16th Division (Libau)	SHCH-324	M-94*
S-4	24th Division (Revel)	M-95*
S-5	M-71	M-96*
S-6	M-76	M-97*
21st Division (Revel)	M-78	
SHCH-309	M-79	
SHCH-310	M-80	
SHCH-311	M-81	
tender	tender	tender
SMOL'NY	POLYARNAYA ZVEZDA	KRONSHADT
salvage ship		tender
KOMMUNA		OKA

*Commissioned on 12 December 1939.

On 30 November 1939, Soviet armies invaded Finland across a broad front, from the isthmus between the Gulf of Finland and Lake Ladoga northward to the Arctic Circle. During this so-called "winter war" the Soviet forces, despite their massive numerical superiority, were initially thrown back. The war, which lasted until March 1940, showed that Soviet forces lacked initiative, had faulty equipment, and were inferior to the Finns in tactics. But the Soviet masses prevailed.

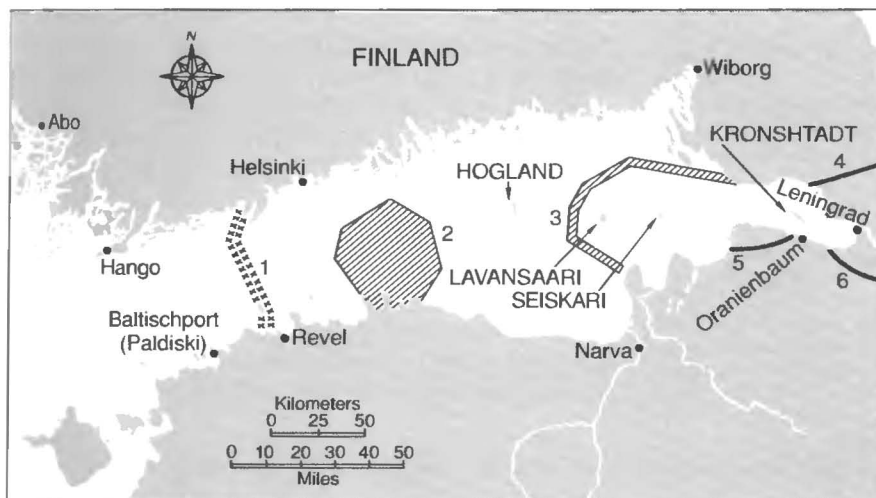
Stalin had proposed a close blockade of Finnish ports by Soviet submarines, but he was dissuaded by

the Navy commissar, Admiral N.G. Kuznetsov, because of the treacherous reefs and channels. The larger Libau-based submarines were active near the Aaland Islands and in the Gulf of Bothnia, while the submarines based at Baltiski Port, Revel, and Kronshtadt operated east of Uto, at the entrance to the Gulf of Finland. On 7 December 1939, the Soviets declared the Finnish coast from Tornio to Helsinki a blockade zone; the Aaland Islands area was added to this zone on 17 December 1939.

During the war Soviet submarines generally operated in pairs. They often revealed their positions by their intensive radio communications with command headquarters ashore. However, the Soviets used shore-based radio stations to intercept Finnish shipping communications and direct the submarines to targets. Another submarine problem was the frequent broaching while launching torpedoes, indicating poor depth control.

Soviet submarine operations during this war were, in general, not very effective. Only one Finnish ship was sunk by submarine torpedoes; a few smaller ones were destroyed by submarine deck guns. Finnish anti-submarine operations were equally ineffective and did not result in any positive contacts. Initially, during December 1939, various neutral ships, mostly German or Swedish, were mistakenly attacked by Soviet submarines. The small Estonian steamer KASSARI (379 GRT) was sunk by the Soviet submarine SHCH-323 off Uto on 10 December, and the German steamer BOLHEIM (3,324 GRT) was attacked and sunk by the submarine S-1 on 10 December, southwest of Sappi. The small Swedish steamer FENRIS (484 GRT) was sunk by 73 artillery rounds fired by the SHCH-311 on 5 January 1940, near the Sydostbrotten.

The SHCH-311, under Captain-Lieutenant F.G. Ver-shinin, also sank the *only* Finnish merchant ship lost to submarines in the war, the WILPAS (775 GRT). The



Gulf of Finland (later names in parentheses).
 1 Double anti-submarine net of 1943-1944. 2 Juminda minefield. 3 Approximate position of German minefields 1942-1943. 4 Finnish front. 5 Oranienbaum salient (held by Soviets). 6 German front confronting Leningrad.

SHCH-311 sank the WILPAS by gunfire on 29 December 1939. (The Finnish presidential yacht AURA, employed as a convoy escort, sank on 13 January 1940, after suffering damage from depth charges dropped against the SHCH-324.) Vershinin claimed to have sunk three large transports during the war. Accordingly, the SHCH-311 was decorated with the Red Banner and Vershinin became a Hero of the Soviet Union, one of the first Soviet submariners to receive the nation's highest decoration.

One Soviet submarine was sunk during the winter war, the S-2 (Series IX) in a Finnish minefield near Market Island on 2 January 1940; her entire crew was lost. Soviet submarine operations came to a complete halt by the end of January 1940, because of the ice closing the Gulf of Finland. The winter war ended on 13 March 1940.⁵

The Soviet-German non-aggression pact, signed on 23 August 1939, had permitted Germany to attack Poland the following week with assurance that the Soviets would not interfere and, indeed, would share the spoils of the vanquished Polish state. Despite Soviet concern over German assistance to Finland during the winter war, and knowledge that Germany would eventually turn against the Soviet Union, military and trade relations between the two nations continued until the outbreak of war in June 1941.

In this period the Soviet port facilities at Teriberka, to the east of Murmansk, and later at Zapadnaya Litsa, were placed at the disposal of the German Navy and were of value to German blockade runners seeking to evade British warships. These ports were made available because, unlike Murmansk, they were not frequented by foreign shipping. The Soviet ports, however, were not used by German surface warships or U-boats. The Commander in Chief of the German Navy, Grand Admiral Erich Raeder, later wrote that these ports

had been a tremendous advantage to some of our merchant ships trying to return home from overseas during the first weeks and months of the war. In order to evade the British net, most of these had had to take the far northern route along the edge of the ice pack, with a consequent battering from the northern storms; but at Polyarny they could make repairs and take on supplies for the rest of the run home through Norwegian waters.⁶

⁵Finland had five submarines in this period, three of the German-designed Finnish-built VETEHINEN class (493 tons; launched 1930–1931); the smaller VESIKKO (250 tons; launched 1932) built under the same arrangement; and the very small SAUKKO (114 tons; launched 1930). The last was intended to operate on Lake Ladoga; however, she remained in the Baltic. None of these submarines played a significant role in the winter war, although they made several attacks on Soviet ships. They would have several successes against Soviet forces in World War II; all were stricken in 1947.

⁶Grand Adm. Erich Raeder. *My Life* (Annapolis, Md.: U.S. Naval Institute, 1960), pp. 333–334.

Zapadnaya Litsa became known by the Germans as *Basis Nord* and was ready for use by blockade runners from 1 December 1939. During the winter of 1939–1940 there were lengthy Soviet-German negotiations over the use of the Arctic sea route for German convoys to and from Japan. Only one German ship, the auxiliary cruiser KOMET (*Schiff 45*), undertook the two-month passage from west to east in July–August 1940 with the assistance of several Soviet icebreakers. With the occupation of Norway in 1940 the Germans no longer had a need for the bases on the Kola peninsula. Admiral Raeder made it a point to telegraph his thanks to Admiral Kuznetsov for the use of the bases.

It should be noted that in this time of close relationship between Germany and the Soviet Union, there were attempts by Stalin to obtain aircraft and warships from Germany. The incomplete heavy cruiser LÜTZOW was sold to the Soviets and towed to Leningrad in April 1940 (but was never completed). There is also some evidence that the German Navy wished to obtain some submarines *from the Soviets*, but Hitler rejected that proposal on 10 October 1939, fearing that the boats would not be useful and wishing to avoid showing any signs of military weakness to the Soviets.⁷

During this period the Soviet Navy continued to expand its newfound bases in the Baltic as well as developing the naval bases and shipyards in the Arctic and the Far East, especially for use by the growing number of Soviet undersea craft.

MISSIONS AND TACTICS

The principal mission of Soviet submarines during World War II would be the interdiction of enemy sea lines of communication. The secondary submarine missions would include minelaying, reconnaissance, transporting supplies to besieged ports, and carrying scouts and sabotage parties to be put ashore on enemy-held coasts.

Soviet submarines initially operated independently. The introduction of extendable communications antennas as well as the Drakon-129 underwater communications device made it possible to deploy submarines in groups as a tactical unit, with the submarines being able to maintain contact with each other up to a distance of 5 miles (8 km) while on or near the surface. The first such operation in the Northern Fleet in February 1943, however, was a failure. From early 1943, primarily in the Northern Fleet, submarines also conducted coordinated operations with aircraft. In the Black Sea during 1944 submarines would undertake coordinated operations with torpedo boats.

⁷See Max Beloff, *The Foreign Policy of Soviet Russia, 1929–1941* (London: Oxford University Press, 1949), pp. 295–296.

During the early stages of the war Soviet submarines would generally wait passively in a predefined position until a target would appear. This did not lead to the desired results. Following the establishment of reliable means of communications with reconnaissance aircraft, submarines started to engage in more active ways of searching for targets. This allowed for the introduction in the Northern Fleet of a new tactic during late 1943 or early 1944, whereby submarines were located singly, each in its own "box" or patrol area, along the German shipping routes. After receiving target data from aircraft, the submarine moved to a position from which the target could be attacked. This method of operation was called the "hanging screen." The main weapon used was the torpedo. Mines and deck guns were employed to a lesser extent.

Submarine attacks generally occurred in daylight because of the need for visual sighting, but night attacks became more frequent as the war progressed. (Soviet submarines were not equipped with radar until late in the war.) The torpedo firing distance was generally 10 to 18 cable lengths (2,027–3,648 yds/1,824–3,283 m).

When the war began German anti-submarine tactics and capabilities were limited. From a naval viewpoint,

the Germans considered the Soviet campaign a secondary theater. Indeed, when the war began the German Navy had no naval forces in the Black Sea or Arctic regions. The allied status of Rumania and the occupation of Norway provided the German Navy with access to those operating areas.

When the German armies and air flotillas attacked the Soviet Union in June 1941 there were 69 completed Soviet submarines in the Baltic. The Soviet surface fleet in the Baltic—although the largest of the four fleets—was small, so small that the German naval high command assigned no major warships to the campaign in the Baltic.

In addition, the Germans and Finns had a large number of minesweepers and patrol craft in the Baltic. The German Navy had prepared to fight a defensive operation in the Baltic, preventing the Soviet fleet from going to sea and supporting the German Army's advance toward Leningrad. The German Navy and Air Force would use naval and air bases in Finland as well as East Prussia and Poland.

At the outset of the war the German naval high command held the Soviets in low esteem; one German flag officer would write that

SOVIET SUBMARINE STRENGTH, 22 JUNE 1941

Class-series	Baltic Fleet	Northern Fleet	Black Sea Fleet	Pacific Fleet	Totals
<i>In service</i>					
D I	D-2	D-3	D-4 to 6		5
L II	L-1 to 3		L-4 to 6		6
SHCH III	SHCH-301 to 304				4
P IV	P-1 to 3				3
SHCH V				SHCH-101, 102, 104 to 112	11
SHCH V-bis	SHCH-305, 308		SHCH-201 to 204	SHCH-113 to 120	14
SHCH V-bis-2	SHCH-306, 307, 309 to 311		SHCH-205 to 207	SHCH-121 to 125	13
M VI			M-51, 52	M-1 to 28	30
M VI-bis	M-71 to 81, 83		M-54, 56, 58, 59	M-43 to 46	20
S IX	S-1, 3				2
S IX-bis	S-4 to 10, 101, 102		S-31 to 34	S-50, 54	15
SHCH X	SHCH-317 to 320, 322 to 324	SHCH-401 to 404, 421, 422	SHCH-208 to 215	SHCH-126 to 134, 139	31
SHCH X-bis	SHCH-405, 406			SHCH-135	3
L XI				L-7 to 12	6
M XII	M-90	M-171 to 173			4
M XII-bis	M-94 to 99, 102, 103	M-174 to 176	M-31 to 36, 60, 62	M-30, 47 to 49, 63	24
L XIII				L-13 to 19	7
K XIV	K-3, 21 to 23	K-1, 2			6
AG (Holland design)			A-1 to A-5		5
BARS class	B-2				1
ex-British	L-55				1
ex-Estonian	KALEV				2
	LEMBIT				
ex-Latvian	RONIS				2
	SPIDOLA				
Totals	69	15	44	87	215

SOVIET NEW CONSTRUCTION SUBMARINES, 22 JUNE 1941

Class-series	Baltic	Arctic	Black Sea	Pacific	Inland yards	Totals
<i>On trials and fitting out</i>						
S IX-bis	S-11 to 16, 20, 21, 103 to 108		S-35	S-51 to 56	S-17 to 19	24
S XVI		S-58 to 60			S-45 to 48	7
SHCH X-bis	SHCH-407 to 410		SHCH-216	SHCH-137, 138		7
M XII-bis	S-92, M-100, 101		M-111 to 113, 120	M-114 to 116	M-104 to 108, 117 to 119, 121, 122, 401	21
M XV	M-200 to 203					4
K XIV	K-51 to 56					6
L XIII	L-20 to 22		L-23 to 25			6
Totals	34	3	9	11	18	75
<i>On building ways</i>						
S IX-bis	S-22 to 24		S-36, 37	S-57		6
SHCH X-bis	SHCH-411 to 419					9
M XV	M-204 to 206					3
Project 95	M-400					1
K	K-54, 57, 58, 60, 77, 78					6
Totals	22	—	2	1	—	25

no German officer who had fought the Russians in 1914–17 had any real respect for their fleet. It is true that the ship's crews knew well enough how to fire their guns, and in a tight corner they would fight bravely to the end. But what the Russians had always lacked . . . was the ability to make quick decisions and to exploit the ever-changing tactical and operational opportunities inherent to a war at sea. . . . Thus there was no reason whatever to fear the opponent, for now the Germans possessed well-trying flotillas of efficient ships.⁸

But the Germans underestimated the tenacity of their opponents in the Baltic.

THE WAR BEGINS

When the German armed forces invaded the Soviet Union on 22 June 1941, the Soviet Navy had 215 completed submarines, still the world's largest undersea fleet. There were 69 completed submarines available in the Baltic Fleet plus another 34 on trials and fitting out, and 22 more submarines on the building ways in Leningrad shipyards (see tables). Of the operational submarines, most were completed between 1930 and 1941, and were relatively modern undersea craft. There were also four submarines taken from the Baltic states (two built in 1927 and two in 1937), the salvaged British L-55, and six tsarist-era submarines (one BARS class and five AG-Holland class). In the coming conflict even the older submarines and poor-performing boats of the PRAVDA class could be useful as training and experimental craft.

⁸Vice Adm. Friedrich Ruge, FGN, *Der Seekrieg, The German Navy's Story 1939–1945* (Annapolis, Md.: U.S. Naval Institute, 1957), p. 198. Ruge had served in the Baltic in 1914–1916, and served as a flag officer in the German Navy during World War II.

NAVAL FORCES IN THE BALTIC, JUNE 1941

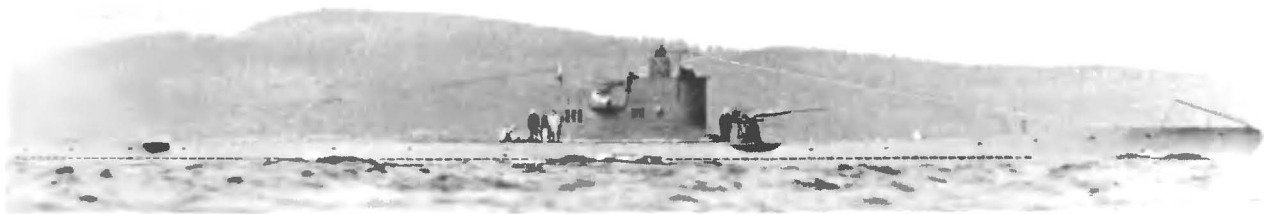
	Soviet	German	Finnish
Battleships	2	—	—
Coastal defense ships	—	—	2
Cruisers	2	—	—
Modern destroyers*	14	—	—
Old destroyers	7	—	—
MTB/guard ships	8	28	6
Minelayers	6	10	3
Submarines	69	5**	5

*Includes destroyer-flotilla leaders.
**Training boats.

(By June 1941, four of the newer Soviet submarines had been lost or withdrawn from service. The large D-1 sank with the loss of her entire crew for unknown reasons during a dive in Motovsky Bay in November 1941; the SHCH-103 was accidentally wrecked in the fall of 1939 in the Far East, but was later recommissioned; the SHCH-424 was rammed and sunk by a fishing trawler off Kola Inlet in the fall of 1939; and the S-2 had been sunk in the winter war.)

After the winter war with Finland, the Soviet submarine force in the Baltic Fleet was reorganized and redeployed. The substantial number of new submarines being completed led to a restructuring that was implemented on 11 February 1941.⁹ Two larger submarine brigades replaced the previous three brigades, each with three to five divisions with up to nine submarines.

⁹Organizational details are found in V.I. Dmitriev and O.G. Chemesov, *In the Depths of the Baltic* (Moscow: Military Publishing House, 1988), pp. 36–42.



The S-1 underway in the Baltic in 1939. The Soviets had a large submarine force in the Baltic during the war, but they were severely hampered by Finnish and German anti-submarine defenses, and restricted by geography and weather. Still, they caused considerable concern among the German military leadership. The S-1 was built with the 100-mm gun fitted in an enclosed mount immediately forward of the conning tower.

A Detached Training Division was established with the older Baltic Fleet submarines as well as new construction units intended for the Baltic. In addition, a separate training brigade was formed consisting of submarines constructed in Leningrad shipyards but destined for other fleets.

In addition, 18 submarines were engaged in training activities. The training brigade, with headquarters in Leningrad, had seven boats, the K-51 through K-56

and the SHCH-408; the detached training division at Oranienbaum (now Lomonosov) had 11 units, the B-2, L-55, P-1, P-2, P-3, and SHCH-301, -302, and -305 through -308.

Only 37 of the Baltic Fleet submarines could be considered ready for combat operations in June 1941. Shortly before the actual outbreak of hostilities on 22 June, the Soviet naval command had deployed ten of the submarines of the 1st Brigade on patrol: two to the

BALTIC FLEET SUBMARINES, JUNE 1941

1st Brigade		2nd Brigade		Not attached	
<i>1st Division</i> (<i>Ust-Dvinsk*</i>)		<i>6th Division</i> (<i>Tallinn</i>)		<i>13th/14th Divisions*</i> (<i>Kronstadt-Leningrad</i>)	
S-1**	S-6	SHCH-309		D-2**	R-1 (S-92)
S-3**	S-7	SHCH-310		K-3	S-11 [§]
S-4	S-8	SHCH-311		K-21	S-12 [§]
S-5	S-9	<i>7th Division</i> (<i>Tallinn</i>)		K-22	SHCH-303
<i>2nd Division</i> (<i>Ust-Dvinsk</i>)		SHCH-317	SHCH-322	K-23	SHCH-304
S-10		SHCH-318	SHCH-323	L-1**	SHCH-405 ^{§§}
S-101		SHCH-319	SHCH-324	L-2**	SHCH-406 ^{§§}
S-102		SHCH-320		M-401	
<i>3rd Division</i> (<i>Libau</i>)		<i>8th Division</i> (<i>Hango</i>)		<i>Detached Training Division</i> (<i>Oranienbaum/Lomonosov</i>)	
L-3		M-90	M-98	P-1	SHCH-301
KALEV		M-94	M-99	P-2	SHCH-302
LEMBIT		M-95	M-102	P-3	SHCH-305
RONIS**		M-96	M-103	B-2	SHCH-306
SPIDOLA**		M-97		L-55	SHCH-307
<i>4th Division</i> (<i>Libau</i>)		<i>9th Division</i> (<i>Kronstadt</i>)		<i>Training Brigade†</i> (<i>Leningrad</i>)	
M-71**	M-80**	M-72**		K-51	K-55
M-77	M-81	M-73**		K-52	K-56
M-78	M-83	M-74**		K-53	SHCH-408
M-79		M-75**		K-54	Others (?)
		M-76**			

* Ust-Dvinsk, also Daugavgrīva or Duenamuende, is at the mouth of the Dvina (Daugava) River on the Gulf of Riga, some 7 miles (11 km) north of Riga. It is popularly known as the "Riga winter harbor."

** Refitting in June 1941.

† Divisions being formed.

§ Assigned to Northern Fleet and refitting in June 1941; reassigned to the Baltic Fleet on 17 August 1941.

§ On trials; commissioned on 30 July 1941.

§§ Accepted from yard on 7 June 1941; commissioned on 28 June 1941.

† Units not belonging to the Baltic Fleet.

Danzig Bight, two in the Gotland area, and the remainder off the coast between Libau and the Irben Straits. These submarines included the S-4, S-8, S-10, and S-101, whose patrols had no positive results, and the L-3, involved in a minelaying operation west of Memel (Klaypeda) on 27 June 1941. Smaller units on patrol were the M-79, M-81, and M-83 off the Latvian coast, and the M-78 and M-80 in the Irben Straits. The M-83 may have unsuccessfully attacked the German submarine chaser V-307 in this opening period of the war.

Of these ten submarines, four were sunk by German naval forces in the first days of the war: the M-78 torpedoed by the submarine U-144 off Windau, the S-3 off Steinort by motor torpedo boats, the S-10 in the Danzig Bight, also by German surface craft, and the M-101 off Dago Island by the submarine U-149.

Ten other Soviet submarines were sent out in two formations from Libau to Riga, and then on to Revel at the start of the war. Six of these submarines left Libau during the night of 23 June and the other four during the night of 26 June. (The loss of the S-3 to German MTBs occurred during this operation.) The remaining six submarines at Libau that had not been immediately available—the RONIS, S-1, SPIDOLA, M-71, M-80, and M-83—were blown up when the Soviets withdrew on 27–28 June to prevent their capture by German forces.

As Hango was within range of Finnish coastal artillery, it became necessary to evacuate all submarines from that port—including those units not ready for operations—to Revel at the end of June 1941. Two submarines were lost en route in minefields, the M-81 and M-99.

Thus, the Soviet Baltic Fleet lost 12 submarines within a week of the outbreak of war without inflicting any damage on the enemy.

A number of Soviet submarines were in the meantime involved in minelaying operations: the KALEV near Ventspils (July/August), L-3 near Polangen (19 July), K-3 west of Bornholm (26 July), and LEMBIT also west of Bornholm (early August). The SHCH-307 succeeded in sinking the German submarine U-144 near Dago on 28 July 1941. The U-144, which had earlier sunk the Soviet submarine M-78, was a small Type IID U-boat (displacement 314 tons surfaced/364 tons submerged); still, the success was notable for that period in the Baltic.

The German attack on Revel necessitated a further withdrawal of Soviet naval units, including submarines, to the Kronshtadt-Leningrad area during 28–29 August 1941. More than 200 ships took part in this move, including the cruiser KIROV (flagship of Vice Admiral V.F. Tributs, Commander in Chief of the Baltic Fleet). Several submarines participated in the evacua-

tion, which had to cross the German mine barriers in the Gulf of Finland and were subjected to air attack by Ju-87 Stuka dive bombers. The SHCH-301, S-5, and S-6 were lost to mines and aircraft during this withdrawal.

Following the evacuations, Soviet submarines became active again in mid-September 1941, when they engaged in minelaying operations near Helsinki, Hango, and Bruesterort, and operated against German merchant shipping along the Swedish coast. The SHCH-317 carried out an unsuccessful torpedo attack on the German light cruiser LEIPZIG on 28 September 1941 near Schworbe (Survesjar). Also during September, several submarines, including the L-1, L-2, P-1, and P-3, were used for transport operations between Kronshtadt and Hango, under siege from German forces. The P-1 and L-2 were lost in the German minefields during September and November, respectively. The P-2, SHCH-302, and SHCH-306 were damaged during German air attacks on the fleet base at Kronshtadt between 21 and 23 September 1941. On that date Ju-87 Stuka dive bombers sank the battleship MARAT, formerly the PETROPAVLOVSK, one of two such ships in the Baltic (the third Soviet battleship was in the Black Sea).¹⁰ Hango was evacuated during November 1941.

The SHCH-323 succeeded in torpedoing the German transport BALTENLAND on 16 October near Oland. An attack by the S-4 on the transport HOHENHORN on 24 October 1941 was a failure. Other Soviet submarine operations in the Baltic in late October included the L-3 laying a minefield off the Gulf of Danzig and the S-7 landing several agents in Narva Bay. Also in this period the S-8, en route to her patrol area, struck a mine west of Suursaari and sank. Soviet submarine activities in the Baltic during 1941 essentially came to an end in late October because of the ice conditions. A scheduled three-month deployment in the Baltic of the K-51 in December 1941 had to be aborted because of damage caused by ice encountered near Suursaari.

THE 1942 CAMPAIGN

Realizing the limited possibilities for employment of submarines in the Baltic as a result of the developing strategic situation in the area, the Soviets decided to transfer a number of the units in the Baltic to the Northern Fleet and the Caspian Flotilla. Before the winter closed the inland waterways, six operational large submarines and ten not yet completed submarines trans-

¹⁰The MARAT's two after 12-inch (305-mm) triple gun turrets remained in action during the siege of Leningrad; later, the "B" forward turret was also returned to service on this "sunken" gun battery.

ited via the Stalin (White Sea) Canal to the Northern Fleet, and six others were transferred to the Caspian Sea. The number of remaining operational submarines in the Baltic fell so low that they were subsequently combined into a single brigade under Captain 1st Rank A.M. Stetsenko.

German and Finnish minelaying operations in the Gulf of Finland had been initiated immediately on the outbreak of the war and continued until mid-November 1941, eventually blocking almost all Soviet ship traffic into and out of the Leningrad-Kronshtadt area. These minefields would play a crucial (and crippling) role in the effectiveness of Soviet submarine operations in the Baltic for most of the war. To a considerable extent, until September 1944 the Soviet submarine campaigns in the Baltic were a battle of the minefields. German aerial reconnaissance identified 48 submarines in the Leningrad-Kronshtadt area on 19 March 1942, and 57 on 1 May 1942. Only 33 of those craft were considered operationally available. Some 25 submarines were observed conducting trials in the area between Kronshtadt and Lavansaari from mid-May 1942 onward. These submarines were fitted with wooden fenders as a protection against antenna mines, and had devices installed to push aside mine anchor cables.

To counter Soviet breakout attempts and to support the blockade in the Finnish gulf, the German Navy had available in the Baltic four minesweeper flotillas, a minesweeper launch flotilla, a submarine hunter flotilla, a patrol boat flotilla, a landing barge flotilla, several support ships, and various small craft and auxiliaries. The Germans also established acoustic (sonar) and radio detection stations at several coastal locations. On 12 March 1942, in Kiel, German and Finnish representatives discussed the possibilities of completely blocking the Gulf of Finland to Soviet submarine operations. The Finns argued that minefields and submarine chasers would not be sufficient, and proposed to lay anti-submarine net barriers. These were, however, not available during 1942. The winter of 1941–1942 was severe in the Baltic, and the ice did not clear from the Gulf of Finland until early May 1942. Consequently, the first mine barriers could not be laid until 9–10 May 1942. In all, during 1942 German and Finnish forces planted over 12,000 mines in the gulf. Among the most important mine barriers laid in the Gulf of Finland during 1941–1942 was the Juminda barrier laid by the Finns during the summer of 1941 from Juminda to the coast of Estonia, about 30 nautical miles (55.5 km) to the east of Revel. Directed against surface ships and comprised of several dispersed fields, it contained about 1,300 mines. Some 100 mines were added to this barrier during 1942, but none thereafter. (See map page 97.)

The Hogland barrier was a system of mine barriers across the Gulf of Finland between Asposkaren in the north and Kap Kurgalsky to the south. This was a combined German-Finnish barrier, laid immediately after the clearing of the ice, starting on 10 May 1942 and completed within a few days. In all, 4,569 mines were laid in this barrier. The German portion of the barrier was designated Seeigel 1–8 and the Finnish portion Rukajarvi A–C. There were about 100 German moored magnetic mines and magnetic ground mines; the rest were divided among large horn-mines with and without antennas, small anti-submarine horn-mines, and formerly Russian mechanical mines and horn-mines. This minefield was protected by a number of coastal gun batteries, and by German and Finnish surface craft.

The Porkkala barrier (German designation Nashorn 1–5) was planned by the Germans as a strong outer barrier across the Gulf of Finland, extending from the general area of Nargen Island in the south to Porkkala in Finland in the north. This barrier was not completed until 1943, when an effective net barrier was constructed. In 1942 it consisted only of some 1,825 mines, none of them magnetic. In the area of the Kronshtadt-Leningrad sea channel the Germans used aircraft to lay some 700 mines. These were magnetic and acoustic moored and bottom mines.

Soviet planning for the 1942 submarine campaign was discussed in the Military Council of the Baltic Fleet in April,¹¹ and it was decided to divide the submarine brigade into three echelons that would, in successive waves, attempt to break through the dense mine barriers to reach positions for attacking German shipping in the Baltic. (As in World War I, Germany was heavily dependent upon Baltic shipping for Swedish iron ore and to support ground operations.) The Soviet submarines were to make the crossing from Lavansaari to the mouth of the Gulf of Finland independently, a distance of some 200 nautical miles (278 km). The M-97 conducted an initial 12-day reconnaissance mission out of Kronshtadt to Lavansaari from 25 May to 10 June 1942. She was lost on 14 August on a mine during a second such mission. The M-89 and M-95 seem to have been engaged in similar reconnaissance missions, with the latter apparently lost on a mine near Suursaari on 15 June.

Some submarines participated in more than one echelon, with the separate echelons spread out over several weeks and the entire deployment spanning the period from early June to early November 1942.

¹¹The Military Council was the command element of Soviet military units during the war. It normally consisted of the commanding officer, chief of staff, and political officer. All major directives and orders had to be jointly agreed to and signed by the command's Military Council.

SOVIET SUBMARINE BREAKOUT ATTEMPTS, 1942

First echelon	Second echelon	Third echelon
S-4	L-3	D-2
S-7	LEMBIT	S-7*
SHCH-303	S-13	S-9
SHCH-304	SHCH-304(?)	S-12
SHCH-317*	SHCH-306*	SHCH-302*
SHCH-320	SHCH-308	SHCH-303
SHCH-405*	SHCH-309	SHCH-304*
SHCH-406	SHCH-310	SHCH-305*
M-89	SHCH-407	SHCH-306*
M-95*	M-96	SHCH-307
M-97	M-97*	SHCH-311*
		SHCH-320*
		SHCH-406
		M-96
		M-102

*Sunk.

SUBMARINE BREAKOUT

Captain 3rd Rank Ya.P. Afanas'yev was in command of the lead unit of the first echelon, the SHCH-304, departing Leningrad on 3 June 1942. The SHCH-304 received some damage by German artillery fire during the passage to Kronshtadt, which was repaired by 5 June. Although she intended to depart Kronshtadt on the evening of that day, it became impossible because of German aerial minelaying taking place in the area at the same time. The SHCH-304 and SHCH-317 left Kronshtadt together, accompanied by minesweepers and patrol boats, on the 9th for Lavansaari, which was used as their staging area. The division commander, Captain 2nd Rank V.A. Yegorov, was embarked in the SHCH-317. The SHCH-304 independently continued her voyage on 12 June and had safely navigated the Porkkala barrier two days later. She made an unsuccessful torpedo attack on the German minelayer KAISER west of Porkkala. The SHCH-317 probably left Lavansaari about one day later, also navigating the mine barriers without problems. It may have been this submarine that was sighted and unsuccessfully attacked by a Finnish aircraft during the night of 15–16 June, about 45 nautical miles (83.3 km) outside of the Hogland barrier. This aircraft sighting seems to have been the first positive indication to the Germans and the Finns that Soviet submarines had successfully broken through the mine barriers.

The SHCH-304 returned to Lavansaari on 30 June after an 18-day patrol, most of that time spent underwater, during which no enemy ships were sunk. The SHCH-317 was more successful, inflicting four confirmed sinkings, but was lost as a result of depth charge attacks by German surface craft between Ruuskeri and Hogland between 12 and 15 July 1942. (She is also

reported to have been sunk by the Finnish minelayer RUOTSINSALMI on 14 July 1942.)

The SHCH-406 made her deployment from 23 June to 7 August, damaged one German ship, and safely returned to the Leningrad area. The SHCH-320 was the next unit to make the passage. She possibly operated in the area just north of the Gdansk Bight between 6 and 8 July, making several unsuccessful attacks and one successful attack on a freighter. She also returned safely to Leningrad. The submarine S-7 departed Lavansaari on 2 July 1942. She needed 68 hours to cross the minefields in the Gulf of Finland, and achieved her first kill on 9 July when she sank the Swedish vessel MARGARETA. Another Swedish vessel, the LULEA, was sunk on 11 July. On 30 July the S-7 destroyed her first German victim, the KAETHE. The Finnish vessel POJANLAHTI was destroyed by gunfire on 5 August following an unsuccessful torpedo attack, and part of the crew was taken prisoner. Following this, the S-7 requested and received permission to return to Leningrad. The SHCH-303 was the last unit of the first echelon, leaving Lavansaari on 8 July. She needed eight days to cross the mine barriers and on the 12th was slightly damaged by a mine explosion in the Porkkala area, after which she was also subjected to air and depth charge attacks. Following a torpedo attack on the German ship ALDEBARAN near Uto on 20 July, the SHCH-303 was damaged by depth charges, forcing a return to base. She arrived at Lavansaari on 7 August, needing ten days to cross the barriers, apparently remaining on the surface all of the time because of damage. The submarine experienced heavy attacks by German forces during the transit. Apart from these first-echelon units, other Soviet submarines—the SHCH-323, S-4, and S-9—were reported active at the time.

The SHCH-323 was apparently damaged near Hogland while in transit and returned to Lavansaari. The S-4 is believed to have operated off the German coast during the July–August period and was damaged by a mine explosion in the Leningrad sea channel while returning. Nothing is known about the activities of S-9 during this period. However, Finnish aircraft attacked what they believed to be an S-class submarine with machine gun fire and depth charges south of Gasoren in the Pellinge archipelago on 24 June. They reported sinking the submarine. Soviet sources indicate that the SHCH-405 was also part of the first echelon. This boat is believed to have been lost on a mine on 21 August.

The L-3 was the first submarine of the second echelon, departing on 9 August and reaching the Baltic on the 14th, heading for an area west of Bornholm Island. On 18 August she attacked and destroyed the Swedish vessel C.F. LILJEVALCH. During the next few days the

L-3 was engaged in minelaying operations, possibly near Sassnitz. She probably returned to the Leningrad area in early September, and is believed to have been attacked by the Finnish patrol vessels VMV-1 and VMV-2 south of Tiskeri on 2 September. The L-3 suffered damage from two mine explosions while transiting the barriers on her way home.

The M-96 conducted an 11-day patrol in the Gulf of Finland, and she possibly attacked a convoy on 14 August but without success. The SHCH-407 was attacked by aircraft and patrol craft on her way out on 18 August. Although suffering damage, she was able to continue. Details of her patrol are not known, but when returning to the Leningrad area she was heavily damaged by a mine explosion near Hogland on 25 September. The submarine managed to reach Kronshtadt on 28 September.

Meanwhile, on 14 September the ex-Estonian LEMBIT suffered severe damage from depth charges following a torpedo attack on the German transport ship FINNLAND near Uto. She had to remain underwater for ten hours while evading German anti-submarine craft, but eventually managed to limp home. The SHCH-309 appears to have conducted an uneventful patrol that lasted 40 days. Yet for unknown reasons she was awarded the honor of becoming a "Guards" submarine on her return.¹² There is some speculation that she was engaged in an intelligence operation.

The S-13, which reached open water on 11 September, was the most successful of this second-echelon group, sinking one German and two Finnish cargo ships on 11 and 18 September, and possibly was responsible for the destruction of the Dutch coaster ANNA W. on 22 September. While recharging batteries during the night of 15 October some 15 nautical miles (27.8 km) west of Ruuskeri, she was surprised on the surface by the Finnish patrol vessels VMV-13 and VMV-15. Making a crash dive, she hit bottom at a depth of 213 feet (65 m) and came to a dead stop. The Finnish craft executed depth charge attacks and apparently believed that the submarine had been destroyed. The S-13 survived the attack and succeeded in returning to Lavansaari on 18 October.

The SHCH-308, or possibly SHCH-306, reportedly left Kronshtadt on 12 August and is thought to have been destroyed by depth charges on 31 August. There is confusion about this unit, as the Soviets regard it as part of the third echelon. The SHCH-310 apparently operated in the Gdansk Bight during September. She torpedoed a German steamer on 28 September and conducted an unsuccessful attack on another near

Rixhoeft on 30 September. While returning to Kronshtadt the submarine hit two mines near Hogland and was subsequently attacked with depth charges by Finnish patrol ships. Although her pressure hull was damaged, the SHCH-310 succeeded in returning to base. The SHCH-304 also seems to have been part of the second echelon, but had to break off patrol because of engine problems.

The third echelon began submarine deployments in mid-September 1942. Prior to this the Germans and Finns had improved their anti-submarine posture in the area and also laid additional mines. The Finnish submarines VETEHINEN, VESIHISI, and IKU-TURSO were deployed on 9 August to Mariehamn to conduct anti-submarine operations in the Aalands. The Lavansaari roadstead was mined by the German small minelayer KM-27 during the night of 21–22 October. The S-9 was the first unit of the third echelon, departing Lavansaari on 18 September. She took 36 hours to cross the Gulf of Finland and passed Sodra Kvarken on 22 September, entering the Gulf of Bothnia. She damaged the German oiler MITTELMEER on 27 September and returned to Lavansaari after completing a 40-day patrol.

The S-12 conducted a 61-day patrol, apparently departing Kronshtadt in mid-September 1942. She operated off Libau and during October damaged two German ships with torpedoes. Her deployment presumably ended in mid-November. The D-2 departed Kronshtadt, escorted by minesweepers, on 23 September, heading for Lavansaari. She became entangled in an anti-submarine net north of Hogland but managed to free herself. The D-2 then headed for an operating area to the west of Bornholm. On 14 October the D-2 sank the German cargo ship JACOBUS FRITZEN between Ystadt and Bornholm, and on 19 October damaged the ferry DEUTSCHLAND off Trelleborg. Several Swedish ships were also attacked. The SHCH-307 operated in the Aalands during September, where she attacked several ships but damaged only one.

The small M-102 may have operated near Hango during early October. The SHCH-320 and SHCH-303 made their second deployments, also during October, but do not seem to have had positive results. The SHCH-320 is believed to have been sunk by a torpedo from the Finnish submarine IKU-TURSO on 27 October. The SHCH-303 entered the Gulf of Finland on 7 November and arrived in Lavansaari on 15 November after running the barriers. The S-7 left Lavansaari on 18 October and reached Uto on 20 October. She was sunk by a torpedo during the evening of 21 October near Soederarm, a victim of the Finnish submarine VESIHISI. Her commanding officer, Captain 3rd Rank S.P. Lisin, and four crewman were taken prisoner. The SHCH-304 or SHCH-307 left on 20 October and sank

¹²The "Guards" prefix was given to ships and other military units for particular achievement, generally in combat situations.

the Finnish steamer BETTY H. on 26 October in the Aalands.

The third echelon suffered several other casualties. The SHCH-302 was lost on 13 October near Someri Island, shortly after leaving Kronshtadt, probably striking a mine. The SHCH-305 was lost to gunfire and ramming by the Finnish submarine VETEHINEN in the Aalands on 5 November. The SHCH-306 did not return from her patrol; her loss, also in November, was probably due to a mine in the Aalands. The SHCH-311 was missing shortly after departure, possibly mined on 11 October, damaged, and subsequently reported sunk by depth charges from the Finnish patrol vessels VMV-13 and VMV-15.

The M-96 was the last submarine of the third echelon, departing in November.

A postwar German analysis of the campaign concluded that during 1942 Soviet submarines made 31 attempts to break through the mine barriers, of which 22 were successful. Some of these submarines made the passage from and to Leningrad more than once. Between six and eight submarines were lost in the transit attempt, and four others were lost in the Baltic. At the cost of these losses and damage to at least seven others, during 1942 Soviet submarines succeeded in sinking at least 20 ships with a total of over 40,000 GRT and inflicting damage to eight others with a total of some 34,000 GRT.

After the war the Germans admitted that although the losses on their side were relatively small, they were disquieting, in particular because of the great daring and perseverance manifested by the Soviet submariners, and because of the great importance of the Baltic sea lines of communication to Germany. During 1942 in the Baltic the Germans alone had escorted nearly 1,900 merchant ships with a tonnage of 5.6 million GRT, and had transported more than 400,000 soldiers. This vital traffic made it essential to block the Gulf of Finland to transit by Soviet submarines.

Of particular significance in the 1942 campaign in the Baltic had been the effectiveness of submarines (mainly Finnish) against Soviet submarines.

THE 1943 CAMPAIGN

When the ice cleared in the Baltic in the spring of 1943, German and Finnish forces immediately engaged in reinforcing the minefields to bar Soviet submarines from the Baltic.

The German minelayers refreshed the Porkkala (Nashorn) barrier with 7,293 mines between 24 March and mid-April, and the Hogland (Seeigel) system with

1,965 mines between 9 and 15 May. The Finns did the same with their portion of the Hogland barrier between 22 and 28 April. Between 28 March and 16 May an anti-submarine net was laid immediately west of the Porkkala barrier. Named Walrus, this system consisted of double anti-submarine nets in parallel lines at a distance of approximately 109 yards (100 m) from each other. The different net parts were heavily anchored and were kept floating by easily visible double-cone buoys. The greatest water depth was 302 feet (92 m), with the net barrier extending to a depth of about 197 feet (60 m).

This net barrier was heavily patrolled by a number of trawlers armed with depth charges and anti-aircraft guns. In order to be able to patrol on both sides of the net barrier, there were four very narrow channels through the system. The Finnish lightship HELSINKI was employed as a stationary hydrophone station. Shore observation stations equipped with telescopes were set up, which were in communication with the patrol ships by ultrashort-wave radio. Aircraft were not assigned to patrol the net to prevent possible confusion in aircraft identification. Instead, Finnish reconnaissance planes operated to the east of the barrier as far as Hogland. The Finns established a hydrophone station on Suursaari on 18 April 1943. German aerial reconnaissance photographs of the Kronshtadt and Leningrad areas in the beginning of May showed a total of at least 35 submarines, of which 9 were large, 18 medium, and 8 small types.

The Soviet submarines were now reorganized into a single brigade with four divisions, with a total of some 25 operational boats. At this time the fuel tanks in SHCH-class submarines were enlarged to extend their patrol endurance from 20 days to 90 days.

It appears that the first submarine leaving Leningrad for Kronshtadt did so on 30 April. The SHCH-303, SHCH-406, and SHCH-408 were the first Soviet submarines that attempted to break through the blockade. The SHCH-303 left Kronshtadt for Lavansaari on 6 May and departed from Lavansaari on the 10th. Supported by air strikes by the Soviet naval air force, and escorted by minesweepers and torpedo boats, she successfully made it through the Hogland barrier and on 18 May began her first attempt at the submarine net. Failing to break through after several passes at the net, and heavily prosecuted by aircraft and patrol boats, she gave up and finally returned to Lavansaari on 8 June. The SHCH-406, SHCH-408, and two more submarines apparently arrived at Kronshtadt on 10 May. One other submarine, the SHCH-323, was sunk by a mine in the Leningrad-Kronshtadt sea channel on 1 May during that same evolution (that submarine was raised after the war).

The SHCH-406 and SHCH-408 made the next attempt at breaking through. Neither was successful. Accounts differ as to how and exactly when these two submarines came to their end. Finnish sources claim that the SHCH-406 was destroyed by the Finnish minelayer RIILAHTI on 26 May and the SHCH-408 by the Finnish minelayer RUOTSINSALMI on 25 May; German sources claim that these submarines were both sunk by German surface craft, off Steinskar Island on 1 June and near Vaindlo Island on 25 May 1943, respectively.

Attempts by Soviet submarines to penetrate the mine and net barriers were also reported on 28 May (one submarine), 1 June (two), 1 July (one), and 27 July (one). All of these submarines were attacked and reported sunk, but there is no postwar correlation as to their identity and the details of their loss. Two Soviet submarines arrived at Lavansaari from Kronshtadt on 1 June, followed by two more during the night of 3–4 June. German aerial reconnaissance of the Kronshtadt-Lavansaari area on 24 July identified nine submarines in Kronshtadt; three others were identified in Lavansaari. Two more submarines arrived at Kronshtadt from Leningrad during the middle of August.

The Soviets continued their breakout attempts during the summer, supported by heavy air attacks against the barrier patrol units. The German naval commander in the eastern Baltic reported 46 attacks with 155 aircraft against the barrier and anti-submarine forces in June, 54 with 186 aircraft in July, 93 aircraft attacking in the week of 11 to 17 August, and 465 aircraft attacking in the week of 18 to 25 August 1943. These Soviet air attacks necessitated the withdrawal of the barrier patrol ships during the daylight hours, and German convoy traffic was limited to darkness.

The submarines S-9 and S-12 were lost in the barrier on 5 September and 16 August, respectively. Following these sinkings, the Soviets limited their submarine operations to landing agents in Finland behind the front lines. Soviet submarines were frequently sighted and attacked during these attempts near Helsingfors. On 5 September a submarine was attacked by Finnish aircraft south of Pellinge, and another at Melko off Helsingfors on the same day. Two Soviet submarines were attacked by Finnish aircraft on 7 September, one north of Juminda and the other north of Nargen Island. Another submarine was reported leaving Kronshtadt on 30 September, and during the night of 13–14 October a submarine was sighted surfaced south of Hogland. Shortly before the Gulf of Finland was closed by the ice, a submarine was sighted at Porkkala on 9 December. None of the submarines sighted in the September–December period is identified by class or number, and although the Finnish attackers believed that they had achieved

several sinkings, this seems not to be borne out by postwar records.

Thus, German-Finnish barrier and anti-submarine operations during 1943 were able effectively to bar Soviet submarines from Baltic shipping lanes.

THE 1944 CAMPAIGN

The ice cleared in the Gulf of Finland between April and May of 1944. The German and Finnish naval staffs were convinced that the Soviets would make use of all available means during 1944 to attack the German sea lines of communication in the Baltic. It was therefore decided to enhance the barrier systems with more minefields and to increase the number of patrol vessels.

The net barrier between Porkkala and Nargen Island was refurbished by mid-April. In late April the Hogland barrier was enlarged with a new field of 1,971 mines. In the Bay of Narva a new, shallow minefield was laid, which connected to the Hogland barrier. Contrary to expectations, the Soviets had decided not to risk their submarines on the essentially impenetrable Porkkala barrier as they had done the year before. Instead, the submarines were mainly employed in the Gulf of Finland, apparently traversing the Hogland system without much difficulty. By 4 May 1944, five Soviet submarines were reported in Lavansaari harbor, and four others were proceeding westward between Lavansaari and Seskari at the same time. On 12 May, two submarines were observed during daylight hours on the surface in the Bay of Narva, and indications were that the Hogland barrier was broken through during the following night, possibly by the same submarines. The Finns believed that in fact two submarines had been sent out to penetrate the Hogland system, while the remaining seven units stayed at Lavansaari harbor, remaining submerged during most of the time.

Soviet submarine strength in the Baltic was reduced to 21 combat units by April 1944; two other submarines (the outdated BARS-class B-2 and the ex-British L-55) were employed as battery charging platforms.

BALTIC FLEET SUBMARINES, APRIL 1944

<i>1st Division</i>	<i>3rd Division</i>
D-2	SHCH-303
L-3	SHCH-307
L-21	SHCH-309
LEMBIT	SHCH-310
S-4	SHCH-318
S-13	SHCH-407
<i>2nd Division</i>	<i>5th Division</i>
K-51	M-77
K-52	M-79
K-53	M-90
K-56	M-96
	M-102

Soviet attacks against German and other shipping in the Baltic in this period were conducted by land-based aircraft. Soviet submarine activities were suspended by 10 July, when the Soviet land attack across the Karelian Isthmus was initiated. The Soviet summer offensive in the Baltic region brought Finland to an armistice on 4 September and, by breaking through to Riga in mid-August, also made the German position in the Gulf of Finland untenable. German troops were evacuated from Finland between 4 and 21 September; the evacuation of Revel was completed on 23 September. The Germans sent major naval forces into the eastern Baltic to cover these and later withdrawals. Between June 1944 and the end of the year, 19 German submarines were used in the area of the Gulf of Finland to counter Soviet naval activity. Six of these U-boats were lost, including the U-250, sunk in November 1944 by depth charges from ASW craft and subsequently raised by the Soviets. The U-250 had two T5 acoustic torpedoes on board, among the first of those weapons to fall into Allied hands.¹³

Thus, the whole barrier system in the Gulf of Finland had been quickly bypassed by Soviet ground forces on the land front. The armistice with Finland also made it possible for the Soviets to set up naval bases along the Finnish coast, and to use the skerry channels to move submarines in and out of the Baltic. The Soviets left the Porkkala barrier intact until the war was over.

The Baltic Fleet submarines did not resume offensive operations until early September 1944. The M-class submarines were the first to move, probably to conduct surveillance operations, as in 1942. The M-96 left Lavansaari on 7 September 1944, to patrol the Narva Bay, and the M-102 went on patrol in the northern part of Hogland. The M-96 was sunk on a mine on 10 September. The hull of M-102 was ruptured by an explosion, and she returned to Kronshtadt on 11 September. The first Soviet group of submarines arrived from Lavansaari in the Hango-Uto area on 29 September 1944; the convoy consisted of three submarines, one TRAL-class minesweeper and four motor launches. Assisted by Finnish pilots, the group departed Uto on 3 October. The next group of four escorted submarines arrived in the Uto area on 2 October, and they deployed into the Baltic on 8 or 9 October. Three more

¹³The British were most anxious to obtain information on these acoustic torpedoes, and Churchill sent a personal telegram to Stalin seeking access to them. Stalin gave permission for a British team to come to the USSR and examine the torpedoes, which were "flat-nose" (four-hydrophone) T5 torpedoes. There were two variants of the T5, and the U.S. Navy had found two of the other "round-nose" (two-hydrophone) torpedoes in the submarine U-505, which had been captured at sea near the Azores on 4 June 1944. These weapons had the German name *Zaunkönig 1* (wren) and were called GNAT (for German Navy Acoustic Torpedo) by the U.S. Navy.

escorted submarines arrived on 5 October at Uto and deployed into the Baltic on the 9th. Consequently, on 10 October there were ten Soviet submarines active in the Baltic. However, they were too late to act against the German forces being evacuated from positions along the Gulf of Finland. A large K-class submarine also arrived from Lavansaari, escorted by a TRAL-class minesweeper and two motor launches.

By 18 October a grand total of 11 submarines had successively been deployed; two of these had returned, leaving nine units on station. According to contemporary Swedish sources, these nine units consisted of one K-class, one D-class, three S-class, and four SHCH-class submarines. They probably included the K-56, S-13, LEMBIT, SHCH-307, SHCH-310, and SHCH-407. Four more units—described as one K class, one D class, and two SHCH class—returned from patrol between 21 and 27 October, leaving only five on station. This was the number kept at sea through the winter, although by constant relief some 23 different sorties were made during the last three months of 1944. During this period, the submarines L-3, L-21, and LEMBIT laid a total of 77 mines on German sea lines of communication. Soviet submarine operations during the last three months of 1944 claimed a total of 12 ships, with 20,969 GRT sunk and one ship of 3,038 damaged. Additional German units were lost on mines.

Soviet submarines failed to sink or damage any of the major German naval units employed at that time in the Baltic to cover the retreat of the German forces from the sea side.



A 21-inch (533-mm) torpedo is loaded into the starboard torpedo tube of a *Malyutka* or "small" submarine. Despite their small size and limited armament (two torpedoes and a 45-mm gun), these submarines accomplished significant results in the war, especially in the northern theater against German coastal shipping. (Sovfoto)

World War II in the Arctic

THE 1941 CAMPAIGN

Submarines reappeared in Arctic waters when the pioneer DEKABRIST-class D-1 and D-2 were transferred to the Arctic in August 1933, followed by the D-3 in September. The three large D-class submarines were organized into a submarine division, supported by the tender UMBA, a small transport ship taken over from the merchant fleet.

With Polyarnyy as the main submarine operating base in the Arctic area, by 22 June 1941 the Northern Fleet had 15 submarines assigned: the D-3, K-1, K-2, SHCH-401 through SHCH-404, SHCH-421, SHCH-422, M-171 through M-173, and M-174 through M-176. These were organized into a submarine brigade, established in February 1938, consisting of three divisions. The number of divisions was to increase as additional submarines became available. When the war began the brigade commander was Captain 1st Rank Nikolai Ignatyevich Vinogradov.¹

¹D.A. Pavlutski had commanded the Northern Fleet submarines until November 1940, when the D-1 was lost with her entire crew during a trial dive. He was removed from that post because of the accident, and the fleet commander (Golovko) appointed Vinogradov to the post. Vinogradov was promoted to rear admiral shortly after the war began and served as commander of Northern Fleet submarines until February 1943; after the war he reached the rank of full admiral. His successor was Capt. 1st Rank (rear admiral from November 1944) Ivan A. Kolyshkin, who commanded the fleet's submarines until the end of the war.

In addition to storehouses and repair shops for submarines, Polyarnyy provided shore accommodations for the crews of all of the Northern Fleet submarines. A naval house provided a library, films, and other recreational and political activities in accord with Soviet naval practice.

German aerial reconnaissance of the Murmansk area had been intensified from 17 June 1941 onward. Vice Admiral Arseni Grigoryevich Golovko, the Commander in Chief of the Northern Fleet, had requested that fighter aircraft put an end to this surveillance. His request was denied, however, as the Soviet high command sought not to give the Germans a pretext for war. Golovko was able to deploy submarines in a defensive position.² By 22 June 1941, four submarines, the K-1, D-3, SHCH-401, and SHCH-421, had taken up positions off the northern Norwegian coast, while two submarines, the SHCH-403 and SHCH-404, were stationed off the Kola Inlet. The German forces based in northern Norway had as their primary objective the capture of the port of Murmansk. However, the Germans underestimated the Soviet defenses, and the land attack soon developed into a static front on the Litsa River, some 35 miles (56 km) west of Murmansk, for the duration

²Golovko became CinC of the Northern Fleet in June 1940 at age 34. After the war he was Chief of the Main Naval Staff, CinC of the then-premier Baltic Fleet, and subsequently the First Deputy CinC of the Navy until his death in 1962.



The M-172, under Captain 3rd Rank I.I. Fisanovich, was one of the Series XII coastal submarines that saw extensive combat in the Arctic during the war. Although small, these submarines were highly effective in the restricted Arctic waters within the limits of their range-endurance. Fisanovich was lost with the ex-British submarine V-1 in July 1944. (Imperial War Museum)

of the war. A successful Soviet amphibious landing on the Rybachiy peninsula on 6 July 1941 assured its possession and tied down German troops needed elsewhere on the northern front. As the only road in northern Norway, Highway 50, was not yet completed, the German forces on the Litsa front were dependent upon coastal sea lines of communications.

The Soviets attempted to conserve their limited surface forces in the face of German air superiority in the area, hence most of the attacks by the Northern Fleet

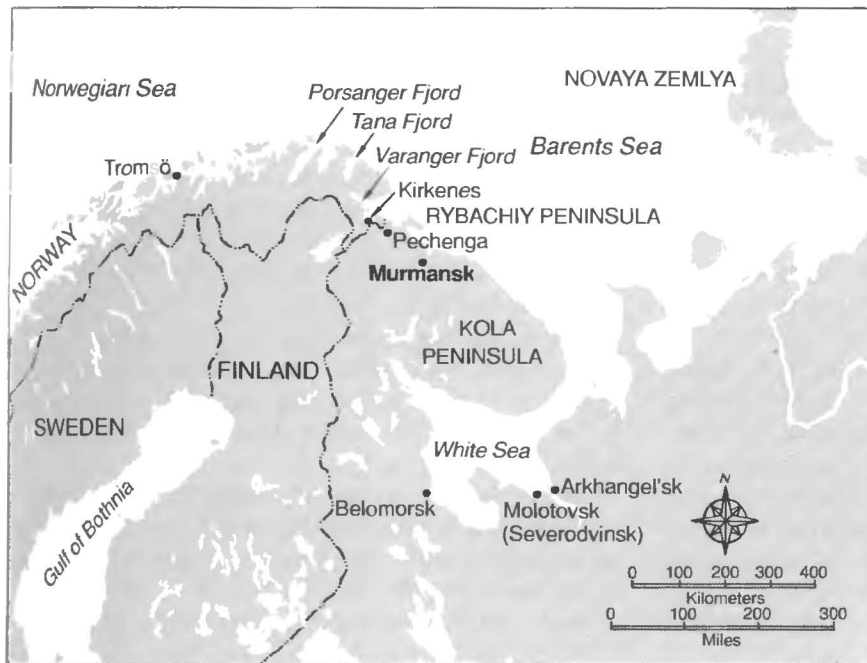
against German shipping were conducted by submarines. The German shipping supporting the Litsa front normally used Tromso or Honningsvaag as an assembly or staging area. Usually small convoys were formed that then proceeded along the Norwegian coast on the 300-mile (483-km) trip to Vardo, and from there to the various locations of German bases in the Varanger Fjord area of northern Norway. German transports sailing singly would generally traverse the portion from Tromso to Mageroy Island through the skerries.

It was not until 7 July 1941 that the Germans detected the first Soviet submarine operating off Vardo. The Soviets clearly missed the opportunity to attack the poorly protected German convoys during the first few weeks of the war. The first German destroyers did not arrive in Kirkenes at Varanger Fjord until 10 July, and the first German submarines did not appear off the Kola peninsula until the 19th of the same month, almost a month after the campaign began.

During July and August the Germans never observed more than three to four Soviet submarines at sea at the same time. Soviet sources indicate that this actually was the number of submarines that they attempted to keep on station along the Norwegian coast between Hammerfest and the Varanger Fjord. Clearly the Soviets were very concerned about their capability of containing the German forces in the north. In July 1941, discussions were started with the British to explore the possibility of sending a Royal Navy task force to Arctic waters. On 19 July, Britain's Rear Admiral Philip L. Vian inspected the Kola area to determine the feasibility of such a move. Noting the wholly inadequate air defense of the region, and learning that in fact the Soviets were chiefly concerned about the movement of German convoys along the coast to the Litsa front, Vian advised against sending major surface ships



Kola Bay



Arctic coast (later names in parentheses).

to the area and proposed instead to dispatch a number of British submarines, to be based at Polyarnyy.

As a result, two British T-class submarines, the TIGRIS and the TRIDENT, were deployed to the Northern Fleet area, arriving off the Kola Bay in early August. These submarines undertook their first patrols during the same month. Commenting on the differences between the submarines of the two navies, one Soviet submarine officer would later write,

We could not help comparing the organisation in the British and Soviet submarines. One striking thing was that the Soviet submarines were cleaner and tidier. Moreover, our discipline was better. Our submariners had a smart look about them, wearing their uniforms according to regulations, and they saluted each other, something that could not be said of the British seamen.³

The British and Soviet submariners—officers and ratings alike—got on well together, despite language barriers, and soon earned each other's respect.

The first confirmed engagements between Soviet and German naval forces occurred on 14 July, when the SHCH-401 attacked two German submarine chasers near Vardo, and the SHCH-402 launched two torpedoes at the steamer HANAU off the Porsanger Fjord. Both attacks were unsuccessful. The torpedoes fired by the SHCH-402 exploded on the rocks, causing the Soviets to believe that they had in fact hit the ship. This was a situation that would repeat itself many times over

during the war, resulting in a large number of erroneous sinking reports. Another reason for the Soviet torpedo failures is that in accord with compulsory instructions, they were set to run at a depth of just over 16 feet (5 m), too deep for many coastal cargo ships, especially when empty.

German submarines in the meantime began conducting operations against Soviet warships leaving and entering the Kola. On 10 August the U-451 sank the guard ship ZHEMCHUG off Svyatoi Nos.⁴ During August and September 1941, there was a series of encounters between Soviet and German submarines, all inconclusive. The U-81 fired two torpedoes at an unidentified Soviet submarine off Rabichiy on 7 August, the M-172 attacked the U-752 off Vardo on 23 August, the U-566 attacked an unidentified submarine on 2 September off Cape Teriberskiy, and the next day the U-566 avoided a submarine-fired torpedo northwest of Kildin Island. The Soviets claim that the M-172 had penetrated into Petsamo Fjord during the weeks preceding the engagement with the U-752, and probably attacked the hospital ship ALEXANDER VON HUMBOLDT in that area on 22 August.

During August and September 1941, the Soviets reinforced their submarine strength in the north by bringing up eight submarines from the Baltic via the Stalin (White Sea) river-canal system—the K-3, K-21, K-22, K-23, the S-101 and S-102, and the incomplete L-20 and L-22. (These L-class submarines were com-

³Rear Adm. I. Kolyshkin, *Submarines in Arctic Waters* (Moscow: Progress Publishers, 1966), p. 75.

⁴The ZHEMCHUG was one of several NKVD patrol ships that were commissioned into the Northern Fleet after the outbreak of war.

pleted at the Molotovsk/Severodvinsk yard in September and August 1942, respectively.)

The limited results so far achieved by Soviet submarines in the Arctic brought about a change in the Soviet deployment procedures in October 1941. Prior to that date, in accordance with prewar practice, Soviet submarines had been assigned to eight rather large patrol areas, four of which were along the Norwegian coast between Hammerfest and Vardo. The location of the other four is not known, and it has to be assumed that they served to protect the Northern Fleet naval bases. When deployed the submarines had to stay within these patrol areas and operated according to what was termed the "position maneuvering method." This policy assumed that sufficient intelligence sources, including aerial reconnaissance, would be available to provide target location data to these submarines. However, the shortage of aircraft and other problems made the provision of precise targeting data impossible.

Thus, it was decided in October 1941 to abolish these deployment procedures and permit more mobile submarine tactics, evidently in order to enable the submarines themselves to gather the needed intelligence. The actual patrol stations remained delimited in nature, but were extended more to the west. Northern Fleet submarines were quite active during the last quarter of 1941, and also began laying minefields.

When the war began only the two K-class submarines, the K-1 and K-2, could be employed for minelaying. The submarines were each fitted to carry 20 mines, of which at the beginning of the war only 16 were available in the Northern Fleet. The inventory of these mines became sufficient to start offensive minelaying in September 1941, and with the four additional K-class submarines becoming operational in October and November, the number of minelaying submarines also increased. The K-1 conducted the first submarine minelaying operation off Vardo on 10 September, and the K-23 undertook a minelaying operation during the beginning of November at the entrance of the Bok Fjord, where the German minesweeper M-22 was severely damaged by a mine explosion on 5 November. A Soviet type M 08 mine was recovered nearby on 11 November.

The first confirmed kill with a torpedo by a Soviet submarine in northern waters was achieved on 12 September, when the unescorted Norwegian transport OTTO JARL was sunk off the Tana Fjord by the SHCH-422. A Soviet submarine operated for the first time west of North Cape in late November. This was the K-3, with division commander Captain 3rd Rank Mahomet Gadzhiev embarked. On 3 December the K-3 attacked the escorted German steamer ALTKIRCH near Hammerfest. The ALTKIRCH was able to evade the torpedoes

fired at her, and the two escorts counterattacked the submarine with multiple depth charge attacks. The K-3 was severely damaged. Unable to conduct repairs underwater, Gadzhiev decided to fight it out with the German ships on the surface with gunfire. The damaged K-3, armed with two 100-mm and two 45-mm deck guns, succeeded in sinking one submarine chaser and driving off the second. After Gadzhiev transferred at sea to the K-23, the K-3 successfully returned to port although unable to submerge.

In December the veteran D-3 was credited by the Soviets with a seventh sinking. Following her return to port on 15 December the submarine became the first in the Northern Fleet to be awarded the Order of Red Banner.

Meanwhile, the two British submarines each made three successful patrols and between them sank five or six German transports and two submarine chasers. The TIGRIS and TRIDENT were relieved by SEALION and SEAWOLF in November 1941. These submarines were based at Polyarnyy until December 1941, when it was decided that there were insufficient support facilities to continue basing British submarines at Soviet ports. The British Admiralty had earlier come to the conclusion that the available operating area in northern waters was too restricted for the number of British and Soviet submarines available and proposed that the Soviets send some of their submarines to work in other war areas under British operational control. Although accepted in principle by the Soviets, such deployments never materialized.

THE 1942 CAMPAIGN

Toward the end of 1941 and during the first months of 1942 German naval forces in northern Norway were significantly reinforced to attack the Allied convoys carrying war material to Murmansk. These reinforcements included the battleship TIRPITZ and the heavy cruisers PRINZ EUGEN and ADMIRAL SCHEER. The Allied convoy operations naturally caused frequent appearances of major British warships and submarines in the Arctic waters, thereby indirectly reinforcing the Soviet naval forces in these waters. Also, the Germans laid extensive minefields to protect their own coastal shipping from Soviet and British submarine attacks. During February and March 1942, some 3,500 mines were laid along the Norwegian coast by the German Navy. Additional convoy escorts and minesweepers were assigned to northern Norway to further protect this shipping.

Soviet submarine activity was low during the first two weeks of January, although the Northern Fleet suffered its first undersea loss on the 10th when the M-175 was sunk by the German U-584 northwest of

Fisherman's peninsula. Later in the month and during February and early March, Soviet submarine activity increased, with some units operating as far west as Hammerfest.

A case of mistaken identity occurred on 18 February near midnight off Porsanger Fjord. The surfaced Soviet submarine SHCH-403 encountered the German mine-layer BRUMMER, en route to plant the first minefield to protect coastal shipping against Soviet submarines, and her escorts. The Soviets evidently believed that they had met an Allied ship, as several crew members were standing on deck waving and shouting "Russki." The Soviet sailors were quickly brought back to reality when one of the German escorts rammed the submarine abaft the conning tower. The submarine's crew leapt through the hatches into the submarine. The conning tower hatch was dropped on the foot of the commander of the submarine, Lieutenant S.I. Kovalenko, and he could not get inside the submarine before she submerged. He was pulled on board one of the German escorts and became a prisoner of war. The SHCH-403 crash dived and returned safely to Polyarnyy, having suffered only slight damage in the ramming by the German escort M-1503.

In another unusual incident, when the SHCH-402 ran out of fuel while on patrol, the K-21 (under then-Captain 3rd Rank Nikolai Lunin) went to sea and served in the role of submarine tanker (with Gadzhiev on board). The two submarines made a successful rendezvous, and despite heavy swells the K-21 was able to transfer 15 tons of diesel fuel by hose and 44 pounds (20 kg) of lubricating oil in bags usually used for distilled water. The SHCH-402 and the K-21 then returned without difficulty to Polyarnyy.

Soviet deployments further increased during April and May 1942, the larger submarines conducting attacks off Nordkyn and Makkaur, and M-class units being active in the Vardo area. Four German transports were sunk in these attacks, which included several engagements with German anti-submarine ships, some of which were fought on the surface. The K-23, with Gadzhiev embarked, was sunk off Okse Fjord on 12 May 1942 by two German anti-submarine ships after a gun duel that followed the submarine reporting to have sunk a cargo ship. The Germans recovered some technical papers from the submarine. Two other Soviet submarines were lost during this period: the SHCH-421 on 10 April after being severely damaged by a mine in the Porsanger Fjord, and the SHCH-401, which was possibly sunk by German surface ships off the Tana Fjord on 24 April. The SHCH-421, under Captain 3rd Rank F.A. Vidayev, with division commander Captain 2nd Rank I.A. Kolyshkin on board, struck a mine while on the surface in the Fjord on 8 April. Both propellers

were lost. The intrepid Soviet sailors quickly raised both periscopes and rigged a diesel engine cover between them as a sail in the hope that the wind and tide would carry the damaged submarine away from the German-occupied Norwegian coast.

Although initially successful, the scheme failed when the wind changed and the SHCH-421 was prepared for scuttling. Because there was no immediate threat, the crew turned to cleaning the submarine while awaiting arrival of the K-22 to take them in tow if possible. The K-22 arrived belatedly, and after several fruitless attempts to take the SHCH-421 in tow, the order was given via radio by the fleet CinC to abandon and sink the stricken submarine. At the time German reconnaissance aircraft were in the area. All officers and ratings were safely removed, and the K-22 fired a single torpedo from a stern tube to sink the "pike." (Vidayev subsequently was given command of the SHCH-422 when that boat's commanding officer was court-martialed for cowardice; see chapter 11.)

In addition to these losses in this period, the SHCH-403 was damaged by dive bombing Stukas that attacked the port of Murmansk on 15 May (also damaging a U.S. freighter). Ten days later the astutely handled S-101 escaped from a 22-hour depth charge attack by four German submarine chasers off Tana Fjord. The Soviet submarine, under Captain 3rd Rank Vekke, was severely damaged, but was able to return to port.

The Soviet fleet command felt that they had suffered serious losses, in particular with the death of Gadzhiev, one of their most experienced and most popular submariners. Submarine activity was practically suspended until the end of June, with the exception of two attacks by SHCH-402 near Vardo.

During July 1942, the D-3, K-21, K-22, SHCH-402, and SHCH-403 participated in the covering operations of the Allied convoys PQ-17 (bound for Murmansk) and QP-13 (returning to Britain). The K-21, commanded by Captain 2nd Rank N.A. Lunin, had taken up position north of Ingoy Island. The Germans had made dispositions to attack PQ-17 in strength (Operation *Rösselsprung*), with all available major surface combatants and 12 U-boats participating. A German battle group, consisting of the battleship TIRPITZ, the heavy cruiser ADMIRAL HIPPER, the armored ship (pocket battleship) LÜTZOW, seven destroyers, and two torpedo boats, was sighted by the K-21 on 5 July between 1512 and 1525 exiting the fjord near Ingoy Island. The German warships' course brought the K-21 into the center of the German formation at about 1600.

Lunin fired a spread of four torpedoes from the K-21's stern and trainable torpedo tubes, apparently aimed at the TIRPITZ from a range of some 3,500 yards (3,150 m). After firing, the K-21 immediately went

deep. The submarine's hydrophone operator reported the explosion of two torpedoes after a run of 2 minutes and 15 seconds.

Lunin is believed to have been subjected to a depth charge attack between 1632 and 1638. At 1709, the K-21 surfaced to report the attack by radio. This report was intercepted by the German monitoring service. Contrary to Lunin's belief, the German ships had not returned to port, and—according to German records—the attack by K-21 was never noticed by the TIRPITZ group until the intercept of Lunin's 1709 radio message. The TIRPITZ had not been hit by the K-21 torpedoes (although Soviet sources contend that British intelligence reported that the TIRPITZ had to be docked for repairs).

The TIRPITZ group was some 40 nautical miles (74 km) northeast of North Cape at 1846, safely passing through a British submarine patrol area. By that time most of the destruction of convoy PQ-17 had already been accomplished by German submarines and aircraft. Unaware of the threat posed by Allied submarines, the TIRPITZ group turned to return to base at 2130 without being sighted. Lunin was made a Hero of the Soviet Union for his feat of attacking and supposedly damaging the TIRPITZ, and the K-21 was awarded the Order of Red Banner.⁵

During the remainder of July little else of note happened with respect to submarine attacks, with the exception of an inconclusive encounter between the SHCH-402 and the German submarine U-457 on 14 July. German sources on 4 August reported an unsuccessful submarine attack on a convoy in the Varanger Fjord. On 8 and 11 August the SHCH-403 attacked German convoys in the Vardo area but did not achieve any results. During the same month other unsuccessful attacks were executed by the K-21 and SHCH-422. The K-2 failed to return from a patrol off the northern Norwegian coast; she was probably lost in one of the German defensive minefields. Also in August, as indicated by German intercepts of Soviet radio traffic, the SHCH-402 was apparently dispatched to counter Operation *Wunderland*, a German attempt to attack the Soviet convoy routes through the Arctic to the Far East.

The Soviets were again to provide assistance in covering the next Allied convoys, PQ-18 and QP-14, which sailed to and from Murmansk during September. It is not clear from available records whether this operation involved Soviet submarines, but a submarine attack was reported off northern Norway by the German aircraft tender KARL MEYER on 15 September. On the 22nd the Germans unsuccessfully pursued a submarine in the Varanger Fjord.

⁵Lunin subsequently attained the rank of rear admiral.

In September 1942, influenced by the warship and merchant shipping demands by the Allied landings planned for North Africa in November (Operation Torch) as well as the German naval and air threat from Norway, the British Admiralty decided to suspend the convoys to Murmansk until January 1943. However, with the withdrawal of the battleship TIRPITZ to Trondheim in central Norway and the heavy cruiser SCHEER to the Baltic, the only heavy German naval units remaining in northern Norway were the heavy cruiser HIPPER, a light cruiser, and destroyers.⁶ Also, most of the German strike aircraft in northern Norway were withdrawn to the Mediterranean as the Allies invaded French-held North Africa. Accordingly, the Admiralty resumed convoy sailings in mid-November. Shipping losses, however, were high as the Germans were able to increase the strength of U-boats in the Arctic theater to 25 by November, a number that remained available through the winter and presented a major threat both to Anglo-American convoys and to Soviet naval operations.

During the remainder of the year Soviet submarines seem to have shifted their attention mainly to minelaying operations, with the exception of the deployment of one unit in conjunction with three British submarines operating off Alta Fjord in support of the outbound convoy QP-15, which left Murmansk on 17 November. This shift in emphasis to minelaying operations coincided with the completion of the minelaying submarines L-20 and L-22. Between mid-November and early December 1942, Soviet submarines of the K class and the L-20 and L-22 laid four minefields, off Vardo, in the Varanger Fjord, off Kirkenes, and off Petsamo. These caused some disruption in German shipping and the loss of a few ships.

The 1943 CAMPAIGN

Unusually intense Soviet submarine operations occurred during the second half of January and in early February 1943. The increase in activity can be partly explained by the arrival of S-51 from the Pacific Fleet (see chapter 11), and in part associated with the Allied convoys JW-52 (inbound) and RW-52 (outbound), with the latter receiving a substantial Soviet surface escort. The submarines operated close to shore, as on previous occasions, a measure that yielded good results. Up to six Soviet submarines were kept on patrol simultaneously, and now also attempted to coordinate with air reconnaissance. The Soviets started the new year well with a successful torpedo attack by L-20 in

⁶The TIRPITZ was held at Trondheim because of Hitler's fear of an Allied invasion of Norway.

the Tana Fjord on New Year's Day, sinking the German transport MUANSA, albeit at the expense of using six torpedoes. The L-20 also probably laid mines in the same area, one of which was discovered by the Germans on 10 January.

The German monitoring service detected the simultaneous sortie on 31 January of at least four Soviet submarines—the SHCH-403, SHCH-422, L-20, and M-172. Some of these submarines, as well as others (including the K-3, K-22, SHCH-402, and M-171), caused significant losses among German transports between late January and mid-February, sinking four and damaging two with an aggregate of 8,640 GRT and 11,406 GRT, respectively, and conducted several other attacks that were not successful. In the event, the Soviets may have had in this period at least eight and probably more submarines deployed simultaneously. The Soviets kept a high level of submarine deployments all through the spring and summer of 1943, apparently maintaining at least four submarines on patrol, covering the North Cape as well as the Vardo area. Although numerous attacks were conducted, they were not as successful as in the February period. Between 1 March and 1 September, the Soviets lost the K-3, SHCH-422, and M-106, in exchange for six German cargo ships for a total of 5,140 GRT sunk.⁷ The L-20 and L-22 both conducted minelaying sorties during May, while the SHCH-402 and SHCH-403 set up or resupplied a Soviet sabotage detachment on Arnoy Island in this period.

German sources indicate that during 1943 Soviet submarines carried out a substantial number of such "special" operations, for which the Norwegian coast was well suited. As in the previous year, during the summer of 1943 German naval forces conducted operations against the Arctic shipping route. This forced the Soviets to intensify their defensive measures to protect this route, which included sending the submarine K-1 into the Kara Sea. The German monitoring service repeatedly detected this submarine in that area from 30 September to 7 October, after which she disappeared, lost to a trio of anti-submarine craft off Batsfjord, according to German sources.

During the second half of 1943, the German monitoring service identified several new Soviet submarines in the area by their radio traffic. These included the S-14, S-103, and S-104 in August or September, and the M-200—the lead unit of the Series XV submarines—on 19–20 October. These undersea craft belonged to a group of six submarines brought from the Caspian Sea to the Northern Fleet area via the inland

waterway systems—the S-14, S-15, S-103, S-104, M-200, and M-201.

A substantial number of Soviet submarines were noted active on patrol in the Arctic during late August and early September, with several German convoys being attacked during early September. On 14 and 15 September the Soviets conducted a coordinated attack, employing submarines, aircraft, and torpedo boats, against a large German convoy approaching Kirkenes. While achieving no results, this attack seems to have been the first of its kind in the northern area. The resumption of Allied convoys to Murmansk in November 1943 (when there was less daylight exposure to German attack) possibly lessened the number of submarines available to attack the German supply routes, as they were needed to help provide cover against possible deployment of German surface forces. On 21 December, a Soviet submarine landed a commando detachment at Langbuneset, which subsequently conducted a raid on a German truck column on the road between Vaertness and Vadso.

During 1943 the Germans observed a total of 64 Soviet submarine attacks with 119 torpedoes being fired. These submarines claimed some six cargo ships and seven escorts totalling some 22,500 GRT. In addition, two other ships totalling 6,109 GRT were lost on mines. Four more ships of 18,491 GRT were damaged. These figures contrast sharply with a volume of over six million GRT of German traffic during 1943 between just Narvik and Petsamo.

THE 1944 CAMPAIGN

To provide better protection against Soviet air attacks, in late 1943 the Germans had begun to assemble large convoys for northern region supply efforts. For the first time the Soviets conducted their submarine attacks according to the "hanging screen" method, an operation code-named RV-1, which lasted from 16 January to 4 February 1944. According to Soviet sources, there were nine submarines involved, five in the attack group, two for reconnaissance, and two in reserve. Again, according to the Soviets, they cooperated closely with aircraft, destroyers, torpedo boats, and coastal artillery batteries.

Positioned along the northern coast of Norway, each in its own adjoining patrol area, were (from west to east) the L-22, S-103, S-104, S-102, S-56, M-119, and M-201. Additional submarines known to be at sea were the S-15 and M-105, thus making up the total. The submarines were positioned in holding sectors some 25 to 30 nautical miles (46.25–55.5 km) to the seaward from the belt of German defensive minefields. When receiving air intelligence, a submarine would proceed to the target convoy. Simultaneous attacks by several

⁷The SHCH-422 was commanded by Capt. 3rd Rank Fyodor Vidayev, a successful and well-liked officer. Following his loss a bust of him was erected as a memorial at Polyarnyy.

submarines were not excluded. However, it is not entirely clear what the purpose of RV-1 really was; if it was directed against German convoys—two sizable convoys were underway during January and early February—it was a dismal failure. The Germans lost only one transport, the HENRIETTA SCHULTE, to submarine torpedoes while in transit. If, on the other hand, the Soviet submarine operation served as a cover for the Allied convoys JW-56A and JW-56B, it did not prevent German submarines from conducting repeated attacks and sinking a number of Allied merchant ships. RV-2 started on 20 February and produced no results. It did, however, demonstrate that the Soviets were developing complex submarine operational concepts.

Soviet submarine activity again seems to have been low after the RV-2 operation until the end of May 1944. The Soviets claim several successes during this period, including an engagement on 17 March of a coordinated attack by the M-201 and aircraft on one of the German convoys near Sylte Fjord. German records speak only of an unsuccessful submarine attack on this occasion, during which a spread of two torpedoes was observed that inflicted no damage. The month of April was quiet, with only one submarine sighted during the first half of the month, although the Soviets had apparently started another of the combined operations against German shipping on 10 April, RV-3. The S-104 and M-105 were noted active in radio traffic on 18 and 20 April, respectively, but they were not sighted by German naval forces. Soviet sources claim several attacks by S-15, M-103, and M-201 at Makkaur and at Laks Fjord during the latter part of May. The three submarines and possibly others were indeed noted by the Germans to be active in radio traffic on several days during the second half of May. There is only one confirmed attack on record for the whole of the month, which occurred during the afternoon of 26 May on a German convoy eastbound for Kirkenes. The Soviet action against this convoy was given the code name RV-4 and had started on 11 May.

The German convoy was first attacked by Soviet aircraft with an estimated 220 sorties in ten waves, resulting in the sinking of the Norwegian steamer SOLVIKEN (3,502 GRT), hit by an aerial torpedo with several other ships being damaged. The attacking aircraft reportedly suffered heavy losses from the German fighter cover. That night a spread of four torpedoes was fired at the convoy by a Soviet submarine from too great a range to score. During the ensuing counterattack German submarine chasers observed the bow of a submarine breaking the surface. A depth charge attack followed that may have damaged the submarine. (No Soviet submarine is known to have been lost on that day.)

The Soviets attempted another coordinated attack

involving aircraft and submarines against several German convoys during June (RV-5). Soviet aircraft attacking a German convoy bound for Kirkenes on 17 June sank one transport by torpedo and damaged another with a bomb hit. An attempted submarine attack near Vardo on the same day was frustrated by the convoy escorts. When part of the same convoy departed Kirkenes on 19 June the Soviets again mounted a coordinated attack with submarines guided by aerial reconnaissance. An attempted attack by the M-201 early on 20 June was foiled by German convoy escorts and aircraft. The S-104 succeeded in sinking the German submarine chaser UJ-1209 during the afternoon of the same day off Tana Fjord, firing four torpedoes of which two were hits.

German submarines again conducted operations against the Arctic sea route during the summer of 1944. This operation lasted from the end of June to early October, and resulted in several engagements with Soviet convoys. There is no record of encounters with Soviet submarines.

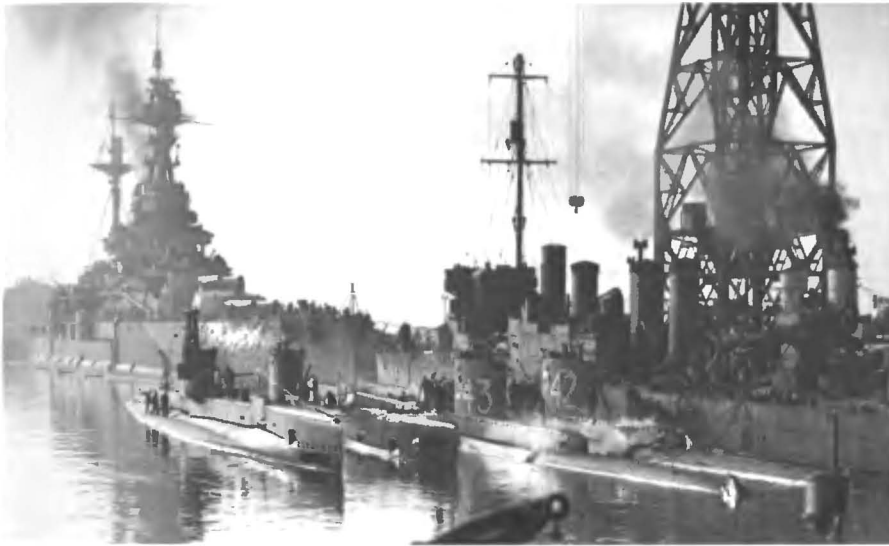
During the summer of 1944, the Soviet Navy received a number of ships from the Allies as compensation for the Soviet share of surrendered Italian warships, which could not be sailed from the Mediterranean to Soviet ports because of German naval threat.⁸ These Allied ships included the British battleship ROYAL SOVEREIGN, the U.S. scout cruiser MILWAUKEE (CL 5), nine former U.S. flush-deck destroyers as well as several minesweepers, and four British submarines:

<i>British name</i>	<i>Soviet designation</i>
SUNFISH	V-1
UNBROKEN	V-2
UNISON	V-3
URSULA	V-4

Soviet crews for these submarines had been sent to Scotland at the end of April 1944. The ceremony for their transfer was held at Rosyth on 30 May 1944. After at-sea training, the four submarines departed for Murmansk in late July 1944. The V-1 was accidentally sunk on 27 July by a Royal Air Force bomber while in transit to the Soviet Union. The RAF Coastal Command aircraft encountered the V-1, under Captain 3rd Rank Israel Fisanovich, considered one of the fleet's most gifted submarine commanders, "well outside the zone in which air attacks had been forbidden during the submarines' passage," according to the official British history.⁹ The submarine "had been instructed to make her

⁸The Italian government capitulated in September 1943, with the surviving Italian warships being ordered to escape possible German control by fleeing to Malta. During this operation the Italian battleship ROMA was struck by a single German aircraft-launched guided bomb, caught fire, blew up, and sank—the first warship to be sunk by a guided weapon.

⁹Capt. S.W. Roskill, RN, *The War at Sea*, Vol. 3, Part 2 (London: Her Majesty's Stationery Office, 1961), p. 158.



Being prepared for transfer to the Soviet Navy, from left are the battleship ROYAL SOVEREIGN, the submarines SUNFISH, URSULA, UNISON, and UNBROKEN, and a pair of U.S. four-stack destroyers. These ships were transferred in place of surrendered Italian ships in the Mediterranean. The war in the Atlantic prevented the Italian ships from being transferred to the Soviets. (Imperial War Museum)

passage on the surface, and to fire recognition signals [flares] if approached by aircraft; but she dived on sighting the Liberator which, not unreasonably, assumed her to be German." Thus perished Fisanovich and his entire crew.

The other three submarines arrived safely in the Northern Fleet, where they served under the Soviet ensign until returned to Britain in 1949.

Additional coordinated attacks involving Soviet submarines, aircraft, and torpedo boats were conducted against several German convoys in the Norwegian area during July and August. The attacks during July (with the operational designation RV-6) had only limited results, but in August the Soviets were more successful, with the M-201 on the 18th and the S-16 on the 24th each sinking a German cargo ship (this was probably the S-16's first combat patrol). The S-103 also made attacks on 23 and 28 August, but did not succeed in scoring a hit; she used electric torpedoes, a first for Soviet submarines. During August the L-15, L-20, and S-19 were also known to be at sea. Also, on 26 August the S-56 was sailing on the surface off the Kola peninsula when sighted by the German submarine U-711, one of several U-boats operating in the area at the time. The U-711 fired a single acoustic torpedo against the S-56, but the torpedo malfunctioned, ran on the surface, and struck a ballast tank of the double-hulled S-56. The Soviet submarine suffered only slight damage, and the U-711 withdrew without retribution. (The U-711 suffered a number of torpedo failures during that patrol.)

These operations were followed by a lull in Soviet submarine attacks until late September, although attacks against German shipping by aircraft and torpedo boats continued with increasing intensity. This submarine stand-down may well have occurred in antici-

pation of expected German evacuations out of northern Finland following the capitulation of that country to the Allies, which became effective on 4 September. The S-56 conducted several attacks against a patrol boat and minesweepers on the 24th and 26th, and may have skillfully used a trick of releasing oil and wreckage in order to deceive the counterattacking German submarine chasers. She also broached the surface during these counterattacks, possibly as part of the same misleading effort. The SHCH-402 was mistakenly attacked by Soviet aircraft in the Barents Sea and sunk on 21 September.

The Finnish withdrawal from the war in September 1944 necessitated an entire redistribution of the German forces in the northern area. Because of the importance of the nickel mines near Petsamo, the Germans initially intended to remain in a defensive position on the Litsa front and to establish a new front in northern Finland. Soon it became clear that this would not be feasible, and in early October 1944 the German high command made the decision to withdraw into northern Norway and establish a new front on the Lyngen Fjord. In the midst of the German preparations for withdrawal, the Soviet 14th Army on 7 October attacked the German front with overwhelming superiority, supported by amphibious landings behind the German lines. The German forces nevertheless managed to withdraw in an orderly fashion, occupying their new position on Lyngen Fjord toward the end of the year. The nickel mines were destroyed. (The pursuing Soviet forces stopped short of the Norwegian border.)

German evacuation convoys from Petsamo began on 11 October. Against these convoys the Soviets had deployed from Vardo to North Cape the submarines M-171, S-14, S-51, S-101, S-102, S-104, V-2, and V-4. The L-20 was also at sea during this period, but

her location is unknown. The Soviet submarines claim to have sunk 15 German ships in these evacuation convoys between 12 and 31 October. Although numerous engagements occurred, confirmed losses, however, are only one German submarine chaser each by the S-104, on 12 October, and the V-4 on 20 October, and the transport LUMME by the S-104, also on 12 October. Attacks by Soviet aircraft and torpedo boats claimed several additional losses. This operation marked the end of Soviet submarine activity against German shipping in the northern waters.

In the final Soviet submarine operations of the Northern Fleet, in November 1944 the S-16 and S-19 went to sea with radar installed, among the first Soviet undersea craft to have that device. However, neither submarine made contact with German ships during these final patrols of the northern campaign.

The submarines of the Northern Fleet made a significant contribution in containing the German assault against the important port of Murmansk. The German shipping losses and the delays in moving troops and cargo by sea were considerable. And, the navigation accomplishments of Soviet submarines in the harsh

Arctic environment were considerable, especially for the small *Malyutka*-class submarines, affectionately referred to by Soviet submariners as "midgets."

The Northern Fleet commander, Arseni Golovko, summed up the feeling of many Soviet fighting men and leaders during the war. An entry from his diary after three months of war reads,

We are having it tough. But the superiority the nazis are enjoying will not last forever. Some day we will turn the tables on them because we have withstood the onslaught of the nazi war machine. We are learning from our mistakes. They are inevitable in the early months of the war, but they will not be repeated. However, the enemy will never enjoy superiority in morale. The lofty qualities of our fighting men are our advantage. His men will never perform a collective exploit like the crew of the PASSAT or that of the TUMAN. They are not capable of achieving anything like the collective feat the crew of Krol's subchaser or the mass exploit the marine detachments accomplished.

These are our advantages.¹⁰

¹⁰Adm. Arseni G. Golovko. *With the Fleet* (Moscow: Progress Publishers 1979), p. 47. The PASSAT and TUMAN were patrol ships, both sunk in combat with larger German warships.



Allied convoy PQ-17 en route to Murmansk as seen by a German reconnaissance plane. This was the most heavily devastated of the Russian convoys. The submarine K-21, commanded by Captain 2nd Rank N.A. Lunin, was credited by the Soviets with having made a torpedo hit on the German dreadnought TIRPITZ during the operation, but German records indicate that the warship suffered no damage and she inflicted none on the hapless convoy. (*Luftwaffe* photo)

World War II in the Black Sea and Far East

THE BLACK SEA 1941 CAMPAIGN

The submarine brigade established in the Black Sea in March 1931 was split into two brigades in 1936.¹ At the outbreak of war in June 1941, the Soviets had 47 submarines available in the Black Sea. The 1st Brigade, under Captain 1st Rank P.I. Boltunov, had four divisions with the submarines D-4 through D-6, L-4, L-5, L-6, S-31 through S-34, and SHCH-201 through SHCH-215. The 2nd Brigade, under Captain 1st Rank M.G. Soloviev, had three divisions with the older Holland-design A-1 through A-5, and the small M-31 through M-36, M-51, M-52, M-54, M-58, M-59, M-60, and M-62. Several other submarines were apparently in a separate training division. These submarines initially operated from Sevastopol, the large naval base on the Crimean peninsula.

As in the other fleet areas, submarines constituted the largest component of the Soviet fleet. Also in the Black Sea when the war began was the third Soviet battleship, the PARIZHSKAYA KOMMUNA. Previously

named SEVASTOPOL, she was transferred from the Baltic to the Black Sea in 1929–1930.²

Germany had no warships in the Black Sea when war began. But its ally, Rumania, which borders the western side of the Black Sea, had several warships available, including one submarine launched in 1931.³ The German Air Force, however, could reach much of the Black Sea from bases in Rumania, and the *Luftwaffe's* Ju-87 Stuka dive bombers were highly effective in the anti-shipping role (as they were in the Baltic and Mediterranean theaters). During the course of the war the Germans would transport overland and via river routes six small submarines (250 tons), 23 minesweepers, 16 MTBs, 26 submarine chasers, 50 landing craft, and numerous cargo and support craft to work with German ground forces in the area. The Italian Navy also sent six small submarines into the Black Sea to augment Axis forces.⁴

¹On 12 August 1942, these were reorganized into a single brigade. On 23 June 1943, the submarines were again reformed into two brigades.

²The ship was renamed in 1921, and was recommissioned in 1925 and sent to the Black Sea. En route to the Black Sea in 1929 she was damaged in heavy weather and had to put into the French port of Brest for repairs. She was the largest Soviet warship in the Black Sea when the war began; after being damaged by German air attack in 1942, she withdrew to Poti and remained there for the remainder of the war; in 1943 the Soviets reverted to using the name SEVASTOPOL.

³Two other Rumanian submarines were completed in 1944. Although they made workup cruises, they did not undertake war patrols.

⁴The six U-boats had their engines and other equipment removed, were completely sealed, and were careened on their sides. They were then placed on floats and towed on the Elbe River to Dresden, and hauled by trailers (still on their sides) to Ingolstadt on the Danube (a distance of some 250 miles/402 km). The submarines were again placed on floats and towed to Linz, where they were righted and prepared for service in the Black Sea. A detailed account is given in Friedrich Popp, "Overland Transport of German Ships During World War II," U.S. Naval Institute *Proceedings* (January 1955), pp. 27–37.



The small M-class submarines served extensively in all of the combat theaters. Their small size and sectional construction facilitated their transport between the fleet areas by inland waterways, and to and from the Far East via the Trans-Siberian Railroad. (Imperial War Museum)

At the start of hostilities, four submarines from the Black Sea Fleet's 1st Brigade were deployed to operate off the Rumanian ports of Constanta, Mangalia, and Varna, and—subsequently—off the Bosphorus.⁵ The smaller units of the 2nd Brigade were deployed on defensive patrols off the Danube estuary and the Caucasus coast. Initially, the Rumanian DELFINUL was the only submarine available to the Axis in the Black Sea. She operated near the Crimean and Caucasus coast in a series of patrols from 10 July through 13 December 1941. Although not sinking any Soviet ships, the DELFINUL did serve as an effective deterrent, as her mere presence—imagined or real—often gave the Soviets the impression that there were German submarines in the Black Sea. The Soviet submarine M-33 made an attack against the DELFINUL off Constanta in August, as did the SHCH-210 in two attacks against the Rumanian submarine off Varna that month, all without success.

The southern thrust of the German assault carried into the Ukraine, and the Soviets were forced to evac-

⁵Despite efforts by both the Allies and Axis to bring Turkey into the war on their respective sides, Turkey remained neutral until February 1945 when, with Germany's defeat assured, Turkey entered the war on the Allied side.

NAVAL FORCES IN THE BLACK SEA, JUNE 1941

	Soviet	Rumanian
Battleships	1	—
Heavy cruisers	3	—
Light cruisers	3	—
Modern destroyers	11*	4
Old destroyers	5	—
MTB/guard ships	2	7
Submarines	47**	1

*Includes destroyer-flotilla leaders.

**Includes five World War I-era submarines.

uate Nikolayev, the main shipbuilding center on the Black Sea, between 14 and 17 August 1941. A number of warships on the building ways were destroyed or abandoned: a battleship, a large cruiser, two destroyer leaders, two destroyers, and the three submarines, the S-36, S-37 and S-38. Material assembled for two other submarines, the S-41 and S-42, was also abandoned. Two cruisers, two destroyer leaders, three destroyers, and five submarines (L-23, L-24, L-25, S-35,



Soviet submarines at a port in the eastern Black Sea during the war. Shown here are two L II-class submarines and (center) an S-class boat. The Germans overran the major Black Sea submarine building yards and bases in 1941. (Imperial War Museum)

SHCH-216) that were fitting out when the war began were successfully evacuated to Sevastopol and, subsequently, to ports in the Caucasus.

Following the Soviet evacuation of Odessa in October 1941, the Black Sea Fleet minelaying submarines planted mines in the Dnepr estuary to hinder Axis coastal shipping operating in support of the German advance along the coast. As the German troops assaulted the Crimea and began a siege of Sevastopol, the Soviet high command ordered a seaborne landing on the Kerch-Feodosiya peninsula, to the east of Sevastopol, in an attempt to delay the German advance. The Soviet plan called for assaults against the northern (Sea of Azov) and southern (Black Sea) shores of the Kerch peninsula beginning on 26 December 1941. Some 40,000 Soviet troops were involved in the amphibious operations, with the submarines M-51 and SHCH-201 being involved.

Through the end of 1941, the Soviets undertook 101 submarine sorties, during which they lost six submarines on mines laid by Rumanian minelayers off the Bulgarian coast, one to an attack by a Rumanian destroyer, and one by accident. Their net result in sinkings during the same period was only six Axis ships totalling 15,698 GRT.

THE BLACK SEA 1942 CAMPAIGN

In the later phases of the German siege of Sevastopol, which lasted from 30 October 1941 until 4 July 1942, when the port city capitulated, Soviet submarines were employed extensively in transport missions to and from the naval base. These activities started on 7 May 1942. Initially one submarine of the D class, four of the L class, and two of the S class were used, but from mid-June they were reinforced by six submarines of the SHCH class, eight of the M class, and two of the outdated AG (Holland) class.

These submarines made a total of 77 sorties to Sevastopol, with some of the larger submarines making up to seven resupply trips. During this operation the submarines supplied Sevastopol with some 2,300 tons of ammunition, 1,100 tons of food, and 574 tons of fuel, and evacuated some 1,400 wounded. At least three of these submarines were lost—possibly the SHCH-212 in a gasoline explosion in Sevastopol, the S-32 in a German bombing attack, and the SHCH-214 sunk by an Italian torpedo boat. German and Italian sources cite the SHCH-208 being torpedoed by the small Italian submarine CB-2 on 18 June.⁶ However, Soviet sources indicate that the SHCH-208 was sunk in

⁶The Italian Navy sent six small CB-type submarines to the Black Sea, arriving at Constanta during early May 1942. They deployed to Yalta at the end of the same month.



An SHCH-class submarine setting off for patrol in the Black Sea. This is one of the later, streamlined Series X submarines. These SHCH-class or “pike” submarines were very popular with Soviet submariners. Like most Soviet submarines built during the war, these were improved with each series. (Imperial War Museum)

August, apparently lost to a mine. In addition, the outdated A-1 was scuttled at Sevastopol in June 1942.

The Soviet evacuation of Sevastopol was ordered on 30 June 1942, and the submarines then participated in this operation through 4 July. As the German forces in the Black Sea area moved farther eastward, it became necessary to establish sea lines of communication for their support. An essential part of their protection was formed by some 5,000 naval mines laid in barriers along the western coast of the Black Sea and along the southern coast of the Crimea. Of these, about 1,700 were anti-submarine mines and 2,795 were anti-sweep floating mines.

The Soviets countered with employing submarines against Axis shipping in the Black Sea. As of mid-July 1942, the number of Soviet submarines in the Black Sea had been reduced to 34 units, notwithstanding the addition of 14 new construction boats. Only 20 of these were operationally available, and they were reorganized into a single brigade. The remaining boats were employed for training. These submarines now had to operate from the ports in the Caucasus, which necessitated long transits. Consequently, during the next year and a half the small M-class submarines mainly conducted operations off the Crimea and in the north-western area of the Black Sea. The larger submarines were used to interdict the traffic between the Crimea and Rumania, off the Rumanian and Bulgarian coasts, and off the Bosphorus. Anchored mines were laid by L-class submarines off German-held Sevastopol and the Rumanian and Bulgarian coasts. Submarines were also used to support operations by partisans in the Crimea, landing arms and specialists.

The relentless German armies and other Axis troops continued to push eastward, toward the Caucasus. After the fall of Sevastopol, most of the Black Sea Fleet had withdrawn to Novorossiysk, 60 miles (96.5 km) to the east of the Kerch Strait, and the smaller port of Poti, at almost the eastern extremity of the Black Sea, some 40 miles (64.4 km) from the Turkish border. The Germans laid siege to Novorossiysk, and the city and naval

base fell on 6 September 1942. The German hordes seemed unstoppable as they thrust eastward, toward the oil fields of the Caucasus. However, 400 miles (643 km) north of the Black Sea coast, at Stalingrad (now Volgograd), the Soviets went onto the offensive against the German troops holding portions of that industrial city. From November 1942 until 1 February 1943, a German army held portions of the ruins of the city against savage Soviet onslaughts. When the crucial battle ended, some 300,000 German troops had been killed or captured. At Stalingrad the tide of the war shifted against the Germans.

During 1942, Soviet submarines sank 13 ships for a total of some 12,000 GRT; however, only six of these ships were among those participating in logistic support of German ground forces. During the second half of 1942, three Soviet submarines were lost on mines, and two as a result of combined German-Rumanian anti-submarine attacks.

The first three of six German U-boats to operate in the Black Sea, three Type IIB submarines, arrived in November 1942, followed by three more by mid-1943. Based at Constanta, the U-boats attacked Soviet shipping along the Caucasus coast and in 1943 to mid-1944 succeeded in sinking six identified ships with an aggregate tonnage of 26,453 GRT up to the end of 1943—twice the tonnage sunk by Soviet submarines during 1942.

THE BLACK SEA 1943 CAMPAIGN

On 1 January 1943, the Black Sea Fleet submarine brigade contained four divisions comprising 29 boats, of which 18 were operational and 11 were undergoing maintenance or repairs. In February 1943, Rear Admiral P.I. Boltunov was appointed chief of submarine operations on the staff of the Black Sea Fleet; his position as brigade commander was taken by Captain 1st Rank A. Krestovskiy.

During the first year of the war Soviet submarines in the Black Sea generally had acted independently, searching for their target in a predefined patrol operating area. This concept, it was believed, would allow for coverage of a wider area with a limited number of boats. In 1943, the Soviets began to employ *rudel* tactics, deploying submarine groups generally consisting of three units. From April 1943 the Soviets also attempted to establish cooperative tactics between submarines and aircraft, although it was felt that many of the target locating reports received by submarines from aircraft were either too late or not sufficiently accurate to direct the submarines. These new tactics made the Soviet submarines somewhat more effective, and one unit, the S-33, succeeded on 20 April 1943 in torpe-

doing Rumania's largest cargo ship, the SUCEAVA of 6,700 GRT.

Generally, German radio intercept stations along the coast were able to identify Soviet submarine deployments in a timely manner, stopping or rerouting convoys until the threat had passed. The submarines had a difficult time attacking Axis merchant ships because most were small and had a shallow draft. Torpedoes often ran beneath targets without inflicting any damage. The introduction of proximity fuses in Soviet torpedoes from the summer of 1943 solved this problem in part. During all of 1943, Soviet submarines succeeded in sinking only 16 ships with an aggregate tonnage of 30,880 GRT, plus a number of small coastal units. German ASW efforts became more effective during the second half of the year with the establishment of the 1st Anti-Submarine Flotilla. The flotilla's specialized anti-submarine ships succeeded in destroying five Soviet submarines through the end of the year, reducing the total force available to the Soviets to 18 operational units, which included some of the older boats brought back into active service. According to a Soviet analysis of the 1943 campaign, Soviet submarines conducted 139 combat patrols during 1943. Minelaying by submarines during the year was limited to 120 mines laid by the L-4, L-6, and L-23.

During November 1943 the Soviets had ten submarines able to go to sea to perform reconnaissance missions, to harass German shipping, and to land agents behind enemy lines along the occupied Black Sea coast. By late 1943 the military situation in the Ukraine and the Caucasus was rapidly changing in favor of the Soviet Union. Still, the Germans managed to retain the greater portion of the Crimea through mid-April 1944.

THE BLACK SEA 1944 CAMPAIGN

During the first months of 1944 the Soviet submarine threat in the Black Sea had been practically neutralized by German naval and air forces. During the winter of 1943–1944 the Soviets were unable to put more than three or four submarines on patrol simultaneously, and German ships succeeded in sinking the L-23 in January (with the commander of the submarine brigade, Captain 1st Rank Krestovskiy, on board) and, according to German but not Soviet sources, a second submarine in February. The German merchant traffic to Sevastopol proceeded practically unimpaired and transported even more supplies than actually required during this period. Subsequently, the German evacuation of Sevastopol by air and sea was conducted between mid-April and mid-May 1944. Timidity on the part of Soviet naval forces enabled the Germans to evacuate about 32,000 men,



An L-class submarine in the Black Sea as viewed from a Soviet flying boat. The *Luftwaffe* controlled the western portion of the Black Sea for most of the war, making submarines important for attacking German coastal shipping as well as reinforcing and evacuating Soviet positions as German armies advanced through southern territory. (Imperial War Museum)

including 6,000 wounded, by sea even after the harbor was no longer usable; there were losses among the German evacuation ships and craft, primarily from Soviet air attacks. One senior German naval officer later observed, "If the Russian Fleet had intervened, not one German would have escaped from the Crimea."⁷ The Germans successfully undertook even larger evacuations by sea from Kuban (200,000 men, 60,000 horses, and a large amount of material), with minimal interference by the Soviet Navy.

The Soviet Navy in this period attempted to interdict German shipping with torpedo boats, naval aircraft, and submarines. Of the last, there were only 16 operational submarines remaining in the Black Sea Fleet. These were deployed in "squares" between the Crimea and the Rumanian coast. Aerial reconnaissance from recaptured airfields at Odessa, Skadovsk, and Yevpatoria provided targeting support. But the submarines again had problems hitting the numerous small Axis ships employed in evacuation and resupply efforts, and often could not get within firing distance of the fewer larger ships. The use of compressed air torpedoes by Soviet submarines in many instances allowed these larger ships to conduct evasive maneuvers after detecting the torpedo wakes. Altogether, Soviet aircraft proved much more effective. Following these efforts, Soviet Black Sea submarines, reinforced by units transferred from the Northern and Pacific fleets, were from

July 1944 deployed to the western portion of the Black Sea. By that time Axis shipping was already reduced to a minimum, while the mine barriers off the coast generally prevented attacks by Soviet submarines on the few ships that were encountered at sea.

The capitulation of Rumania on 24 August 1944 brought an end to German naval activities in the Black Sea.

WAR IN THE PACIFIC

The Soviet Pacific Fleet, which had been reestablished in 1935, was accorded a high priority in the allocation of submarines through late 1940, as Stalin professed special interest in the Far East. And, the several major border battles in the Far East (Manchuria) with the Japanese in the late 1930s had led Soviet military leaders to believe that there would be a future conflict with Japan.

When Germany invaded the Soviet Union in June 1941, there were 87 submarines in the Far East, comprising the largest submarine force of the four Soviet fleets. These consisted of 2 submarines of the S class, 13 of the L class, 35 of the SHCH class, and 37 of the smaller M class. Another 11 submarines were on trials and fitting out (see pages 99–100).

Most of the fleet's submarines had been assembled at the Dalzavod Shipyard in Vladivostok from components produced in European shipyards and factories. The yard at Komsomol'sk, which Stalin had erected in the 1930s to build battleships for service in the Pacific,

⁷Vice Adm. Friedrich Ruge, FGN, *Der Seekrieg, The German Navy's Story 1939–1945* (Annapolis, Md.: U.S. Naval Institute, 1957), p. 291.



Far East

was constructing warships up to cruiser size as well as submarines, but this yard was also heavily dependent upon components and machinery from factories in European Russia, which had to be transported to the Far East over the Trans-Siberian Railroad.

Several Pacific Fleet submarines had been built in Leningrad, sent to the Arctic via the inland waterway, and subsequently shifted via the Northern Sea Route to the Pacific Fleet. The first submarine that made the northern passage was the SHCH-312, which was renumbered SHCH-134 upon arrival in the Pacific in 1937. The SHCH-321 made the passage in 1939 and was renumbered SHCH-135. The SHCH-328 was also scheduled to transit to the Pacific (to become SHCH-136), but that submarine was apparently lost or suffered a casualty in the Northern Fleet in 1939. She may have made the transit at a later date. The SHCH-423 (formerly the Baltic Fleet SHCH-327) made the transit between August and September 1940 (renumbered SHCH-139). She may have been a replacement for SHCH-328. The smaller M-class submarines were shipped to the Far East by rail.

While the Japanese were, after December 1941, committed against Britain, the Netherlands, and the United States, with the onset of war in Europe the decision was made by the Soviet high command to transfer Pacific Fleet submarines to the European theaters. The fleet's 1st Submarine Brigade, containing the L-15, L-16, S-51, S-54, S-55, and S-56, was transferred during the winter of 1942–1943 from Vladivostok to the Northern Fleet via the Panama Canal. These six submarines left Vladivostok in September–October 1942,

transiting across the North Pacific via the Aleutian Islands, to the U.S. coast, thence southward to the Panama Canal, through the Caribbean and across the North Atlantic to Great Britain, and then northward to the Northern Fleet. The S-51 arrived in the Kola Inlet on 24 January 1943.

The L-15 and L-16 were in transit some 500 miles (805 km) west of Seattle, Washington, on 11 October 1942. The Soviet submarines were travelling on the surface when they were sighted by the Japanese submarine I-25, about to conclude a patrol off the U.S. west coast. The submarine had just carried out two incendiary bombing raids against U.S. forests with a float-plane. After having attacked several U.S. merchant ships, the I-25 had a single torpedo remaining.

Believing that the two L-class submarines were American undersea craft, the commanding officer of the I-25, Commander Meiji Tagami, fired his one torpedo. The men on the bridge of the L-15, following behind the L-16, heard a succession of three sharp explosions from the other submarine. The stricken L-16 reportedly broadcast a last message: "We're sinking from. . . ." The smoke dispersed and the L-16 was gone from sight.

A lookout on the bridge of the L-15 reported a submarine's periscope. The L-15, according to Soviet records, opened fire with the craft's 102-mm deck gun, but without effect. There were no survivors from the L-16. The I-25 returned safely to Japan.⁸

Upon her arrival in Iceland it was discovered that the L-15's after diving planes were damaged, and she underwent repairs in Great Britain. The S-54, S-55, and S-56 arrived in Rosyth, Scotland, in early January 1943, and were given minor refits, which included the fitting of asdic (sonar) and new batteries. The S-55 and S-56 left Britain on 1 March 1943, arriving in the Kola Inlet on the 8th. The S-54 underwent a more extensive refit at Portsmouth, with her crew being trained in the use and maintenance of asdic. The L-15 and S-54 left Britain in company at the end of May 1943, and arrived at the Kola Inlet on 7 June.

The Soviet Union declared war against Japan on 8 August 1945, in accord with the Allied agreements reached at Yalta in the Crimea in February 1945, which stipulated that the Soviet Union would enter the war against Japan within nine months. By that time the Japanese Navy had practically ceased to exist.

The Soviet Pacific Fleet had 78 submarines at its disposal in August 1945, but these found little employ-

⁸Some Soviet writers in the post-World War II period have suggested that a U.S. submarine may have sunk the L-16, or that at the least the United States failed to provide warning to the Soviet submarines that Japanese undersea craft were in the area. (U.S. submarines did sink four Soviet merchant ships in the Sea of Japan and adjacent waters during the war, including the 11,000-GRT merchant ship *TRANSBALT*, one of the larger ships sunk by U.S. submarines in the war. All of the sinkings were instances of failure to identify the target ship's nationality.)



Captain 1st Rank Alexander Tripolsky, right, commanded the group of submarines that transited from the Far East to the Northern Fleet. He is shown here at Dutch Harbor, Alaska, with a captain 3rd rank. Tripolsky had commanded the submarine S-1 in the Russo-Finnish War, earning the award of Hero of the Soviet Union. In the S-51, he departed the Far East on 6 October 1942 and arrived at Polyarnyy on 24 January 1943, after a transit of more than 16,000 nautical miles (29,000 km). (U.S. Navy)



An S-class submarine transiting the Panama Canal, one of the submarines the Soviet Navy shifted from the Far East to the Northern Fleet via the Panama Canal during the war. One submarine, the L-16, was torpedoed and sunk en route by a Japanese submarine. Few Soviet submariners saw palm trees during the war! (U.S. Navy)

ment because of the lack of targets and their operating area being limited to only a portion of the Sea of Japan. The submarine L-8 participated as one of the escorts in the amphibious assault on the northernmost of the Kurile Islands, Shimushu Island, between 16 and 18 August. The L-12 and L-19 were on patrol off the northwestern coast of Hokkaido on 22 August. Both submarines conducted attacks on Japanese shipping on that day, which resulted in the sinking of four ships including a large Japanese repatriation ship from Sakhalin. The L-19 later attempted to pass eastward through La Perouse Strait and was sunk, apparently on a U.S. mine. On the following day Soviet submarines on patrol were ordered to cease attacks on Japanese shipping.

BUILDING SUBMARINES

On 22 June 1941, there were 100 submarines on trials and in various stages of construction on building ways in the Soviet Union (see page 100). During the Great Patriotic War—the Soviet term for the 1941–1945 war in Europe—a total of 57 new submarines were completed and delivered to the fleet: 5 of the K class, 5 L class, 9 SHCH class, 16 S class, and 22 M class.

When the war began submarines were being constructed at eight shipyards with no less than five classes and several series being built. In Leningrad the Marti/Admiralty, Ordzhonikidze/Baltic, Sudomekh, and Zhdanov yards were building variants of the large K, mid-size L, S, and SHCH, and the small M classes. Also, submarines being constructed at the inland Krasnoye Sormovo yard in Gor'kiy were transported by inland waterway to Leningrad for fitting out and completion.

Shortly after the outbreak of war several unfinished submarines at Leningrad as well as those being built at Gor'kiy were floated via the inland waterway system to the Molotovsk/Severodvinsk yard in the Arctic, and to Astrakhan and Baku on the Caspian Sea for completion. The availability of the inland waterways permitted many of those craft to be saved from destruction or, as were some units, laid up at Leningrad for the duration of the war.

As German forces laid siege to Leningrad the shipyard facilities were turned to producing tanks and other weapons for the Soviet defenders. Many shipyard workers were conscripted into the Red Army, further reducing yard effectiveness, as did the intense hunger during the three-year siege. Some yards were able to continue limited ship work, mainly repairing damaged units of the Baltic Fleet. A few submarines, however, were completed in 1943–1944 at Ordzhonikidze/Baltic (L-21, K-51, K-52, K-53), and Marti/Admiralty (K-55, K-56).

The Krasnoye Sormovo yard at Gor'kiy continued

to produce submarines of the S and M classes during the war, sending incomplete craft via inland waterways to Caspian ports and to Molotovsk/Severodvinsk to be completed. The experimental submarine (*opyitnaya podvodnaya lodka*) M-401, belonging to the Series XII-bis design, was laid down at Gor'kiy on 28 November 1939 and launched on 31 May 1941. She was powered by a single closed-cycle diesel engine developed by submarine designer A.S. Kassatsir. During the war the M-401 successfully underwent trials in the Caspian Sea where she made 74 cruises, which included 68 dives and 360 nautical miles (665 km) submerged in closed-cycle operation. Further work on this closed-cycle diesel concept was suspended during the war but restarted immediately after the hostilities, primarily at the Sudomekh yard in Leningrad. (The M-401 was transferred to Leningrad via the inland waterways, probably during 1948, although some sources indicate as late as 1950.)

An enlarged *Malyutka* design, the Series XV, was begun at Sudomekh just before the war. These submarines were 281-ton 162-foot 5½-inch (49.5 m) craft with four torpedo tubes and a two-shaft propulsion plant. The M-200 through M-203 were launched in 1941 and completed at Astrakhan; the later submarines of this series were built at Sudomekh after the war.

On the Black Sea, the German capture of Nikolayev in August 1941 halted submarine construction at the Marti/south and 61 Kommuna yards. Several unfinished submarine hulls were towed eastward, but the S-36, S-37, and S-38 were destroyed on the building ways at the Marti yard in August 1941 to prevent their falling into German hands. Also lost was the Marti-built L-25, which was sunk by a mine off the Caucasus coast while under tow in 1944. The L-23 and L-24 being built at Nikolayev were towed away from Nikolayev and completed at Poti during the war.

Soviet forces did not recapture Nikolayev until March 1944. The retreating Soviets had sabotaged the shipyards in 1941, and the Germans did the same in 1944. Demolition charges, the sinking of ships and barges in channels, and the destruction of cranes and other yard machinery, coupled with close-in fighting, had left the Marti/south and 61 Kommuna yards in ruins.

The new Molotovsk/Severodvinsk yard completed several submarines that had been towed northward from Leningrad through the inland waterways—the unfinished L-20 and L-22 built at Ordzhonikidze were completed in 1942, and the S-17 constructed at Gor'kiy in 1944. Molotovsk also reassembled several Gor'kiy-built M-class boats that were transported to the Caspian for completion and trials, and then disassembled and shipped to Molotovsk for a second completion and service in the Northern Fleet.



The Marti (south) yard at Nikolayev, like most of the southern USSR, was overrun by German armies in 1941. This view of the yard shows the unfinished S-37 (left) and S-36 still on the building ways. Other incomplete submarines as well as surface ships were towed to Soviet-held ports farther east for completion. (German Army)

The first submarines actually constructed at the Molotovsk yard were the S-58, S-59, and S-60, although they were not completed until 1947–1948. The main facility at Molotovsk was the battleship building hall, erected in the 1930s at Stalin's direction to permit side-by-side construction of two battleships. (The first major surface warships built at Molotovsk were three OGNEVOI-class destroyers, started during the war, with only one launched during the conflict.)

During the war submarine construction continued at the Dalzavod yard in Vladivostok, with components manufactured in the European portion of the country. Naturally, as the war engulfed the western portion of the country, the construction efforts in the Far East fell off.

During the war design work was underway on several new submarine projects, including new medium and large submarines. Work on a new *Malyutka*-type submarine was apparently already underway before the war, interrupted by the outbreak of the war, and then taken up again. The design was to incorporate the most

recent advances in engines and hull construction, and to have improved batteries and other components. This submarine was apparently intended to incorporate a diesel engine that could be operated while submerged, probably in a closed-cycle system, while special attention was also given to decreasing the noise level of the craft's main and auxiliary machinery, apparently by resilient machinery mountings. This design apparently evolved into the M-254 (discussed in chapter 12).

Other propulsion experiments apparently took place in the Black Sea area. German troops at Feodosiya in 1942 photographed an unidentified small submarine, about 65½ feet (20 m) in length, fitted with a single screw, that was to carry two externally mounted torpedoes. No identification of this craft has so far surfaced in the postwar Soviet literature.

The S-class medium submarine design, of German origins through the firm *Ingenieurskantoor voor Scheepsbouw*, was refined during the war. From 1945 the design was further revised to incorporate the latest German submarine technology, including some Type



The primitive facilities of the Molotovsk Shipyard at Severodvinsk were vital to the fitting out and maintenance of Northern Fleet submarines. The yard was photographed by a German aircraft in July 1941: (A) naval base; (B) fitting out area; (C) dry dock with entry locks under construction; (D) wharf; (E) construction hall No. 42; and (F) metal working plant. (*Luftwaffe* photo)

XXI U-boat features. The result was the Soviet W- or Whiskey-class submarine (see chapter 13).

Design work on a new, large submarine began in 1944. This undersea craft was to incorporate all requirements originating from the wartime experience. This design appears to have developed into the postwar Z or Zulu class (NATO designations).

During the war Soviet submariners increasingly used hydroacoustic (sonar/asdic) detection for locating German surface ships as well as U-boats. In his unsuccessful attack against the *TIRPITZ* in July 1942, Captain 2nd Rank Lunin's K-21 initially detected the German surface force at a distance of 12 nautical miles (22 km) with the submarine's Mars-16 sonar. Reportedly, Lunin employed sonar to penetrate the battleship's screen (the *TIRPITZ* was accompanied by two cruisers, seven destroyers, and two torpedo boats). He brought the K-21 to periscope depth only when in the "immediate vicinity" of the dreadnought. His attack, however, failed despite Soviet claims to the contrary.

Other Soviet submariners, especially in the Northern Fleet, made extensive use of sonar. In May 1942 the

M-176 under Senior Lieutenant I. Bondarevich was attacked by the U-702, apparently in Norwegian waters. His sonarman, A. Adamyuk, was able to detect the U-boat's maneuvering for a torpedo attack. The M-176 evaded the attack—Soviet sources say a total of ten torpedoes were launched against the M-176 during an underwater duel that lasted more than three hours. The M-176, according to Soviet records, counterattacked and successfully torpedoed the U-702. (German records cite the U-702 as being lost to unknown causes in April 1942 in the North Sea.)

Another Northern Fleet submarine, the S-101 under Captain-Lieutenant Ye. Trofimov, initially detected the surfaced U-639 by sonar in the Kara Sea. Unobserved, the S-101 sank the U-639 with a three-torpedo salvo. As the war progressed the submariners increasingly employed sonar for initial surface ship and submarine detections, especially in the Arctic where there were long periods of darkness and fog, and where heavy seas further limited visibility from the low-lying submarines.

The Soviets credit their first submarine attack to rely completely on acoustic data—using active and passive sonar without raising the periscope—to the M-171 of



An S-class submarine fitting out at the Molotovsk Shipyard in June 1944. The extensive system of inland waterways permitted unfinished submarines to be transported to yards still under Soviet control for completion and operational service as the Germans took over vast portions of European Russia. (U.S. Navy)

the Northern Fleet. Captain-Lieutenant G. Kovalenko carried out the attack, probably off Varangerfjord, on 5 April 1943, but apparently without success. More submarine attacks followed using only sonar when conditions prevented the use of periscopes. The Soviets credit the S-51, under Captain 3rd Rank I. Kucherenko, with having scored the first successful attack using only sonar targeting data on 13 May 1943. German records, addressing the S-51's operations in the Arctic at that time, contend that she made several unsuccessful attacks. But subsequent sinkings by Soviet submarines in the Arctic were accomplished entirely with acoustic detection and tracking.

Thus, by the end of the war the Soviet submarine force had considerable experience with sonar and, with the availability of Soviet and, after the war, German sonar technology, would have significant potential for future submarine development.

MANNING THE SUBMARINES

The massive Soviet submarine construction programs of the 1930s placed a severe strain on personnel training. This situation was exacerbated by the Stalinist purges of the late 1930s, which deprived the Navy of thousands of senior and middle-grade officers. Those officers who survived the purges and "fleeted up" to submarine command and staff positions were generally lacking in initiative when war came.

When the war began, the path to commanding a large submarine was considered to be three or four years at a naval school (the equivalent of Annapolis or Dartmouth) and at least four or five years in various submarine positions. As submarines arrived more rapidly than officers could be trained, the path to com-

mand was shortened. And, the so-called "sea wolves"—merchant navigators and ship masters—were called into naval service, given two years of training, and assigned to submarines as first lieutenants (executive officers). Some of these officers rose to command large submarines during the war.

A new submarine commanding officer would have a "rider" from the division or brigade staff, usually an officer of more senior rank, on board for his first few cruises. This officer observed the new captain as part of his normal promotion/command screening and training process.

Not all officers selected for command were able to survive the strain of wartime operations. Soviet accounts contain details of several officers who failed; for example, according to one account, "Before the war we regarded Lysenko, Captain of the M-172, as a skilled submariner and an exacting officer. He handled his submarine without any glaring errors, and under his command the crew worked efficiently during exercises. In short, on the surface of it, everything seemed normal."⁹ But during the first operational patrol of the M-172 the commanding officer suffered a number of psychological problems, and when he dived to avoid Soviet aircraft and the submarine hit the bottom, he broke apart, exclaiming that the Germans had a giant magnet that had trapped his submarine! The submarine was refloated and brought back to port by the engineer, and Lysenko was removed from command. (The M-172 subsequently gained numerous laurels—and the award designation of "Guards Red Banner"—while under command by the ill-fated I.I. Fisanovich.)

⁹Rear Adm. I. Kolyshkin, *Submarines in Arctic Waters* (Moscow: Progress Publishers, 1966), p. 26.

In another instance, the commanding officer of the SHCH-422, Captain-Lieutenant Malyshev, also in the Northern Fleet, was court-martialed for cowardice. Malyshev had previously had several successful patrols, but then returned with unused torpedoes despite reported opportunities to have used them against the enemy, and on a subsequent patrol he sabotaged the gyro compass because "he was afraid to carry on with his patrol." Soon after Malyshev was killed during an air attack on his base, according to available records.

During the early part of the war political commissars were assigned to each of the larger submarines. In October 1942, this position was changed to political worker (*zampolit*), a position with officer rank. In most military and naval units the troika of the military council—the commander, deputy, and commissar—had to approve all decisions. On submarines, however,

[the] Commissar had no authority to interfere in the running of the ship. On patrol, let alone during an attack, the captain was completely independent in his decisions. The Commissar's duties rarely ranged beyond the political education of the crew, explaining to the men how important it was to fulfil combat assignments and the captain's orders to the best of their ability.¹⁰

The evidence is that the submariners—all volunteers—and political workers got along well under the confining and exacting conditions of submarines and submarine warfare. In the fall of 1942 the new chief *zampolit* for the Northern Fleet's submarine brigade was 30-year-old Captain 2nd Rank Rudolph Radun. He had begun his career as an electrician in a submarine. Radun subsequently was assigned to political work, elected a deputy to the congress of the Young Communist League, and then assigned to the Northern Fleet's political administration before going back to submarines.

In describing the state of Soviet naval personnel during the war, a contemporary U.S. naval intelligence assessment, based primarily on attaché reports, observed,

The general efficiency of the Soviet naval forces is rather below that of the navies of the western capitalist powers. . . . The officers, on the whole, are a poor lot; they are drawn from all grades of society and enter the Naval Schools with an indifferent education. They appear, however, to learn much by experience when they are afloat.

Ratings are generally extremely well set up, well-disciplined and exceptionally tough. Petty officers exert considerable authority, and are given every encouragement to improve their education.

Although the personal appearance of Red sailors is far below the standard of other western navies, it is much

cleaner and neater than that of the soldiers of the Red Army.¹¹

German naval officers who fought against the Soviets in the war gave a somewhat similar appraisal, albeit emphasizing different features of the Red submariners:

As in other navies, Soviet submarine crews represented an elite corps of volunteers. Observations of the years 1942 and 1943 show that the strength of the Russian submariner lay in his willingness to sacrifice himself, and his tenacity and stubbornness, as expressed in his repeated breakthrough attempts in the heavy German and Finnish mine fields systems in the Gulf of Finland. The psychological pressures facing him and which he completely overcame can be compared with those of the German submariner who had to transit the Gulf of Biscay in 1943 and 1944.¹²

Then, addressing the shortfalls of the Red submariners, the German officers observed,

However, his inadequate training on the other hand worked very much to his disadvantage, and it was made more difficult by the winter ice and the unusually limited sea area for attack exercises. The cause for his failures can probably be seen in many cases in the lack of training and experience. Perhaps the submarine commanders in 1941, 1942, and in the fall of 1944 were unable to solve complex tactical problems (result of too dogmatic training before the war!), and the engineer personnel were not in adequate enough control to prevent the submarines from breaking the surface after the torpedo was fired, especially after a spread. Toward the end of the period of operations in 1944 and in 1945, however, definite progress could be detected.¹³

Most submariners lived ashore when their submarines were in port. Morale tended to be higher on submarines than on surface ships, primarily because of their more intensive level of activity and, when at sea, the reduced threat from German air attack, especially the Stuka dive bombers and Heinkel torpedo planes that were the scourge of Allied surface ships in European waters during the war.

At sea the submarines were crowded and damp, and stank from diesel oil, human sweat, and the other odors of confined environments. (A U.S. naval intelligence report noted that in the L-class submarines "sanitary conditions are usually poor."¹⁴) Food appears to have

¹¹U.S.S.R. Navy, Division of Naval Intelligence Report, Serial 40-43, Department of the Navy (Washington, D.C.: 30 November 1943), p. 10 (Secret). This comprehensive document "contains all pertinent information concerning the Navy of the U.S.S.R. available in the [U.S.] Division of Naval Intelligence" at the time.

¹²Vice Adm. Friedrich Ruge, FGN (ed.), "Soviet Submarine Arm in the Second World War," Vol. IIa of *The Soviet Russians as Naval Opponents* (Karlsruhe, West Germany: Historical Division, U.S. Army Europe, February 1955), p. 23.

¹³*Ibid.*

¹⁴U.S.S.R. Navy, Division of Naval Intelligence Report, Serial 40-43, Department of the Navy (Washington, D.C.: 30 November 1943), p. 124 (Secret).

¹⁰*Ibid.*, p. 160.



Soviet sailors give the universal sign for victory as they stand proudly on the submarine L-15 in the port of Greenock, Scotland, in February 1943, while en route from the Far East to the Arctic. The flags are the Soviet naval jack (above) and ensign. Note the traditional striped tee-shirts of Soviet sailors. (Imperial War Museum)

been wholesome if monotonous. Staples included herring, canned beef, groats, beet borscht, and a periodic 100-gram ration of vodka. Upon returning to port with a significant score of sinkings, a Northern Fleet submarine would signal her successes with blanks fired from the deck gun, and the crew would be feasted with suckling pig when they came ashore. Victory celebrations in the Baltic were much more austere until the lifting of the siege of Leningrad.

As the war progressed, women were assigned to submarine brigades, as typists, as communications specialists, and in other shore assignments. These female sailors appear to have served in all fleets, including at the Northern Fleet headquarters at the remote settlement-port of Polyarnyy.

SUMMARY

It is easy to be critical of the relative lack of performance of the Soviet Navy and its submarines during World War II. Yet it should be remembered that the important achievement of the Navy was not measured in terms of the number of enemy ships actually sunk, but—

viewed from a broader perspective—the quality of its contribution to the overall national objective: defense of the homeland. In this respect the Navy, and especially submarines, can be considered successful. For the Soviets, the campaigns fought in the North and in the Black Sea were peripheral to the main theater of operations, except that secure transit routes for the Murmansk convoys from Great Britain were vital, especially during the early part of the war, to bring needed war material into the country. Nevertheless, the Soviet Navy succeeded in forcing Germany to commit substantial air and naval forces for the protection of its lines of communication in all three European theaters.

Traditionally, the Baltic had served as a gateway to the heart of Russia and the Soviet Union: St. Petersburg and, later, Leningrad. It was also in the Baltic that the Germans could bring most of their naval capability to bear. It could be argued that during the war the German Navy controlled the Baltic and successfully prevented the Soviet fleet—surface ships and submarines—from sortieing out of the Gulf of Finland. However, the Germans found that effective control of the Baltic Sea was very dependent on control of the adjoining land areas.

MERCHANT SHIPS SUNK BY SOVIET SUBMARINES

Year	Baltic	Northern area	Black Sea	Pacific
1941	2 4,067 GRT	5 7,199 GRT	5 15,845 GRT	—
1942	19 40,146 GRT	10 19,020 GRT	9 11,526 GRT	—
1943	—	14 26,169 GRT	15 30,618 GRT	—
1944	12 20,969 GRT	7 15,819 GRT	5 6,858 GRT	—
1945	15 67,504 GRT	—	—	4 size unknown
Totals	48 132,686 GRT	36 68,207 GRT	34 64,847 GRT	4

Once the Germans lost control of the latter in 1944, the Soviet Navy was essentially free to operate throughout the eastern Baltic. That the Soviet fleet with the exception of submarines did not exploit this freedom can be explained by the fact that too many of the surface ship crews had been sent to the land war.

Most important, the Soviet Navy survived World War II intact, with a reputation for bravery although perhaps not for skill. It fulfilled the missions for which it was built that it was capable of carrying out. Soviet submarines had limited impact during the Russo-Finnish War, which may in part be excused by the fact that for submarine operations the war was fought in winter, the wrong season. Also, the Navy, like the other armed forces, had just suffered the terror and decimation of the Stalinist purges. Yet the war with Finland served as a useful training ground for the more serious business that was to come when the Soviet Union entered World War II.

During the 1941–1945 war the Baltic and Arctic became the main theaters of submarine operations. The initial German-Finnish attempt in 1942 to blockade the Soviet submarines by minefields in the Gulf of Finland failed. In 1943, anti-submarine nets were laid across the Gulf which, supported by air and surface craft as well as minefields, did effectively frustrate Soviet penetration efforts until the armistice was signed between Finland and the Soviet Union in September 1944. Thereafter, Soviet submarines could move freely into the Baltic, attacking the withdrawing German forces with some effect.

In the northern theater the Soviets never had a sufficient number of submarines for an effective campaign, and apart from that, in their relatively (self-imposed) restricted operating areas, there would never be large numbers of targets.

In the Black Sea, submarines were mainly used to supply the beleaguered Sevastopol and for other special operations. They had minimal effect upon Axis shipping, which was important for the supply of the advancing German armies.

The principal contribution of the Pacific Fleet to the war was to send reinforcements to the Northern Fleet. After the war the Soviet naval leadership concluded

that there had been serious shortcomings in the employment of their submarines on a strategic level as well as tactically. The main recognized strategic mistake was the wrong disposition of the submarines. Most were blockaded in the Baltic and in the Black Sea; only a limited number were available in the area where they could be most useful: the Northern Fleet. The low submerged speed and the limited diving depth were thought to impede the general tactical usefulness of submarines.

The Soviets claim that their submarines sank 322 enemy cargo ships for a total of 938,313 GRT as well as 87 warships and naval auxiliaries during the war. These include some 50 ships that the Soviets estimated were victims of 1,749 mines laid by Soviet submarines during the war. However, a detailed review of available Soviet and German records gives a rather different picture of losses to submarine torpedoes and gunfire, as shown in the above table.

Despite this relatively poor showing by Soviet submarines, Soviet naval analysts and historians are quick to point out that submarines were the most effective means of destroying merchant ships in all theaters of the war. According to Rear Admiral K. Stalbo, one of the senior spokesmen of the Gorshkov era, using the merchant tonnage sunk by submarines as 1.0, aviation sank only 0.27, surface warships 0.08, and mines 0.09.¹⁵

The German analysis of Soviet submarine operations during the war concluded,

[The] unimpressive result of Soviet submarine operations in the Baltic, however, should not lead to the conclusion that Russian submarines were not capable of greater performance. Investigation of operations in the Arctic Sea and in the Black Sea will show that Soviet submariners are lacking neither in aggressiveness and tenacity or, in the view of continuous training obtained in the course of their practical experience, in the necessary nautical and tactical skill. We can be sure that the Soviets have very

¹⁵Rear Adm. K. Stalbo, "Losses of the Fascist German Navy During the Period of the Great Patriotic War. What Do They Tell Us?" *Morskoy Sbornik* (No. 5, 1975), p. 108. Stalbo, later promoted to vice admiral, is a doctor of naval sciences.

AWARDS TO SOVIET SUBMARINES DURING THE WAR

Baltic Fleet	Northern Fleet	Black Sea Fleet
<i>Guards Red Banner</i>		
D-3		
M-172		
S-56		
SHCH-402		
<i>Guards</i>		
K-22	L-3	M-35
M-171	SHCH-303	M-62
M-174	SHCH-309	S-33
SHCH-422		SHCH-205
		SHCH-215
<i>Order of Red Banner</i>		
K-21	K-52	A-5
L-22	LEMBIT	L-4
S-51	S-13	M-111
S-101	SHCH-307	M-117
S-104	SHCH-310	S-31
SHCH-403	SHCH-320	SHCH-201
SHCH-404	SHCH-323	SHCH-209
SHCH-421	SHCH-406	

thoroughly studied the experiences of their own and other submarine arms and have drawn their own conclusions from them.¹⁶

¹⁶Ruge, "Soviet Submarine Arm," pp. 24–25.

Taking a broader view of the impact of submarines in World War II, Admiral S.G. Gorshkov observed,

On the eve of World War II the opinion existed among the bourgeois naval theoreticians that submarines were a weapon of the weak. The course of the war at sea totally refuted this. Moreover, *submarines became the most important means of combat at sea*. And while in some states their capabilities were underestimated in the prewar period, in the course of the war they had to make a reassessment of submarine forces. Thus, Hitler Germany, which in no way was among the weak countries in a military respect, underestimated the importance of submarines in the prewar period and during the war built 1,131 submarines. Despite the furious development of enemy ASW forces and means, and the considerable losses from their action, the number of German submarines grew from 57 boats at the outbreak of war to 493 at the end (on 1 January 1945).¹⁷ [emphasis added]

And, Gorshkov made special note of Winston Churchill's comment on the German U-boat campaign: "The only thing that ever really frightened me during the war was the U-boat peril."¹⁸

¹⁷Adm. of the Fleet of the Soviet Union S.G. Gorshkov, "Navies in War and in Peace," *Morskoy Sbornik* (No. 11, 1972), p. 33.

¹⁸*Ibid.*, p. 24; the quotation is found in Winston S. Churchill, *Their Finest Hour*, Vol. 2 of *The Second World War* (Boston: Houghton Mifflin, 1949), p. 598.



Building hall No. 42 at Severodvinsk was erected on Stalin's orders to construct major warships for the Northern Fleet. The facility—shown here in June 1944—was intended to construct two battleships simultaneously. It is now part of the world's largest submarine construction yard. (U.S. Navy)